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**The August 14th, 2003 Blackout: Implications for Future Disaster
Preparedness in Toronto, Ontario**

by

Kelly Marie MacGrandles
Bachelor of Arts, Wilfrid Laurier University, 2002

THESIS

Submitted to the Department of Geography and Environmental studies in partial
fulfilment of the requirements for Master of Arts degree
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ABSTRACT

Hazards, both natural and technological occur on a fairly regular basis. Timely and accurate communication of information before, during and after a disaster is essential for saving lives and property. This theme is the focus of this Master's thesis, in which the August 14th, 2003 blackout is used as a case study to assess how information is provided to the public during disaster events. More specifically, the thesis evaluates how agencies within the City of Toronto communicated risk information to the public. The methods used in this thesis include a review of the existing risk communication academic literature. This review provides a basis for an analysis of the current methods of risk communication used by authorities in Toronto. A news release analysis and interview analysis were then conducted to determine how closely the information in news releases issued from August 14th - August 21st, 2003 followed the criteria outlined in the academic literature.

Eighty one news releases were analysed. These news releases were analysed first for overall content related to emergency risk communication. The daily theme of the news releases changed from a focus on safety and updates to appeals to conserve as the aftermath of the blackout progressed. The news releases were then divided into ten categories, with similar agencies being grouped together. These ten categories were analysed for information that was included in emergency risk communication, as suggested from the literature review. The ten categories were: Province of Ontario, City of Toronto, transportation, communication, hydro, hospital, police, humanitarian/volunteer and other. It was found that overall, the provincial releases met very few criteria, as most releases were too short to include important information suggested from the literature. The miscellaneous category, "other" produced the news releases with the most complete information. The other eight categories fell in between these two.

There were thirteen interviews undertaken with people who were involved in disseminating risk communication to the City of Toronto after the blackout. These interviews were undertaken to determine how the agencies that issued these releases decided what information was important. In addition, these interviews highlighted the fact that few agencies had a template for writing a complete news release, and information that the literature suggested was important, was not deemed important by some interviewees.

This thesis contributes to the academic literature regarding risk communication by showing that the information in the academic literature is not being applied on a practical level by authorities who communicate risk to the public. In conclusion, there are seventeen recommendations that have been suggested to allow risk communication authorities to improve their communication methods.

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Chapter 1- Hazards and Disasters

1.1 Introduction to Risk, Disasters and Emergency Preparedness

The world's population is increasing and population densities are becoming higher in urban areas. As nations continue to urbanize, we need more effective ways to prepare for, and respond to, both natural and technological hazards. In North America, all larger cities have an emergency plan in place to help reduce the consequences if a disaster were to occur. However, these plans are not perfect. In the aftermath of a disaster, a review of the emergency plan can lead to alterations to better prepare for the next disaster. Past disasters can also help cities assess how prepared individuals were.

Eighty percent of Canadians live in urban areas, with over four and a half million people living in the Greater Toronto Area alone (Parliament of Canada, 2003; Statistics Canada, 2004). As Canadians continue to urbanize, it is becoming more important to understand how city officials can effectively communicate the risks and hazards that are present. Authorities must be able to disseminate information about planning for an emergency, what to do if an emergency occurs and where to get information in the aftermath of a disaster. This information must flow from authorities to the public as effectively as possible.

It is not just the authorities who must respond to a potential disaster. Citizens must prepare themselves. To accomplish this, there must be effective communication between the authorities and the general public. People need to know where to go for help, such as for food, shelter and emergency medical treatment. Effective communication reduces confusion in the aftermath of a disaster and allows emergency response personnel

to work more effectively.

Even in non-crisis periods, emergency preparedness should still be undertaken. These periods are opportunities for cities to strengthen their disaster management capability and to undertake public emergency preparedness campaigns. Non-crisis periods are also opportune times for cities to assess whether or not their communication techniques are reaching all residents. These issues regarding the communication of emergency information in both times of normalcy and times of disaster will be investigated in this thesis.

1.2 The August 14th, 2003 Blackout

Since the threat of disaster is always present, cities need to learn from any disaster or adverse event that occurs in their area. While not all adverse events will result in structural damage to cities or large business losses, less severe events are an opportunity to evaluate disaster management approaches and initiate improvements. In addition, the communication methods used by the authorities of the affected areas can be studied to determine the effectiveness of communication from the authorities to the public.

An example of a recent event, which can be studied to help strengthen risk communication policies and practice, occurred in northeastern North America on August 14th, 2003. A large- scale blackout occurred around four p.m. (Final Report, 2004). In Canada, the majority of residents in the province of Ontario were affected; Toronto, Ontario was the largest Canadian city affected. This blackout was treated like an emergency situation and first-responder, humanitarian, and governmental agencies all treated the situation as if it was a full-scale emergency.

The City of Toronto may be able to look at the blackout to investigate aspects of emergency management that either worked well or need improvement. This thesis will focus more specifically on emergency risk communication during the aftermath of the blackout. It will examine methods of effective risk communication suggested by the literature, and compare them to methods the authorities used in Toronto during the blackout.

When using the blackout as an example of a disaster, key questions to ask include: Were the authorities, such as police and emergency workers, able to accurately convey messages to the public? With the disruption to normal means of communication, how did the authorities communicate information to residents? The lessons learned about the communication between authorities and the public can be incorporated into the City of Toronto's emergency plan as well as shared among other large urban centres.

This thesis will describe and evaluate the risk communication information given by authorities via news releases. There were three main methods used to evaluate the information being disseminated. The first method is a document analysis. Documents from a variety of sources, both from Canada and the United States were utilized to obtain information about the blackout. An example of one source used in this thesis comes from a joint Canada- U.S. task force set up to probe the cause of the blackout. This task force examined the causes of the August 14th, 2003 blackout. The second method involves analysing news releases written in the aftermath of the blackout. These releases were analysed for content, i.e., what was included as well as what was missing in the releases. The criteria for the evaluation were developed by investigating the existing literature

related to information that should be given to the public in an emergency situation. This can be found in more detail in Chapter 2. The third method used was semi-structured interviews undertaken with staff of various agencies who were directly involved with the emergency response in the blackout. Thirteen interviews were conducted over a period of four months. Again, the questions asked during the interviews are related to the guidelines that have been suggested by the literature. They are also outlined in Chapter 2.

1.3 Outline of Thesis

This thesis is divided into seven chapters. The second chapter presents a more in-depth discussion of geography, disasters and hazards. This section includes information on humans, resource use, risks and their relation to disasters. In addition, a discussion about why people may perceive adverse events differently is presented. Because there are cultural, language and other barriers to effective communication, these issues must be addressed for effective risk communication. These barriers are outlined in this chapter. Chapter 2 also outlines the information suggested by the current literature regarding ways to effectively communicate emergency information.

Chapter 3 initially focusses on electricity as a resource and then narrows the focus to Ontario and discusses Ontario's power sources. Then the discussion changes to power failures and discusses past large-scale power failures and the commonalities regarding the reasons why the electricity failed. The discussion then narrows to the August 14th, 2003 power failure and gives an overview of the events of that day as well as the causes of the power failure, as suggested by a U.S.- Canada joint task force. Finally, there is a section regarding the implications of continual high demand of electricity from North Americans.

Chapter 4 outlines the methodology used in this thesis. This chapter first discusses the Sociological Theories of Risk outlined by Renn (1992) and argues that this thesis is an example of Renn's Sociological Theory of Risk. The second section compares six academic studies that evaluated risk communication and links these to the methods used in this thesis. The third section discusses the case study method of gathering information and why it was appropriate for this thesis. This chapter also discusses the methods used to obtain and analyse the empirical data.

Chapter 5 is an analysis of news releases that were issued during the blackout. A total of 81 news releases were analysed two different ways. The first analysis was by date. The goal of this analysis was to determine if there was a pattern regarding the type of information released and the date it was released. For instance, in the initial two days after the blackout, there was a lot of information about keeping safe in the news releases. As days passed, the focus shifted to conservation. The news releases were then analysed to determine what elements of risk communication were present in releases issued after the blackout. The second type of analysis done was to determine the general content of news releases. In Chapter 2, the review of the academic literature discusses some important information that should be given to the public in an emergency situation. This information includes, reporting uncertainty or unknown information, addressing misconceptions the public may have and ensuring that communication is made available in as many languages as possible. In addition, the Federal Emergency Management Agency (FEMA) outlined seven elements that should be present in a news release. This information was compared to the information suggested in the literature review. A

summary of findings is included in this chapter, and recommendations based on these findings are made in Chapter 7.

The sixth chapter includes an analysis of 13 interviews undertaken with people who were involved in the City of Toronto's response to the blackout. These people were interviewed between July 26, 2004 and October 7, 2004. This chapter involves analysing the risk communication strategies used by different City of Toronto authorities, such as City of Toronto authorities, first responder agencies, media outlets and humanitarian agencies who helped with the response. For the purpose of this thesis, the interviews were divided into three groups, City of Toronto authorities, media outlets and humanitarian agencies. The interview transcripts were then coded using a qualitative data analysis computer program. Recurring themes were outlined from this program and problems with the City of Toronto's emergency communications emerged. These problems are highlighted in this chapter, and then expanded upon in Chapter 7 where recommendations to improve emergency communication are made.

Chapter 7 summarizes the findings from the news releases and interviews undertaken in this thesis and also includes how these findings relate to the academic literature that was presented in Chapter 2. This chapter also contains 17 recommendations that the City of Toronto may be able to employ to improve their emergency risk communication strategy. Finally, this chapter discusses how the findings of this thesis may benefit other cities by improving their emergency risk communication strategy so the authorities can more efficiently give emergency information to the public.

Chapter 2 - Literature Review and Background

2.1 Geography and Disasters

This thesis contributes to the sub-discipline of hazard geography. Hazard geography focuses on the relationship between humans and the aspects of their natural and human-made surroundings that are hazardous or threatening (Hewitt, 2000). The difference between a natural and technological hazard is the origin of the threat.

Natural hazards have been studied more extensively than technological threats because floods, earthquakes and hurricanes have been occurring for thousands of years (Cutter, 1994). However, new technological hazards are continuously emerging and these hazards are often the result of human error or a knowledge gap between the desired outcome of a technology and the unknown aspects of that technology (Smith, 1992). The August 14th blackout is an example of a hazard created by society, because it was caused by a failure of human technology.

While a hazard can be defined as “the potential interaction between an extreme event and a vulnerable community” (Lindsay, 2003, p. 291), a disaster can be defined as a “situation or event, which overwhelms local capacity, necessitating a request to national or international level for external assistance” (CRED, 2005). The Center for research on the Epidemiology of disasters lists four criteria that must be present for the Center to officially declare it a disaster. The four criteria are: 1) 10 or more people killed, 2) 100 people affected, 3) a state of emergency was declared, 4) Appeal for international assistance (CRED, 2005). Because there were over 50 million people affected, and a declaration of a state of emergency, the August 14th blackout can be considered a disaster

(Yourish, 2003, 40).

Large-scale power failures are a relatively rare event in the developed world. Before August 2003, there had been several large-scale power failures, but only four previous blackouts in northeastern North America. One occurred in November of 1965, affecting Ontario, and some Eastern Seaboard States (IMO, 2003a). Another occurred in New York City in 1977 and, in 1988, a lightning storm in Minnesota resulted in power loss to North Dakota, South Dakota, Ontario, Minnesota and Saskatchewan (IMO, 2003a). As well, in January of 1998, an ice storm in Eastern Ontario and Western Quebec resulted in power outages to over three million people (CBC, 2003a). In some places power was not restored for thirty days (CBC, 2003a).

2.2 Managing Hazards and Disasters

Disasters generate the need for emergency response. The Canadian Centre for Management Development (CCMD) defines an emergency as “an abnormal situation that requires prompt action, beyond normal procedures, in order to limit damage to persons, property or the environment” (Boisvert & Moore, 2003, p. 3). Emergency management involves handling the risk of a hazard so a community can mitigate potential damages as well as devise a plan if a disaster does occur (Wilson and Oyola-Yemaiel, 2001). Being prepared and planning ahead for a disaster can reduce the number of lives lost and damage to property.

In the United States some form of emergency management legislation has been in place for over 200 years and emergency management has evolved considerably (Waugh & Hy, 1990). During the early 1970's, there were over one hundred federal agencies that

dealt with some form of hazard mitigation and disaster preparedness (Haddow & Bullock, 2003). This multi-agency disaster relief scenario was troublesome, as there were difficulties with coordination. Problems also occurred because of confusion and competition between agencies (Haddow & Bullock, 2003). President Jimmy Carter was the first to suggest that all federal agencies dealing with disasters should be combined into one. The Federal Emergency Management Agency (FEMA) was established on March 31, 1979 (Haddow & Bullock, 2003). While there were some initial difficulties in consolidating emergency relief, new ideas allowed FEMA to become a viable agency. A series of disasters such as the Midwest floods in 1993 and the Oklahoma City bombing tested FEMA, and demonstrated this agency was able to provide reliable aid following a disaster.

In Canada, federal emergency management legislation is comparatively recent. The *Federal Policy For Emergencies* (1995) was amended from two acts: the *Emergencies Act* (1988) and the *Emergency Preparedness Act* (1988). This *Federal Policy For Emergencies* requires all levels of government to undertake emergency preparation and outlines the responsibilities of each level of government in dealing with an emergency (Boisvert & Moore, 2003). Canada does have a federal emergency management organization, called Public Safety and Emergency Preparedness Canada (PSEPC). The goal of PSEPC is to reduce the risks of crime, natural hazards, technological hazards and terrorist activities, as well as encourage people to increase their own personal safety (PSEPC, 2004).

While the United States federal response to an emergency starts at the

governmental level, in Canada, emergencies are handled on an individual basis (Boisvert & Moore, 2003). If individuals are unable to handle the crisis, the municipality will attempt to resolve the emergency. The province may be asked to handle the crisis if it is beyond the capabilities of the municipality. The Government of Canada may help only if there is an official request or it is a national emergency (Boisvert & Moore, 2003).

In Ontario, the Ministry of Community Safety and Correctional Services is responsible for provincial emergency preparedness (PERP, 2004). The Ministry keeps an updated Provincial Emergency Response Plan (PERP), which includes emergency situations such as natural disasters and terrorist acts, but does not include nuclear disasters. A separate Provincial Nuclear Emergency Response Plan has been documented for nuclear emergencies (PERP, 2004).

Emergency Management Ontario, an agency under the Ministry of Community Safety and Correctional Services, requires the twelve separate ministries in Ontario to maintain current emergency plans. The following chart shows each ministry's responsibilities in a disaster (PERP, 2004).

Table 2.1 Ministries Required to Have Current Emergency Response Plans (PERP, 2004)

Ministry	Area of Responsibility
Agriculture and Food	Agriculture and food emergencies.
Community and Social Services	Emergency shelter, clothing and food, victim registration and inquiry services and personal services required in support of all emergencies.
Community Safety and Correctional Services	Coordination of provincial emergency management.
Energy	Energy supply matters.

Environment	Spills of pollutants to the natural environment.
Health and Long Term Care	Large-scale human health emergencies and epidemics. Emergency health services.
Labour	Emergency worker health and safety.
Management Board Secretariat	Continuity of government services.
Municipal Affairs	Coordination of extraordinary provincial expenditures for emergencies.
Natural Resources	Forest fires, floods and droughts.
Northern Development and Mines	Abandoned mines hazards. Support for provincial emergency management in Northern Ontario.
Transportation	Highway and other transportation services.

While each of these ministries may be required to act in a specific disaster, if a disaster occurs in a city, the mayor initiates the emergency response plan (Ontario Gazette, 2004). According to the Ministry of Community Safety and Correctional Services, most emergencies are handled by the community's local police, fire, emergency services and public services and the province does not become involved(PERP, 2004). The *Ontario Emergency Management Act* of 1990 requires all municipalities to have an up-to-date emergency plan. The law states, "Every municipality shall develop and implement an emergency management program and the council of the municipality shall by by-law adopt the emergency management program." (E-laws, 2.1(1), 2002). This law also requires a Municipality's completion of an emergency plan, training programs for all involved in emergency services and procedures, and community education regarding

safety and preparing for an emergency (E-laws, 2.1(1), 2002).

Provincial emergency services may be required if public safety is threatened, or resources are inadequate for the community to handle the emergency on its own (Ontario Gazette, 2004). The Provincial Emergency Response Plan (PERP) will then be utilized. The PERP has different levels of involvement in an emergency depending on the severity (PERP, 2004). The first level involves routine monitoring and keeping in close contact with the affected area to pass along advice or determine if the next level of response from the Province is required (PERP, 2004). The second level: enhanced monitoring, involves the Provincial Operations Centre carefully monitoring the emergency and determining if other provincial or federal agencies need to be notified. An officer from Emergency Management Ontario will be dispatched to the area (PERP, 2004). The third level: partial activation, requires the Provincial Operations Centre to manage the emergency with on-site assistance provided by the Provincial Emergency Response Team (PERP, 2004). The final level of provincial involvement in an emergency is a fully functional Provincial Operations Centre with provincial and federal personnel to establish a quick response (PERP, 2004).

According to Steve Beatty of Emergency Management Ontario, the August 14th blackout was considered a provincial emergency (Personal communication, December 3, 2004). Because of the quickness of the onset of the event, there was a full activation of the Provincial Operation Centre. There was no time to increase the level of provincial involvement in the proper sequence. However, as time passed, the province scaled down its involvement sequentially.

2.3 Four Phases of Emergency Management

There are four phases of emergency management: planning, preparation, response and recovery. From the perspective of municipal planning, the first phase of emergency management requires communities to have an emergency plan. This phase also encourages individuals and businesses to plan for a potential disaster. The second phase: preparation, involves educating the public on the hazards specific to their region, such as flooding or some form of technological disaster. However, it should be noted Emergency Management Ontario is in the process of separating prevention and mitigation into two separate phases (Bill Fox, personal communication, April 8, 2005). The third phase involves the emergency response to a disaster which has just occurred. Helping the victims through first aid is an example. The fourth phase: recovery, involves assessing how the community coped and what improvements to the emergency plan can be made (Waugh & Hy, 1990).

Risk communication falls mostly into the preparation and response phase. In the preparation phase, education and increasing awareness of hazards are examples of action taken to prepare for a disaster. In the response phase, information such as, evacuations, boil water orders and where to go for help need to be given to every affected individual. In the following section, an overview of the four phases of emergency management will be discussed to illustrate how the information in this thesis will best contribute to the response phase.

2.3.1 Mitigation/Planning Phase

The first step in the planning phase is establishing an emergency management

plan. Every hazard that could occur in the community must be listed, including natural and technological risks (Ferrier & Haque, 2003). All activities which can help prevent a disaster or reduce the loss of life and property are classified under the mitigation or planning stage, such as, building earthquake resistant homes, proper land use planning, thorough evacuation plans and improved power grid construction and management (Smith, 1992).

2.3.2 Preparation Phase

The second phase in emergency management is preparing for a disaster. Households can prepare for a disaster by having an emergency kit with batteries, flashlights, portable radio, first aid kit and other emergency supplies. Preparation related to a specific imminent threat is usually undertaken when an actual disaster is about to occur. If preparation is done before a disaster strikes, some problems can be mitigated, such as the extent of damage to buildings. For instance, using storm shutters during a hurricane can reduce the amount of damage a house may sustain. At the municipal and provincial levels, preparedness also involves an early warning system that will alert the public in case of an emergency, such as storm watches and warnings (Smith, 1992; Boisvert & Moore, 2003).

2.3.3 Response Phase

The third phase of emergency planning is the response phase, which occurs immediately following a disaster. During this phase, first responder agencies are the main organizations that will be called into action. Often at the municipal level, there will be a central command centre staffed by an emergency management team to direct people

involved in the immediate response. Many volunteer or humanitarian agencies may help with setting up emergency shelters, or distributing donations of clothes, money and food. In this thesis, some volunteer agencies were interviewed to determine how they publicized their involvement in the blackout recovery effort.

Several problems may develop during the response stage. One problem can be the lack of communication between the community affected and other organizations (Bui et al., 2000). A second difficulty in a disaster involves the distribution of timely and important information (Bui et al., 2000). “Information in disaster relief is an essential resource that translates into supplies” (Zhang et al., 2002, p. 371). Getting relevant information to the public quickly can ease worry and reduce confusion. The recommendations in this thesis can enable authorities to provide an efficient flow of information to the public and reduce the number of people who do not receive emergency response information.

2.3.4 Recovery Stage

The recovery phase encompasses the restoration of utilities and returning the area to its pre-disaster condition (Waugh & Hy, 1990). Finally, when the recovery from the disaster is mostly complete, it is time to evaluate how the emergency was handled. For instance, was the evacuation plan successful? Did the people who needed medical aid receive it promptly (Smith, 1992)? What residual social and economic problems remained once the disaster has abated (Slovic, 1994)? Insight from this review will contribute to a community’s ability to deal with future hazards and disasters. The overall goal of emergency management is to learn from each successive event to improve

community safety and security. The blackout can be utilized to determine how the emergency response was handled and to suggest improvements to the City of Toronto's emergency plan.

2.4 Risk Communication 1970-Present

Little has been written regarding effective methods to influence the general public to prepare for an emergency. While risk communication has been studied since the 1970's, enthusiasm regarding the topic seemed to wane during the 1990's. As evidenced by the lack of referencing to recent work, there seems to be a small resurgence in risk communication literature, but it has branched off into focussed sub-topics.

Risk communication can be divided into two main areas; information given by authorities and how people use this information (Pidgeon, et. al, 2003). This thesis discusses information dissemination to the public. While determining if the public receives this information is important, this thesis does not research this aspect of risk communication. This thesis focusses on how authorities determine what information should be given to the public as determined through a review of the existing risk communication literature. If authorities are not using effective communication techniques to inform the public, the public will not be adequately educated on hazards and emergency preparedness.

My thesis aims to add to the small body of literature on dissemination of risk information by authorities. The goal is to determine the ways that risk communicators in Toronto, Ontario attempted to inform the public of hazards related to the blackout and compare this to the information suggested in the academic literature. This thesis adds to

the general information regarding the gap between the theoretical methods of risk communication and the actual methods used in emergency situations. This thesis asks: What steps were taken to make communication available to as many people as possible considering the loss of power? Did news releases follow any set parameters as identified in the academic literature? What steps were taken to ensure communication reached all languages as well as the visually and hearing impaired? This information regarding communication in the blackout can be used to determine ways to communicate and educate people on how to be prepared for a disaster in general.

Considering the threat of hazards and disasters is always present, effective risk communication must be an integral part of any community and provincial emergency plan. People's perceptions of a hazard and the vulnerability of different groups of citizens are important concerns that must be considered when developing effective risk communication plans.

The blackout of 2003 provides an opportunity to study how prepared Toronto was for a large- scale disaster in regards to communicating information throughout the city. Because there are so many variables involved in disseminating effective hazard communication to the public, the criteria outlined in this chapter is used to assess the robustness of Toronto's risk communication approach during the blackout.

2.5 People and Risk Perception

Risk communication is defined as important information about risks, (such as emergency preparedness, severity of an event or agencies to contact for help) that is passed from authorities to the public (Lofstedt, 2003). Effective risk communication

gives information to the public regarding hazards and how to prepare for them (Frewer, 2004). It must be undertaken in such a manner as to cross language gaps, preconceived notions, misconceptions as well as ethnicity and gender.

It is important to understand how people perceive risk, since this affects their behaviour in managing hazards and responding to disasters. A person's perception affects whether or not they feel that there is likely to be adverse consequences related to a specific hazard (Slovic, 1994). It is a person's decision to take notice of a possible hazard and voice concern about the hazard, that partly affects the perception of that risk (Pidgeon et al., 2003). These perceptions will depend on what type of disaster is occurring and where it is occurring (Hewitt, 2000).

2. 6 Risk Communication and the Media

Risk communicators can use various forms of media to reach a wide audience. In any disaster, information must get from the source to the public. Choosing the best method of communication to get information to the public may be difficult. When the same event is covered by newspaper, television, radio and magazine, one study found that newspapers have more depth regarding information on a risk (Turner, Nigg & Paz, 1986). However, the same study showed that people are more likely to believe the information if it was seen on television (Turner, Nigg & Paz, 1986). For public risk communication in non-hazard situations, using radio as a primary source of information may not be the best method. Often the radio is used as a background source and generally people do not pay as close attention to it as they would other sources (Turner, Nigg & Paz, 1986). It is these problems that risk communicators face when determining

how to best relay information to the public. For instance, it is suggested that to relay important emergency information, several forms of media should be employed. One of the benefits of using many different forms of media to communicate risk information is the increased likelihood that people will be exposed to the information, which means more people are likely to discuss the information informally (Turner, Nigg & Paz, 1986). However, in the case of the August 14th, 2003 blackout, some forms of media, such as television, were not available.

The media role in risk communication can also be seen as detrimental. Certain media organizations have been criticized for sensationalism or bias (Bromley & Segerson, 1992). The decision for newsworthiness will sometimes halt important but boring information from being published. Another problem is that most television pieces are short. There is no room for the reporter to retell the basic background information for the story, and most newspaper readers do not read the entire story (Bromley & Segerson, 1992). Sometimes the reporter does not have the knowledge to discuss the scientific background. There is also a problem of timing. Most journalists only do a cursory background check of the facts or must assume that others have already checked the background information on the story (Bromley & Segerson, 1992). These facts are important when looking for evidence of complete and accurate reporting after a disaster has occurred. During interviews for this thesis, it was discovered during the aftermath of the blackout, that there were some problems regarding accuracy of telephone numbers as reporters are encouraged to get the information to the public as soon as possible, without having the time to double check some facts. This issue will be elaborated in Chapter 6.

2.7 Methods for Effective Risk Communication

In using the media to promote general emergency management or hazard mitigation information, the Federal Emergency management Agency (FEMA) has suggested some guidelines to ensure good communication (FEMA, 2004). The first step involves deciding on the type information to disseminate and its key points (FEMA, 2004). Is this information to be used to educate people, solicit volunteers or publicize an event? Then the best type of media to publicize the information should be chosen. For example, if an in depth article is the most fitting way to publicize the information, choose a magazine.

One way to attempt to reach as many media organizations as possible is through a news release. According to the National Education Association, a news release is a factual message regarding an occurrence of an event or a topic of interest to the public (NEA, 2005). This message should state what the issue is, why it is important, who is involved in issuing the message, and how more information about the event or topic can be obtained (NEA, 2005). A news release allows direct communications between an organization and media services throughout the world (U.S. Newswire, 2005). FEMA outlines a logical sequence that news releases should follow (FEMA, 2004). These include:

- 1) Headline describing the information in the news release
- 2) Short statement that catches the reader's attention
- 3) Follow up sentences that explain who, what, when, where.
- 4) Second paragraphs should inform the readers why this information is important
- 5) Last paragraph is a summary of important facts
- 6) Below, the organization should have a statement about the aim of the organization

and its goals.

7) Contact information for the organization

These seven elements can help ensure a clear message reaches the public. Milette and Sorensen (1987) discuss the importance of clearly giving emergency information to the public. They give an example regarding a vague location of a specific risk. Which results in a tendency for people to either underestimate or overestimate the area affected (Milette & Sorensen, 1987). In addition, these authors discuss how insufficient content in a message can lead to confusion, worry and apprehension. Updating messages on a regular basis for the public can help reduce fear (Milette & Sorensen, 1987). According to the interviews undertaken in this thesis, one member of the print news media stated the more information in a news release, the more information that is likely to be in the story (See Chapter 5). A study by Neuwirth et al. (2000) discusses how more information contained in a news story can help promote people's interest in seeking disaster preparedness information. For example, if there is more information included in the story, such as the projected severity of the hazard, the possible undesirable outcomes, and the accessibility of effective methods of reducing the risk, more people will be motivated to change their behaviour (Neuwirth, et al., 2000).

These methods outlined above to help the media effectively communicate risk can also be used to educate the public on preparedness and mitigation measures that can be undertaken to reduce the problems that occur in a disaster. In addition to effective use of the media, there also needs to be publicity surrounding the information. FEMA has outlined ideas that could be used in promoting the information. This includes involving a prominent member of the community, such as the mayor or chief of police, to support the

cause and give quotes to the media (FEMA, 2004). Joining in with other organizations or programs and inviting the media to the meetings are also effective tools to promote mitigation (FEMA, 2004). The next three sections will highlight the goals of risk communication, some methods of risk communication currently used as well as barriers to effective risk communication.

2.8 Goals of Risk Communication

As stated earlier, the overall aim of risk communication is to inform the public of potential hazards and how to prepare for a disaster (Frewer, 2004). Bier (2001) cites Rowan (1991), who has outlined five goals of risk communication to aid the public and authorities in preparing for a possible disaster. These five goals should be established in times of normalcy. The goals are: 1) ability to trust the communicator, 2) increasing public knowledge about potential risks, 3) education, 4) strategies to reduce or mitigate risk and 5) encouraging people to reduce their personal risk (Rowan, 1991). Trust is a very important issue and will be discussed in more detail below. The other four goals all attempt to encourage the public to prepare for a disaster through different methods of public education, awareness and encouraging the public to take personal interest in disaster preparedness.

These five goals have been utilized in this thesis as a framework to help structure the analysis of news releases issued after the blackout. These goals are discussed further in Chapter 5. This framework has been established to determine if agencies that issued news releases attempted to utilize these goals to effectively communicate risks to public. To do this, the message needs to be received and the importance of the information needs

to be understood by the public, so that people can prepare. However, the literature also suggests that there is very little information on how to motivate people beyond education and influence them to taking preparatory action. This has not been studied as much as other aspects of risk communication.

2.9 Disaster Preparation Through Effective Risk Communication

Much has been written on how and why people respond to hazard warnings (Perry & Mushkatel, 1984). However, effective motivation to influence the public to prepare for an emergency if there is not an imminent threat is rarely studied. There is some information available which suggests that there are five ways to persuade people to prepare for a disaster or reduce their risk of being affected by a hazard (Mileti & Sorensen, 1987). These five ways each use different aspects of psychology, law and enforcement to persuade people to reduce their risk of being victimized by a hazard. These five ways are (Mileti & Sorensen, 1987),

1. Regulatory mandate: laws and regulations are put in place to reduce or encourage certain behaviours or actions. This can include imposing restrictions on building within a flood plain.
2. Enforcement: law enforcement imposes certain restrictions to reduce possibly dangerous behaviours. An example of this is drinking and driving laws.
3. Economic Sanctions: monetary fines or payments for undertaking possibly hazardous actions. For instance, a monetary fine for not wearing a seatbelt while driving.
4. Economic Incentives: monetary gains or other motives for complying with certain regulations.

5. Information and Persuasion: informing the public through sharing of information.

These five approaches can be used independently or in conjunction with other motivating approaches to influence the public, although in general, regulatory practices are the most often used (Mileti & Sorensen, 1987). Educational programs have been tried as well, but regulating behaviour, such as enacting building codes or land use zoning has been the most effective way to avoid or minimize the number of people that become victims in disasters (Mileti & Sorensen, 1987). However, on an individual level, it would be difficult to devise an enforceable type of regulation mandate to influence people to prepare for an emergency. The fifth approach to persuading people to prepare for a disaster is where this thesis fits in.

This thesis involves analysing existing methods of risk communication. If people are aware of possible risks ahead of time and have either taken precautions to reduce the risk or know of their options to reduce their risk, people are more likely to make a rational decision (Miletti & Sorensen, 1987). The information must be presented to the public in such a way that takes into account the steps outlined above.

2.10 Barriers to Effective Risk Communication

Studies have shown that people in authority do not always use the most effective methods to communicate risks. Several such barriers are discussed. While trust is an important aspect of risk communication, direct measures of public perception of trust is beyond the scope of this thesis. One aspect of trust that was studied includes the authority's perception of trust between themselves and the public. This is addressed in Chapter 6. Interviewees were asked how they feel trust between authorities and the

public influences emergency risk communication

2.10.1 Trust

The general public's mistrust of officials is one of the largest factors affecting people's perceptions of a hazard. Distrust can result in people ignoring warnings or downplaying their severity (Lofstedt, 2003). If specific accidents have occurred in the past as a result of insufficient risk communication or if the information appeared biased towards certain interests, trust is lost (Frewer, 2004). Studies have shown that if an untrustworthy source relays information, people will strengthen their beliefs in the reverse direction from the source (Frewer, 2004).

Authorities can gain trust by ensuring messages released to the public are consistent throughout different agencies. A study by Lopes (2002) outlined inconsistent messages in hurricane brochures throughout the eastern United States. Some brochures still recommend putting tape over windows to prevent the glass from breaking. The tape only prevents the glass from shattering, it does not protect a window pane from breaking. Lopes (2002) suggests that multi-agency cooperation in giving out emergency risk communication messages will help foster trust and compliance, for example, because the repetition suggests that the information is reliable

2.10.2 Uncertainty

In a disaster situation, authorities may not know the specific information themselves but should still pass along information to warn people of a potential hazard and what to do if the hazard occurs. In the past, it was thought that the public may misconstrue the uncertainty regarding a risk since the authority was not able to give

people the specific information they wanted. In fact, Frewer (2004) suggests this failure to communicate uncertainty increases public distrust. There is a need for balance between informing the public about a risk and showing them how to be prepared, but also informing them that a particular hazard may never occur.

Some questions asked during the interviews for this thesis include: How do authorities handle giving out information that is not complete? How is the public reassured that they are receiving all of the information that the authorities have? The authorities must show that they are not withholding information and are just taking precautions. How do authorities attempt to achieve this balance?

2.10.3 Use of Scientific Language

Another cause of risk mis-communication is a result of the scientific language used to communicate the risk. For instance, when words such as ‘probability’ are used in risk communication, it is often impossible to ensure that everyone has the same understanding of the term (Bier, 2001). Rocky Lopes (2002) from the American Red Cross argues that risk communicators should avoid words that are not in the average person’s vocabulary. In addition, the wording related to a probability being ‘highly unlikely’ will often have a wide range of interpretations (Bier, 2001).

There is also a problem with people overestimating the likelihood of low probability risks when some of these risks are played up by the media (Lofstedt, 2003; Bromley and Segerson, 1992). This has been called the availability heuristic (Reid, 1999). The easier it is to recall similar events to the present threat, the more likely a person will think the occurrence happens more often than it actually does (Reid, 1999).

This is why media over-representation of large-scale accidents, such as air plane crashes, cause some people to overestimate the likelihood of an event (Reid, 1999). Aside from a few suggestions in the literature, such as using graphing and analogies, not much has been written on how to deal with this heuristic (Bier, 2001).

According to Rowan (1991), there are two arguments regarding the style of risk communication. The first method, the democratic approach, focuses on ensuring the general public is informed of the risk and the options available to reduce the risk (Rowan, 1991). This method avoids the scientific wordings and calculations that are present in the technical approach (Rowan, 1991). The focus is on how an ordinary person perceives a particular risk (Rowan, 1991). The second argument, known as the technical approach, attempts to explain risk with scientific wording and statistical information. Some experts think that the lay person is unable to understand statistics. Others believe quantitative statistics can be a useful tool for the public to make up their own minds. If the public is aware of the statistics, they can make an educated decision (Bromley & Segerson, 1992). However, statistics are easily manipulated to the desired outcome and people are fast becoming aware of this. Bromely & Segerson (1992) highlight an example from the cigarette industry, in which the manipulation of statistics can be undertaken to suggest cigarette smoking is not nearly as dangerous as the statistics from independent labs illustrate (Bromely & Segerson, 1992). In this thesis, I assess these two risk communication strategies and observe how both of these approaches to risk communication are used in applied risk communication.

2.10.4 Misconceptions

Misconceptions occur when people have preconceived, incorrect notions about a hazard. When dealing with a threat, people think of what they already know and determine how the new information about the hazard fits in with their existing knowledge (Lichtenstein, 1987). If this new information does not fit in with the existing information, often it is discarded and forgotten (Lichtenstein, 1987). To avoid this scenario, Bier (2001), suggests the communicator should address these misconceptions and show why they may seem valid, but then discuss how they are inadequate and/or not fully formed (Bier, 2001). It is hard to determine if people have misconceptions, but there are some methods used to determine if they are present. They can include, forming focus groups, doing interviews and even informal conversations between authorities and the public can help highlight misconceptions (Bier, 2001). Using published material from other cities that highlight possible misconceptions is another option (Bier, 2001). Once misconceptions have been identified, the communicator gives new information and informs the public how the misconception is incompatible with this new information (Bier, 2001). Unfortunately awareness that there is a misconception is tough to determine when there is limited time and money available.

There are many misconceptions about disasters that are highlighted in hazard literature. The common misconceptions related to large-scale occurrences in a developed country include (Heide, 2005, Disaster-Info, 2005):

- Large scale panic will occur
- Price gouging will occur
- Looting will occur
- Disasters bring out the worst in human behaviour
- There is a shortage of material goods and resources after the disaster
- People are hesitant to evacuate

- People will be too shocked or stunned to help themselves or others
- Disaster are random
- Life is back to normal in a few weeks
- Shortage of trained personnel will be available to help victims
- Injured people are found mostly by trained search and rescue agencies
- Agencies will cooperate to accomplish the task
- Technology has eliminated communication problems

Examples of these problems occurring are found in past disasters. However, they tend to be isolated incidents instead of regular occurrences (Heide, 2005; Disaster-Info, 2005; FEMA, 2005). In addition, the disaster myth may be perpetuated by using an inappropriate word to describe rational behaviour. For example, in disasters where victims have stated there was panic, it was actually a rational attempt to flee the disaster. Panic refers to irrational actions which do not have a logical basis (Heide, 2005).

The relevance of these incidents to this thesis is to determine if authorities attempted to address these misconceptions to reassure the public that these problems are not common. However, some common disaster misconceptions do not apply here because of the nature of the incident. There were no evacuations or search and rescue teams deployed. There was no immediate loss of life when the blackout occurred, so trained personnel were available. There were very few injured people as a direct result of the blackout, so it cannot be determined how these people arrived at hospitals. Finally, inter agency co-operation would not be addressed in news releases. The rest of these misconceptions will be compared to the ones addressed by authorities through news releases in Chapter 5.

In my interviews, I address the issue of misconceptions and ask the various agencies if they are aware of any general misconceptions about hazards and disasters

people have. I ask how these agencies attempt to correct these misconceptions. In addition, news releases issued in the aftermath of the blackout were also analysed to determine if they attempted to address any misconceptions

2.10.5 Socio-Cultural Barriers to Risk Communication

Language and ethnicity are other challenges in risk communication. Large cities often attract immigrants. For example, 46 percent of all recent immigrants to Canada settled in Toronto (Statistics Canada, 2001). Often English is not the primary language spoken in these homes and this language barrier must be overcome for people to understand a message related to risk, and emergency preparedness. An example of a problem resulting from a language barrier happened when a flood occurred in central Australia. The aboriginal people were affected the most because the warnings were only broadcast on channels that mainly white people listened to, ignoring aboriginal channels that could have been used to warn natives (Blaikie, et al., 1994). In addition to language barriers, often culture will affect the way different ethnic groups interpret information about emergency warnings. In the study of earthquake preparedness from Turner, Nigg & Paz (1986), it was shown that African Americans have a greater sense of fatalism. They feel that more is out of their control in preparing for a disaster. Even if ethnic minorities do receive the warnings, ethnic minorities may feel that the white authority may not be credible (Perry & Mushkatel, 1984). Often previous contact with authorities like police or other agencies are negative, which can contribute to this perception of the white authority as being untrustworthy (Perry & Mushkatel, 1984).

The language barrier is an important component of my research. For example, I

asked authorities I interviewed if they have made provisions for people who cannot read English or how the important information was given to people who may not have access to multiple types of media. Did risk communicators address these types of issues? Proactively preparing as many citizens as possible about general emergency preparedness is a large task, which is made harder because a significant minority of residents cannot read English language literature or understand English language verbal messages. Have emergency planners made provisions for this type of problem and if so, how are they going to communicate the information to minority groups?

Chapter 3 - Electricity and Power Failures

3.1 Introduction to the Power Failure

This thesis initially focused on reviewing the current risk and emergency management literature. The literature review has provided a foundation for this thesis. However, to build upon the literature in relation to the blackout, more information on the blackout, its severity and its causes must be discussed first. This chapter starts with a review of how electricity is used as a resource in Ontario. It continues with a discussion on power failures and recent blackout events that have occurred in Canada and around the world to illustrate the severity of power failures. This chapter will also include a segment discussing how the August 14th, 2003 power failure occurred.

3.2 Electricity as a Resource

Energy has become a vital resource in society today. In Canada, from 1991 to 2001, the amount of energy Canadians consumed rose 15% (EIA, 2004). The total amount of energy consumption per person in Canada is currently 402.6 million Btu (British Thermal Units) per person (EIA, 2004). This makes Canadians the seventh largest energy consumers worldwide, higher than the United States at 341.8 Btu per person and The United Kingdom at 154.8 million Btu's per person (EIA, 2004). Canada's high levels of consumption are a result of our reliance on transportation, cooler climate, heavy industrial reliance on energy, high standard of living and comparatively low prices for energy (EIA, 2004).

3.3 Ontario and Electricity Background

To understand how the August 14th blackout occurred, it is important to discuss

the Canadian electricity system and how it relates to the North American electricity system. Ontario has a 28 400 kilometre long voltage transmission system which supplies electrical power to the province. Hydro One supplies about 1.2 million customers with power (Hydro One, 2004). To supply the province with power, the electrical system must always be ready to receive just produced electrical current, since it is not possible to store hydro. All electricity is made and then transported immediately (Hydro One, 2004). The amount of electricity produced depends on the demand from consumers.

There are four main components needed to produce electricity: generators, transmission lines, distribution lines, and control centres (Mittelstaedt, 2003). Generators produce power by converting a fuel to electricity. Generators raise the voltage of electricity to ensure less power is lost flowing through transmission lines. The amount of electricity produced by a generator is between 7 Kilovolts and 25 Kilovolts (Mittelstaedt, 2003). Severe power surges between generators can be harmful to the equipment. Therefore these generators are programmed to disconnect before significant power surges damage the generator (Interim Report, 2003).

Transmission lines carry the electricity throughout Ontario. There are set paths as well as substitute pathways for energy to flow. A system of transmission lines is connected by substations. Transmission lines can carry 115 000 to 500 000 volts of electricity constantly. Before the electricity can be used in a home, the voltage must be reduced to 120 to 240 volts. Electricity flows from a transformer line to a step down transformer station, which lowers the voltage, and then the electricity goes to the distribution line. The distribution lines are used to carry electricity to substations. The

voltage is then run through a step down distribution station and finally is reduced further by a small transformer and travels into the house (Hydro One, 2004). Throughout the route from the generator to the home, the electricity is monitored by control stations, which ensure operations run smoothly and in a timely manner (Hydro One, 2004).

Because the electrical system is not able to store surplus power, a quick reaction is needed when power disturbances occur (Natural Resources Canada, 2003a). A common cause for a power failure is the demand for electricity exceeding the supply. One section can become overloaded. This section of the grid must be cut off from the other sections, or it can cut off the contacts throughout the other sections of the grid (Mittelstaedt, 2003). A loss of electricity because demand exceeded supply can occur through any type of power source currently used in Ontario.

3.3.1 Ontario's Power Sources

Ontario's power comes from three main sources: nuclear, fossil fuel and hydroelectric. The maximum amount of power that Ontario can produce in a given day is 22, 211 MW (Hydro One, 2004). This is the sum of the maximum daily output of all electricity generating plants in Ontario. Table 3.1 shows a combination of all the different power generating sources used in Ontario. All plants are grouped by power source and geographically. Each geographical grouping has been given a name reflecting the location of the grouping of plants. However, not all generation plants are operating continuously.

Table 3.1. The Different Types of Electricity in Ontario and their Mega Watt Capabilities. Ontario Power Generation, 2004; Nuclear Tourist, 2003).

Electricity Type	MW capability (mega watt)
Hydroelectric	
Niagara group (4 stations total)	2 244
Northeast Group (13 stations)	1 270
Northwest Group (10 stations)	660
Ottawa-St Lawrence Plant Group (10 stations)	2 542
Nuclear	
Pickering A	idle
Pickering B	516 MW x 4units= 2064
Bruce A	904 MW x 3 units= 2712
Bruce B	915 MW x 4 unit = 3660
Darlington	881 MW x 4 units= 3532
Fossil Fuel	
Lambton	1975
Nanticoke	3920
Lakeview	1140
Lennox	2140
Thunder Bay	310
Atikakan	215
Total Power Capacity	27 246

The hydroelectric plants in Ontario accounts for a quarter of all power generated in the province and cost the least to operate (Ontario Power Generation, 2004). There are six plants that make up the fossil fuel division of hydroelectric plants. Five electrical plants use coal and one uses oil and natural gas. Nuclear power accounts for almost half

of the electricity used in the province today (Ontario Power Generation, 2004).

3.4 Power Failures as a Hazard

Over the last century there have been several large-scale electrical failures throughout the world. No two failures occur by identical means. Each outage, especially outages which affect millions of people can highlight new weaknesses or problems with the current electricity system. Natural events pose risks to power supply. People in earthquake prone areas are advised to be prepared for power failures in the event of an earthquake severing power lines (American Red Cross, 2004). Hurricanes and other large storms often lead to widespread power failures due to high winds blowing down transmission lines. These transmission lines are often down for long periods of time, as multiple transmission lines must be reconnected to restore power to residents. An electrical power failure can be extremely dangerous in the wintertime, as there are shorter periods of natural light and very cold temperatures. A severe ice storm which occurred on January 1998 caused power failures in the eastern Ontario area as well as over half of the urban areas of Quebec (CBC News Online, 2003b). In New York City, two separate major blackouts were caused by lightning strikes (Interim Report, 2003).

Electricity failures, regardless of the cause, lead to serious problems. The lights at major intersections do not work, causing people to treat the intersection as a four way stop, resulting in major backlogs of traffic. Retail businesses are vulnerable to electricity failures. Lloyd Stenmark, a representative of the retail chain Zellers, stated that all major retail chains are electronically controlled, and some smaller stores that do not have back up systems are not able to ring through purchases. Security cameras do not work,

making shoplifting more of a threat. Routine daily activities are affected such as, watching television and doing laundry. There are also more serious problems which can occur during electricity failures; people may be trapped in elevators and hospitals may be forced to use back up generators to keep vital machinery working.

Previous to the August 14th blackout, the largest power failure in North America occurred on November 9, 1965. Over 30 million people were affected and power was off in some places for up to thirteen hours (CMP, 2004). The cause was one line tripping, or stopping, which led to a cascade blackout through parts of New York, New England, New Jersey, Ontario and Pennsylvania (CMP, 2004). After the 1965 blackout, the North American Electric Reliability Council (NERC) was formed to oversee the regional reliability councils and to prevent future occurrences (CMP, 2004). While the NERC was established in an attempt to stop any future large scale power failures, there have been more large scale outages. The table below lists four large scale power failures in the North America and the cause of the failures.

Table 3.2: Selected North American Large Scale Blackouts and Their Causes (Interim Report, 2003).

Area Affected	Cause of Blackout
November 9, 1965: New York, Connecticut, Massachusetts, Rhode Island and areas of Ontario, Pennsylvania and New Jersey	Backup protective relay reversed flows, causing the remaining 250 kV lines to trip out
July 13, 1977- New York City	Two towers were struck by lightning
December 22, 1982: West Coast of the United States	High winds blew down two towers, which fell onto power lines
August 10, 1996: 14 West Coast states and Alberta and British Columbia	High demand put on a system which was already taxed by lines severed due to contact with trees

The North American situation is not unique. Electrical failures are a common feature in modern society throughout the world. In the past two years, there have been many blackouts throughout the world affecting large geographical areas. Eastern Denmark and Southern Sweden experienced a large scale power failure on September 23, 2003 (PSERC, 2004). Days later, on September 28, 2003 a blackout hit most of Italy due to high demand for power because of an intense summer heat wave (PSERC, 2004).

There is a greater threat of power failures today than in the past (Department of Energy, 2002), partly due to changes in the electricity market throughout the world. The past electricity market had fewer resources to draw electricity from. The contracts drawn up were for long periods of time and the transmission of power was not run as close to the limits of the system as it is now (Interim Report, 2003). There is also more competition from different forms of electricity today; the new firms operate on shorter contracts, leading to hydro companies changing suppliers more often, searching for better profits. Further, there is more emphasis on profit and less emphasis on updating equipment (Interim Report, 2003). All of these factors have the potential to lead to power failures.

3.5 Commonalities of Major Power Failures

The joint US and Canada task force has identified eight commonalities among the major electrical failures that have occurred in the past half- century (Interim Report, 2003). Each failure had one or more of the following problems.

1. Contact between transmission lines and trees. In warm weather, power lines sag

because the high power flow warms the transmission lines. The lines expand because of the conductor metal used and there is less of a cooling effect on the outside of the lines.

This increases the possibility of contact with nearby tree branches (Interim Report, 2003).

2. Abnormal conditions. Some faults or swings of power shown on the computers are normal, but the reading will result in a sudden stop in power flow to the line (called tripping). Relays are another source of possible abnormal conditions. A relay either opens or closes a circuit breaker depending on the measurement of current and voltage (Final Report, 2004). If a relay is used incorrectly or it is not used at all, that can cause a power failure (Interim Report, 2003).

3. Generators and output. Reactive power is a small allotment of electricity used to maintain both the electrical and magnetic fields of the alternating current which is used for equipment such as transformers (Final Report, 2004). If the operator draws too much energy from the system, there may be voltage problems such as brownouts.

4. There is no visual overview available for the entire system as it is interconnected through different States and Provinces. Nearby systems where a disturbance is occurring do not give automatic warnings for the neighbouring systems to be on alert (Interim Report, 2003).

5. Operators of one system are not required to notify operators in the neighbouring system of any potential problems.

6. Inadequacy of safety nets that can control the spread of the power failure and limit it to a smaller geographical area (Interim Report, 2003).

7. Inadequate training of operators. More training, simulations and explicit instructions

in handling some emergencies are some ways which may improve operator competency (Interim Report, 2003)

8. Safe limits of drawing electricity can be exceeded due to inaccurate simulation modelling or human error (Interim Report, 2003)

3.6 The August 14th, 2003 Failure

Of the eight commonalities listed above, the three that played the largest role in the August 14th 2003 blackout are: transmission lines came into contact with trees, there were inadequate warnings in place and there was little communication between electricity providers.

The day of the August, 14th, 2003 blackout, all systems were running as usual and there were no problems stemming from previous days which could have foreshadowed a power failure (Interim Report, 2003). Demand for electricity was higher than normal because the temperature was above normal in the northeastern United States and southern Ontario. On August 14th, the highest temperature recorded in Toronto was 31.4 degrees Celsius (Environment Canada, 2003). The electricity demand in Ontario was exceeding the amount Ontario could produce, so Ontario was importing electricity. Ontario, New York, New England, eastern Michigan and northern Ohio were importing power on August 14th (Interim Report, 2003). In both Canada and the United States, there were some electricity generating facilities that were unavailable that day for reasons such as routine maintenance or breakdown. However, this is also a regular occurrence, and did not cause the power failure (Interim Report, 2003).

The initial problem which caused the blackout stemmed from the activities at

First Energy Corporation in Ohio (Interim Report, 2003). At 1:31 p.m., First Energy's Eastlake 5, a power generation plant, stopped working (Interim Report, 2003). With two Cleveland electrical plants already not working, this loss of the third plant played a significant role in the power failure. An alarm malfunctioned in a First Energy jurisdiction soon after. At 2:05 p.m., some 345 kV transmission lines came into contact with trees which caused them to shut down (Interim Report, 2003). At 3:46 p.m., multiple electrical agencies had noticed that there were problems with the First Energy system. However, it was too late to isolate any areas and stop the cascade (Interim Report, 2003). From 3:42 to 4:08 p.m., a large number of transmission lines around the northern area of Ohio were automatically disconnected, leaving the areas to the west and south in the dark (Department of Energy, 2002). At 3:46 p.m., the alternate power lines which the 345 kV transmission lines fed were failing. In turn, another major First Energy electrical line failed at 4:06 p.m. (Interim Report, 2003). It is this line's failure which caused the blackout because this line was already over used due to other factors. Under normal conditions, other factors, such as earlier unrelated blackouts in neighbouring states, would not have caused widespread outages, but due to the surrounding areas having trouble with their power distribution and other non routine factors, this affected the major 345 kV line to the point it could not take any more utilities drawing power from it (Interim Report, 2003). First Energy was not able to stop this problem because of inadequate access to information regarding its transmission lines (Final Report, 2004).

Aside from the smaller islands of local load generation that were not cut off from electricity, around 4 p.m. on August 14th, the electric grid was at a breaking point and a

large-scale power failure was imminent. There were only three remaining routes for power to flow into northeastern Ohio (Department of Energy, 2002). This caused a weakness in the system. Michigan was not receiving the normal amount of power and was forced to rely more heavily on a source from western Michigan. The Michigan and New York power companies which connect the two states and jointly supply power, were hit with power variations from 4:09 to 4:12 p.m. (IMO,2003a). The load on the transmission lines that were not down, was very high. The first major generator failure that aided in the cascade of power failures outside of Ohio failed in Michigan at 4:09 p.m. (IMO, 2003a). Indiana was forced to bear the brunt of supplying electricity to Ohio and the eastern area of Michigan. In the span of thirty eight seconds, Michigan and northern Ohio had generators shut down (IMO, 2003a). Northern Ohio Power then separated their shared power supply from Pennsylvania. A total of twenty generators, carrying 2 174 MW of electricity were now shut down (Department of Energy, 2002). The most important generator line to fail was the Perry-Ashtabula-Erie West line, which distributes power in a route from Pennsylvania to northern Ohio, around Lake Erie (Department of Energy, 2002). This caused widespread loss of load generation in Ontario, Michigan and the shore of Lake Erie. Pennsylvania shut down the electricity flowing to New York state. The power outage cascades continued as the nuclear power plants in Pennsylvania and Cleveland were shut down. Cleveland was then disconnected. In the next three seconds, four more pathways for electricity were stopped as the entire northeast area of the Eastern Interconnection was now separated from all outside sources of electricity (Department of Energy, 2002). The Eastern Interconnection is divided in

two distinct areas. The first area, encompassing New York, northern New Jersey, New England, the maritime provinces, eastern Michigan, as well as the Quebec system were all vulnerable to electricity loss because they were on the troubled system (Department of Energy, 2002). The second area of the eastern interconnection was not affected. The first power swing occurred at 4:09 and was 700 MW, while this was unusual, it was not extraordinary (Department of Energy, 2002). The second swing, approximately a minute and a half later caused multiple power swings ranging from 2000 MW to 4000 MW in 12 seconds. New York, Ontario and Michigan all felt these swings. While this was occurring, the power system started to shut down. This affected around 50 million people and 61 800 MW of power to customers was stopped. There were 22 nuclear generating facilities and 80 fossil fuel facilities in the affected area which were shut down (Yourish, 2003, 40).

3.7 Power Restoration

Power restoration in Toronto started around 10:30 p.m. on August 14th, in the areas around Young and Bloor Street to the Queen Elizabeth way because water pumping stations were the first priority to receive power (Pratt, 2003). Second priority was the hospitals. The areas around the City of Toronto hospitals received power starting at 2:00 a.m. on August 15th (Pratt, 2003). After the hospitals received power, different areas of the city started receiving hydro. There was no uniform restoration from one side of the City to the other. Restoration occurred in pockets throughout Toronto. The northwest and southwest areas of the city were the first large areas to be restored. This occurred around 4:45 a.m. on August 15th. Electricity was sporadically restored until noon on

August 16th, when all of Toronto was restored (Pratt, 2003).

3.8 The Aftermath of the Failure

For the first day and a half many rumours were discussed regarding what had caused the blackout. Terrorism was first mentioned and then was quickly ruled out (CBC News Online, 2003c). After that, the mayor of New York City, Michael Bloomberg blamed Canada, saying there was a fire in the Niagara Falls Ontario power generation plant, while the Canadian officials declared the blackout was caused by a lightening strike in a Niagara Falls, New York power generation plant (CBC News Online ,2003c). Even the Office of Emergency Management in Ontario was reporting false information. In the initial few weeks after the blackout, the area in question revolved around Lake Erie and the many interconnections, which consists of multiple long distance high voltage lines. This area supplies power to the Windsor-Niagara Falls corridor, up through New York, Ohio, Pennsylvania, and Michigan (Yourish, 2003, 40). There were a series of high voltage power swings lasting only about ten seconds. Officials were able to get the exact time due to the technology in place to monitor the electricity. When a circuit or transmission line is brought on or off line, the exact time measured in seconds is recorded (Department of Energy, 2002).

3.9 Recommendations to Reduce the Threat of Future Failures

A joint United States- Canada task force was set up to investigate the blackout of August 14th, 2003. The Co-chair for the task force were Herb Dhailwal who was Canada's Minister of Natural Resources at the time and American U.S. Secretary of Energy, Spencer Abraham. The objective was to find out the cause of the blackout and

determine how future blackouts could be averted. The initial U.S.- Canada Power System Outage Task Force report lays blame on human error, equipment failure and certain electrical practices (Interim Report, 2003). The cause of the blackout has been traced to three major energy corporations. The First Energy Corporation in Ohio and its reliability council, East Central Area Reliability Coordination Agreement (ECAR), The North American Electricity Reliability Council (NERC), and the Midwest Independent System Transmission Operator (MISO) (Interim Report, 2003). The final report, released in February of 2004 concurs with the interim report (Final Report, 2004). More specifically, First Energy Corporation workers did not notice the alarm failure signifying a problem and the software failed to properly notify the workers. Nor did this company have a process to ensure that the people in charge of the energy supply would know if the software failed, and thirdly, the operators were not properly trained in situations in which an alarm failure did occur (Interim Report, 2003). The North American Energy Reliability Council (NERC) was also found to be at fault. NERC standards are not legally binding, rather the rules are for voluntary compliance and this led to First Energy's problems (Final Report, 2004). In addition to the inability of NERC to enforce their energy standards, some of its electricity standards were not clearly outlined, which lead to electricity corporations either not implementing, or ignoring the standards (Final Report, 2004). Finally, MISO was unaware of First Energy's problems because there was no real-time data sharing between Dayton Power and one of the major 245 kV lines which tripped and MISO was using inadequate operations and guidelines in dealing with transmission lines with adjoining power systems (Final Report, 2004).

The U.S.-Canada joint task force made a list of 46 suggestions, grouped under categories, ending up with 14 basic recommendations. NERC will be in charge of implementing the recommendations, which are summarized in Table 3.3.

Table 3.3: Overview of the Basic Recommendations from the U.S.-Canada Joint Task Force (Final Report, 2004)

Recommendation 1	First Energy must implement remedial actions in fixing the problems; awareness of conditions and tree growth that caused the blackout. They will then be inspected by the NERC board.
Recommendation 2	The NERC must increase the enforcement of violators who do not comply with regulations.
Recommendation 3	Reliability coordinator and control area readiness must be audited and recommendations must be made to improve the performance of the people involved in specific capacities.
Recommendation 4	Improve the vegetation management procedures and results.
Recommendation 5	Institute a method to follow the execution of these recommendations.
Recommendation 6	Improve training for operators and reliability coordinators involving emergencies within the electrical system.
Recommendation 7	Review the reactive power and voltage control practices and make sure it meets the specific criteria.
Recommendation 8	Find a way to slow down the cascade outage by improving the system, such as by using relays.
Recommendation 9	Responsibilities of the reliability coordinator, control area functions must be made clear.
Recommendation 10	Guidelines need to be made to improve situational awareness.
Recommendation 11	Review what was learned from the restoration part of the blackout.
Recommendation 12	More time-synchronized recording devices need to be installed to obtain data quicker.
Recommendation 13	Design of the system as well as the criteria for operation needs to be re examined.
Recommendation 14	Data recovery methods used after a failure need to be updated.

These recommendations were divided into three general groups. Recommendation 1 was the only recommendation in the first group regarding specific problems that need to be fixed. Recommendations 2-5 were listed under strategic initiatives and the final 9 strategies were all listed under the heading of technical initiatives (Final Report, 2004). Most of these recommendations had an implementation date of June 30, 2004 (Final Report, 2004). Some of these, such as a new rule by NERC to require all power agencies to write up quarterly reports regarding transmission line trips of 115 kV and up, was started March 30, 2004 (Final Report, 2004). All audits and emergency training were also to be completed by June 30, 2004 and a system to monitor the reliability performance of all major power agencies was to be completed by January 1, 2005 (Final Report, 2004). According to a published report on the NERC website, these audits and training have been completed by most parties involved (NERC, 2004).

These recommendations were put in place for both Canada and the United States. One of the recommendations requests that both Canada and the United States pass legislation to allow the NERC to have more enforcement power when it comes to violations and monitoring problems. However, as of January 7, 2005 the legislation mentioned in this section has still not been passed in the United States (NERC, 2004)

3.10 Implications Regarding Increasing Demand for Electricity

While the U.S. - Canada Joint task force concentrated on fixing specific causes of the power failure, it chose to ignore the problem of increasing demand for electricity. This is not a new problem. The State of California is another area that has been dealing with extreme energy consumption levels, power emergencies and brownouts for years

(ECEEE, 2002). The last major power crisis in July of 2001 lasted several months, with brownouts and calls by government to conserve electricity as much as possible (ECEEE, 2002). Because of the severity of California's power crisis, the state has invested time, energy and money into alternative fuels and conservation plans. While there is not an energy crisis in Ontario, the Premier of Ontario, Dalton McGuinty is calling for more conservation in part because of the August 14th Blackout. Instead of improving the hydro infrastructure, he is encouraging residents of Ontario to conserve electricity, for example by taking showers instead of baths, turning down the thermostat when not at home and installing new hydro reading metres, called "smart metres" in homes (Urquhart, 2004). These smart metres read the time of day hydro is being consumed. The cost of electricity will vary according to the time of day it is being consumed, with hydro being cheaper in the evening when there is less usage (Urquhart, 2004). The goal is to reduce Ontario's electricity consumption by five percent or 1 350 MW by 2007 (Urquhart, 2004).

While this is one avenue for conservation, the New Democrat Party leader Howard Hampton would like to see residents purchase more energy efficient appliances. He cites a study by the Canadian Environmental Law Association and the Pembina Institute who say 12000 MW of power can be saved per year if energy efficient appliances are purchased (CELA, 2004). Electricity availability has become an important issue to North Americans and as more and more people rely on an electricity grid, this will topic will see even more research.

Chapter 4 - Methods

4.1 Methods Used

This chapter outlines the methods used in this thesis. Section 4.2 of this chapter describes how this thesis fits into the approach titled, ‘Sociological Theories of Risk’ (Renn, 1992). Section 4.3 discusses six similar studies that evaluate some form of risk communication. It compares these studies to the methods used in this thesis. The fourth section discusses why a case study was appropriate for this thesis and gives an overview of the case study method.

The data collection undertaken in this thesis include both documents and personal interviews. Section five discusses the documents used, why they were chosen and how they were used to gather information for the thesis. The next sections discuss the approach to the interview analysis. The final section draws conclusions from the methods discussed and introduces the next two chapters involving the news release analysis and interview analysis.

4.2 Sociological Theories of Risk

The study of risk encompasses many different disciplines and approaches. Renn (1992) offers a classification system that integrates some of the most common approaches (Table 4.1).

Table 4.1: Approaches to Researching Risk (Renn, 1992).

Approach	Explanation	Examples	Benefits	Drawbacks
Actuarial	Use of statistics and formulas to mathematically determine certain risks.	Predicting the number of car accidents that result in fatalities in the upcoming year. The insurance industry predominately uses this type of risk approach.	Can give a relatively accurate guess on what will likely occur in the future.	The variables must not change over time and there must be enough data available. Only quantitative information can be used in the statistical formula.
Toxicology-Epidemiology	Environmental and health risks are studied and attempts are made to link animal exposure of risks to potential human risks.	Used to determine the amount of exposure to a specific risk agent that will cause problems in humans.	Can serve as an early indication that there may be problems with certain substances.	The toxin may not have the exact same effect on humans or there may be other variables that can alter the data when dealing with humans.
Probabilistic Risk Assessment	Prediction of an expected failure of a technology.	Determining the likelihood of a nuclear plant explosion. Safety sciences predominately use this type of risk analysis.	Can give predictions even if all of the components of a system do not provide enough data.	Cannot predict human and machine interactions where human, not technological failures can cause certain technological aspects to break down.

Economics of Risk	Framework is established to logically determine the risk.	Risk-benefit analyses are very common. They can be used to aid in decision making.	Can be used to help make a decision when multiple factors are present.	When decisions are made on behalf of large populations, often the decisions made are the result of a few people and the decisions made do not accurately reflect a large number of people.
Psychology of Risk	People will react to their perceptions of a risk instead of looking for objective, scientific analysis of the risk to make up their minds.	People's individual preferences of risk are used and helps understand individual variations in the study of risk. Can be used to determine people's biases or preconceptions on certain aspects of risk.	If people's biases and preferences regarding risk are known, this can help policy makers determine the most effective ways to communicate risk to the public.	Individuals act on their preconceptions of risk, not the actual scientific probability of the risk.

Social Theories of Risk	People's perceptions of risk are altered by social, cultural and environmental aspects.	Analysis of media coverage of risk or risk communication strategies involving different ethnicities or classes.	Provides an opportunity for lesser known aspects of risk such as race, class and socioeconomic status to be studied.	There are so many different approaches to the structural theory of risk that a straightforward classification of risk and disasters through social theories is very difficult. Subjective information can be used unintentionally by researchers to obtain desired results.
Cultural Theory of Risk	Culture plays a significant role in determining society's reaction to risk.	Responses to a risk from a cultural perspective can highlight problem areas in communicating risk to certain cultures.	Data about a certain cultures and its response to risk can be used to anticipate risk on a person by person basis.	Cultural patterns do not always fit each individual and organizations may adopt certain cultural practices even though it is not used on a wide basis.

In my thesis, the approach I take is most closely aligned with the social theories of risk, which, according to Renn (1992), tends to be used in three main areas. The first is policy making and regulations, the second is conflict resolution. The final area is risk communication (Renn, 1992). Renn (1992) specifically highlights some of the concepts that are studied under the approach, including how risk is influenced by media coverage,

communication, race, class and ethnicity. Renn (1992) states that because structural dimensions of risk underpin emergency management, risk communication is not straightforward. This thesis explores the complexity of communicating risks to the public.

4.3 Other Risk Communication Studies within Academic Literature

The goal of this section is to review the academic, risk-communication literature from a methodological perspective. The review targeted studies that provided an analysis of risk communication to the public, were explicit about methods used, provided a detailed evaluation of the particular method used, and included a practical dimension. On this basis, six studies were considered in detail, as summarized in Appendix A. Five of these used a natural disaster as the focal point and one discussed a possible technological disaster associated with magnetic fields.

4.3.1 Lessons of Relevance to the Current Study

These six articles, which are illustrative of the broader risk communication literature, provide five lessons that are of relevance to the current thesis. These relate to the timing of the investigation, the sources of information used, benefits of interviews in academic research, the scope of the work, and approach taken in the analysis/evaluation.

Of the six articles, four evaluated risk communication in past hazard events. The events were; a 1999 earthquake in Taiwan, Hurricane Hugo, multiple past hazard events and Hurricane Gilbert (Ho & Hallahan, 2004; Faupel & Styles, 1993; Freudenbereg, 1996; Fischer, 1994). This type of post-event analysis can lead to suggestions for improving future risk communication. This is what this thesis will attempt to do for the

City of Toronto through an analysis of news releases. Any weaknesses that are identified may aid other large cities in highlighting potential problems in future risk communication.

Second, the media is a relevant source when studying risk communication during disasters. The studies on the earthquake in Taiwan, multiple past hazard events and Hurricane Gilbert all used the media as a basis for their respective studies (Ho & Hallahan, 2004; Freudenberg, 1996; Fischer, 1998), although the specific media examined varied from study to study. In terms of findings, Freudenberg (1996) argued that the media is a reliable source of information, and he disputed the hypothesis that media exaggerate risk. Similarly, the study of Hurricane Gilbert (Fischer, 1998) indicates that the media typically portray disasters accurately. This thesis uses information disseminated through media to evaluate a specific aspect of risk communication. Each study discussed above analysed an aspect of media communication. However, no study analysed news releases. This unique source of information, which was gleaned from five different online web sites for the current study, may be able to provide new insight into the communication of risk.

Third, interviews can be a useful source of information. In the studies on Hurricane Hugo, landslide hazard in Spain, Hurricane Gilbert and the safety of magnetic fields, interviews were used to gather data (Faupel & Styles, 1993; Solana & Kilburn, 2003; Fischer, 1994; Read & Granger, 1998). In this thesis, interviews from people within various agencies in the City of Toronto were done to obtain more information about the writing of, and use of news releases in risk communication. In most cases, the

interview findings were corroborated by other sources of information such as the news release analysis or secondary sources. Having more than one set of data can help reduce inconsistencies. In the current thesis, as in Fischer (1998), the interviews were used to supplement the data obtained from the mass media.

Fourth, the scope of the analysis varies. Most studies deal with one specific aspect of communication, e.g. Fischer's focus on media exaggerations, while others were broader, e.g. Ho and Hallahan's examination of corporate advertising. While each study focussed on one aspect of risk communication, two of these studies used multiple evaluation criteria to evaluate a specific aspect of risk communication. In the thesis, an attempt is made to complete a more comprehensive evaluation by using multiple evaluation criteria.

Finally, the approach taken in the evaluation of risk communication varied from study to study, but commonly was based on coding schemes. One type of coding is the presence or absence of different information. Coding was used to evaluate materials in the Taiwan earthquake and multiple past hazard events studies (Ho & Hallahan, 2004; Freudenberg, et al., 1996).

As described for this thesis, with the Taiwan earthquake study, the procedure for coding was based on a review of the current literature of quantitative and qualitative data analysis methods (Ho & Hallahan, 2004). There were five themes obtained from public relations literature. The earthquake study concentrates on the analysis of corporate advertising in the aftermath of the earthquake. One difference between the Taiwan earthquake study and this thesis is the coding of implied information within the media.

The Taiwan earthquake study attempted to code latent information which, the authors concede, requires a certain amount of personal judgement (Ho & Hallahan, 2004). This thesis does not attempt to code any implied information, and only codes information if it is explicitly stated in a news release or interview transcript.

In the second study that used coding, multiple past hazard events, the coding was used in a previous experiment. This experiment asked volunteers to rate each hazard based on the Psychometric Paradigm of Risk Perception which includes factors such as dreadedness or perceived seriousness of the event (Freudenberg, et al, 1996). This paradigm is not used in this thesis, as there are no ratings done based on people's perception.

Coding can be subjective, which may make the results difficult to replicate. However, in both of these studies, multiple people coded the data sets in order to reduce the subjectiveness of the coding. In this thesis, there was only one person coding the data. However, the coding was checked multiple times to ensure that all pieces of information were coded into the proper themes. In addition, the themes were based on the presence or absence of specific information which reduced the subjectivity in coding.

4.4 Methods Used to Analyse Case Study Information

A qualitative approach was taken in the current study using news releases and semi-structured interviews as the main information sources for examining risk communication to the public during one particular event - the Toronto blackout. There are several potential contributions to knowledge that arise from case studies of this type. In this thesis, the intent is to provide additional information on an already widely

researched event, and to highlight lessons that have potential significance for emergency management generally-both of which tie in with the Feagin et al., (1991) discussion of case studies.

While a case study method can identify specific weaknesses in a particular disaster, there are limitations to this approach. When researching a specific case, often the findings can not be generalized to fit other situations. For instance, this case study of the City of Toronto may not benefit rural areas which do not have access to the multiple methods of media communication. Also, this case study may prove useful for cities that are of similar size and level of economic development as Toronto.

The case study method was chosen to provide an in-depth analysis of a specific disaster. This case study highlighted a specific city's response to a blackout, but it did not take into consideration other areas that were affected by the same blackout and handled it differently. For instance, New York City authorities may have chosen different information to convey based on prior experience with two citywide blackouts, with one in 1977 inciting a riot (Time magazine, 1977). Rural areas may also have had different priorities when releasing information. Therefore, researching a different city that experienced the same blackout, may reveal different patterns of risk communication.

4.4.1 News Releases

News releases are the main data source for the thesis. There were 81 news releases used in the analysis. Chapter 5 discusses the specific methodology regarding the analysis of the news releases. The majority of news releases were obtained through Canada news wire. Canada News Wire is an agency that distributes news releases to the

media, but the releases are also available to the public (CNW, 2005). As stated on their web site, over ten thousand sources use Canada News Wire. These include: private agencies, all levels of government, non governmental organizations, volunteer agencies and associations (CNW, 2005). In addition to Canada News Wire, all City of Toronto emergency response agency websites were accessed to determine if any news releases were distributed online. Hydro One, the Ministry of Community Safety and Correctional Services and the Red Cross were additional agencies that had posted news releases on their website. They were also used in this analysis.

The 81 releases were analysed using criteria selected from the review of the literature. Rowan's five goals of risk communication (1991) were used to determine if the author of the news release attempted to increase awareness of possible risks as well as give strategies to reduce these possible risks. In addition, FEMA has outlined seven elements that should be included in every news release. Each news release was examined to determine if the seven elements were included. Also, a review of the literature revealed that misconceptions, unknown information, the use of scientific language as well as availability of information in multiple languages are all important components of risk communication. Each news release was also examined for any of these features.

4.4.2 Interview Analysis

The news releases were supplemented with the interview data. Decisions related to the interviews included experts to be interviewed, the interview structure, the questions to be asked and how to deal with new information that becomes apparent throughout the course of the interview (Schram, 2003). For this thesis, attempts were

made to use the same questions for each person and agency. Agencies were asked the same questions, with some additional questions depending on the type of agency. There were two open-ended discussion questions at the end of the interview to allow each person interviewed to bring up relevant information if they felt it was important.

Data collected by thorough interviews has many benefits. Two of these benefits include the gathering of a lot of information in a short amount of time and the opportunity to clarify information if needed (Limb and Dwyer, 2001). There are also some problems associated with interviews which can affect the quality of the data received. Often supplementary interviews are needed to clarify information given in the first interview, but due to time and money constraints, second interviews are often not undertaken (Merton, et al., 1990). Also, the data collected may not be as detailed as possible due to the lack of experience of the interviewer. The interviewer may not ask specific enough questions or probe an interviewee to go as in depth as needed (Merton, et al., 1990). The inexperienced interviewer may also dismiss an answer as off-topic because it is not on the preset list of questions, even though there is some relevance to the answer. The interviewer then directs the interviewee back to the list of preset questions without learning of this relevant information (Merton, et al., 1990). In the interviews conducted, this was avoided by attempting to allow the interviewee to bring up topics they felt to be important. In addition, at the end of the interview, the interviewee was asked if there was anything else regarding the blackout that they wanted to discuss. About half of the interviewees brought up a point that they felt was important, but was not covered by the questions that had been asked.

Interviews were conducted with various City of Toronto communication agencies, first responder agencies, media outlets and humanitarian organizations that played a role in the City of Toronto's response to the August 14th blackout. These interviews were undertaken to determine the organizations' general risk communication strategies as well as emergency communication methods used during the August 14th blackout. Thirteen separate interviews were conducted from July 26, 2004 to October 7, 2004. On average, the transcribed interviews were about seven pages long. Because of a confidentiality agreement, no organizations are identified by name and there are no other identifying characteristics of the people or organizations described in the analysis of the interviews.

Fifteen people who were involved in the emergency response to the blackout were interviewed in thirteen separate interviews. The questions were divided into three categories. The first category included general background questions. These questions asked about each person's role in emergency communication within the City of Toronto. The second set of questions involved the role they played in giving information to residents during the blackout. These questions relate to the overall goals of risk communication; relaying information to the public clearly and accurately so the public can determine what information they feel is important (Frewer, 2004). In addition, general risk communication questions were asked. This type of question revolved around how they provide information to the public in times where there is no imminent crisis. The format of this information dissemination was compared with the format suggested in the literature. A list of questions asked is included in Appendix B.

Using a semi structured interview provided detailed information about Toronto's

approach to risk communication from people who have firsthand knowledge. The goal of a semi structured interview is to learn as much as possible about a certain situation or outcome from a knowledgeable source (Merton, et al., 1990). The semi structured interview was beneficial for two reasons. Firstly, because the background situation was known to both the researcher and the interviewee, more of the interview could be focussed on pertinent information (Merton, et al., 1990). Secondly, more specific questions about risk communication during the blackout could be asked, enabling more thorough information to be obtained from the interviewee (Merton, et al., 1990).

Once interviews were completed, they were transcribed and entered into a data analysis program to search for reoccurring themes. The data analysis program used for this analysis was called QSR N6. Computer aided qualitative data analysis is a valuable tool because it aids in finding recurring themes throughout the vast amount of data from interviews and documents that have been collected. This type of computer aided analysis replaces the cut and paste technique that was often used before computers (Kelle, 1995). The idea behind computer analysis software is to allow the discovery of recurring themes and variables quicker (Kelle, 1995). The user is also able to make notes when coding themes or sub-themes as well as see how often a certain theme is coded (Kelle, 1995). Benefits to using computer aided analysis include the ability to find themes that may otherwise have gone overlooked. Also because the information is coded in small blocks, computer aided qualitative data analysis can give a more accurate representation of the number of times a certain theme appears. This gives the researchers reassurance that the themes the researcher thinks are the most common actually are

(Kelle, 1995).

While there are benefits to computer aided analysis, there are also some drawbacks. There is a possibility that different researchers, using the same data sets will come up with different coding themes (Kelle, 1995). To attempt to reduce this problem, it is suggested that the codes that are decided upon need to be straightforward, clearly labelled and do not overlap with other coded themes (Kelle, 1995). In the interview analysis for this thesis, the problem was minimized by using coding themes developed from a thorough literature review. These themes have been shown to be important across a variety of research studies. The data was coded according to themes developed from the literature review as well as themes that emerged from the interviews themselves. Analysis of the coded interviews is supplemented by a review of the collected textual information and documents. The interviews were transcribed and then imported into a computer aided data analysis program. Each interview was re-read and the information was coded into six initial groupings. These groupings were: 1) what the organizations felt should be included in a news release, 2) educating the public on emergency preparedness, 3) misconceptions, 4) unknown/uncertainty, 5) scientific language, 6) communication available in other languages. These initial themes were based on the information the literature review suggested was important to accurate risk communication. As data was entered into the program, new themes emerged. These themes included what type of information was released by the authorities, what information the public was attempting to find and intergovernmental issues in emergency management. The interview analysis is discussed in more detail in Chapter 5.

Another problem to avoid in qualitative data analysis, is over-reliance on coding all the data passively instead of the researcher interpreting the analysis itself as well as using the information given from the computer analysis (Kelle, 1995). To avoid this problem, additional coding themes were added as they became apparent in the data. This allowed me to see other themes emerging that the original coding structure alone would not pickup.

Using the methods described above, the following chapters outline the results of the primary data gathered for this thesis. Chapter 5 gives a detailed analysis of the analysis of news releases. Chapter 6 discusses the results of the analysis interviews undertaken. Chapter 7 presents the seventeen recommendations to help improve the City of Toronto's risk communication strategy as well as the conclusion of this thesis.

Chapter 5 - Analysis of News Releases

5.1 Importance of News Releases

During an emergency, messages originating from public and private agencies are disseminated to the public via media such as radio, television and newspapers. Often, the agency prepares its message as a news release, which is sent electronically to every news organization that subscribes to a news wire service, such as Canada News Wire. The media outlet then decides whether to relay the message to the public.

The aim of this chapter is to describe and assess the content of news releases related to the Toronto blackout that were prepared and released by agencies such as the City of Toronto, hospitals, police services and volunteer organizations from August 14 to 21, 2003. This date range is a result of the media not reporting as much information as time passed. After August 21, 2003, there were too few news releases related to the blackout to contribute new information to this thesis. The description is organized by topic and date of release, while the assessment indicates the extent and ways in which news releases are consistent with each of the principles of risk communication described in Chapter 2.

5.2 Criteria for Inclusion of News Releases in this Study

In total, 81 news releases were included in the analysis. Only news releases that included information on risk management, emergency preparedness, emergency response and would benefit the citizens of Toronto were included. Of the 81 releases, 62 were from Canada News Wire; others were obtained from the Ministry of Correctional Services and Community Safety (6), The Canadian Red Cross (1), Government of

Ontario (6), City of Toronto (4), Toronto Police Services (1) and Hydro One (1). News releases accessed from the Ministry of Correctional Services and Community Safety, the Government of Ontario and City of Toronto web sites were also available on Canada News Wire.

There were ten categories of news releases examined. The first two categories of news releases were from governmental agencies: the Province and the City of Toronto. There were 24 news releases from the province and 9 news releases from the City of Toronto examined. These news releases were separated into two distinct categories because the City of Toronto and the Province of Ontario each gave out different types of information. Provincial concerns, such as urging hydro customers to conserve, were directed at the entire province. Citywide news releases often focussed on specific information that only Toronto residents would use, such as public transportation closures.

The remaining categories were not grouped by government, but by agencies who dealt with common issues, such as hospitals. This change in grouping was done to determine what information was given by agencies that dealt with specific issues, not the issues regarding the operation of a municipality or province. The third category was transportation. Eleven transportation news releases were included in the analysis because the efficient movement of people and goods is a key component of emergency response. There are a lot of commuters to the City of Toronto and these commuters faced problems getting home because public transportation methods, such as Via Rail were not working normally (VIA Rail, 2003a).

The fourth category was communications related news releases. Bell Canada

issued three news releases, and these comprised the communication news releases category. Good communication is essential for any emergency. Because of the need for good communication, agencies which help facilitate this communication need to provide updates as to the availability of all means of communication.

The fifth category, hydro, may not always be considered an essential organization in an emergency response, but because this blackout was centred around power, hydro news releases should be included. The Toronto Hydro Corporation, Hydro One, Hydro Ottawa and the Independent Electricity Market Operator were four groups who issued a total of 15 news releases regarding the hydro situation. Hydro Ottawa was included because these news releases gave general safety tips on blackouts that were applicable to every city.

There were a few news releases from the main agencies responsible for the immediate response to a disaster. Hospitals and the Toronto Police Service each sent out press releases. There were six press releases from hospitals and one Police organization press release. There were no press releases through Canada News Wire from the Toronto Fire Department. These agencies mainly dealt with Corporate Communications Toronto in the Emergency Operations Centre and had their messages given verbally to the media.

Any other news release which did not fit into one of the above categories was put into the category of 'other'. There were six news releases under this category. This category mainly consisted of companies who felt there was a need to tell the public about their services and how these services would benefit the public during this crisis.

Volunteer or humanitarian organizations also issued five press releases. Canadian Blood Services, the Canadian Red Cross as well as the Institute for Catastrophic Loss Reduction (ICLR) were included in this category. Finally, there was one press release from EMS (Emergency Medical Services) in Toronto. EMS is a separate agency within the City of Toronto, while it does serve hospitals and police, it was counted separately. There is only one press release for this category but EMS is an essential service in any disaster and the news release from this organization must be studied to determine what type of message the EMS was attempting to give to the public.

5.3 Criteria Examined Based on the Literature

The assessment criteria against which the news releases were measured against are as follows:

1. FEMA's criteria for writing news releases- chosen because FEMA is a noted authority in disaster management that works with 29 federal agencies in the United States and numerous State, private and non-governmental organizations (FEMA, 2005). Also, FEMA was the only organization identified in the literature review as providing a framework for writing a news release.
2. Rowan's (1991) goals of risk communication- chosen because of their frequent reference in the academic literature. For example, Bier (2001) used these goals in his paper on current methods of effective risk communication. In addition, each of the goals appears throughout the academic literature separately. For instance, trust (Lofstedt, 2003, & Frewer, 2004) and increasing public knowledge (Lopes, 2002), are two goals of risk communication that are discussed separately in this thesis.

3. Three additional criteria from the risk communication literature were added because of repeated references the importance of these matters.

Each of the criteria have been discussed in more detail in Chapter 2 of this thesis.

Table 5.1 outlines this criteria. This is followed by a more detailed description of each item.

Table 5.1: Overview of Criteria Used in Examining News Releases

Item	Description of Specific Criteria
Completeness of News Release	<ul style="list-style-type: none">• Seven criteria outlined by FEMA contained in news release
Risk Communication	<ul style="list-style-type: none">• Increasing public knowledge of risk• Education• Risk Mitigation• Emergency preparedness in the future
Misconceptions	<ul style="list-style-type: none">• Misconceptions regarding emergency preparedness or the blackout
Unknowns	<ul style="list-style-type: none">• Details about unknown or uncertain information
Statistic use/Scientific Language	<ul style="list-style-type: none">• Use of statistics to illustrate the situation• Type of language used where people may not fully understand the scientific definition of the word

More specifically, all seven of FEMA's criteria for writing news releases were adopted. These include: 1) A headline describing information in the news release, 2) a short statement to catch the reader's attention, 3) follow up sentence to explain who, what, when and where, 4) a second paragraph explaining why this information is important, 5) a summary of important facts, 6) below the news release, the organization

should have a statement about the aim of the organization and its goals, 7) contact information for that particular organization.

News releases were examined for subject matter that discussed a particular risk, such as rolling blackouts or food spoilage. This would indicate an attempt to prepare the public for a risk that is present. Four out of Rowan's (1991) five goals of risk communication were adopted to determine if agencies attempted to increase awareness of dangers due to the blackout and secondly if strategies to reduce risk were included. The one goal that was not used in the assessment was the "ability to trust the communicator"; because, within the content of this thesis, it would be difficult to obtain information by which this could be judged. Also, each of the remaining four goals were combined into two goals; these were "increasing public knowledge of the risk" and "education". Because these goals are similar, they were combined for the assessment. The third and fourth goals; "informing people how to reduce personal risk" and "motivating people into taking action", were also combined because of their similarities. Thus the criteria, as adopted from Rowan (1991) are: increase awareness and strategies to reduce risk. For example, the Province of Ontario released a message stating that if any food in a refrigerator had warmed to room temperature for more than two hours, to discard it (OMCSCS, 2003h). It discussed the risk of food spoilage as well as educating the public on how to determine if food may be spoiled.

Misconceptions result from a flaw in the public's thinking patterns. People may discard the new information because it does not fit with the existing information (Lichtenstein, 1987). As Bier (2001) states, it is important for authorities to address

misconceptions. People who have preconceived ideas regarding emergencies may have inaccurate information about dealing with an emergency. A misconception related to the August 14th blackout dealt with public concern about the rise in crime. A news release from the Toronto Police Services states that there were very few crimes committed as a direct cause of the blackout (Toronto Police Services, 2003). (See Chapter 2).

The fourth item analyses if authorities acknowledged that there was any uncertainty or unknown information. With uncertainties, Frewer (2004), suggests communicating to the public that there may be unknown information will allow the public to form a more realistic perception of an event, instead of having an unrealistic view based on no information. In the case of the blackout, some unknowns were related to the power situation. There was a great deal of uncertainty regarding when the power grid would be running at full capacity. The authorities addressed this situation by informing residents of possible rolling blackouts and declaring that there were no guarantees there would not be any further blackouts (IMO, 2003b; City of Toronto, 2003c).

The final item involves scientific wording and the use of statistics in news releases. There are two views of using scientific wording to give information to the public, according to Rowan (1991). The first view states that the use of statistics and scientific language should be avoided. It is better to give all information in layman's terms (Rowan, 1991). The second view states that people have the ability to interpret statistics and members of the public are able to make up their own minds (Rowan, 1991). The use of statistics and scientific language in a news release was analysed to determine

which approach was used more. Statistic use was included in the criteria to determine if authorities were using the technological approach or the democratic approach to risk communication. Any scientific language, such as probabilities or kilowatts were tallied, to determine the method authorities chose to give out information.

5.4 Information Contained in News Releases by Date

The first analysis of news releases attempted to determine the main topics by date. In general, the 11 news releases on August 14th, 2003, focussed on communication, transportation and safety. One news release provided information describing why a state of emergency was put into effect as well as discussing the blackout and the scale of the power outage (OMCSCS, 2003a). It is important to note that the last sentence does say that there will be further updates as new information is received (OMCSCS, 2003a). The importance of keeping the public updated was uncovered during interviews with various agencies in Toronto. A second news release informs the public how to protect themselves in a power failure and what to do after the power comes back on (OMCSCS, 2003b). In addition, a business, Coleman Powermate, released information on how to safely use generators (Coleman Powermate, 2003). The first day, out of 11 news releases, not one release discussed conservation of power.

There were two transportation related news releases from Air Canada on August 14th, providing information regarding the grounding of all flights to and from affected areas and how to re-book affected flights (Air Canada, 2003a). A third transportation release was from VIA Rail Canada, announcing significant delays of passenger trains in

the Windsor-Quebec City corridor (VIA, 2003a). A release about communication, from Bell Canada, informed the public, that while the Bell Telephone Networks were functional, customers should only use telephones for emergencies (Bell Canada, 2003a). On the first day of the blackout, there was relevant information given to the public regarding safety, transportation, and communication. Only 14 percent of all news releases were issued the day of the blackout.

On August 15th, 2003, there were 35 news releases issued or 44 percent of all releases studied. The majority of news releases analysed informed the public on safety related issues specific to the blackout, such as having a fully stocked first aid kit, how to avoid a heat related illness and how to cool down houses without the use of air conditioners. Because the temperature in the days after the blackout was quite high, heat related illnesses were a concern (Canadian Red Cross, 2003). A second issue related directly to the blackout, safe food handling, was also discussed in the news releases. There were four separate news releases from four different agencies regarding time lines for throwing away food that had thawed (Canadian Food Inspection Agency, 2003; Canadian Council of Grocery Distributors, 2003; Food Safety Network, 2003; Health Canada, 2003). In these releases, most information was consistent; however, there were two small inconsistencies found. In the Health Canada news release (2003), it states that most freezers will keep food frozen for twenty four hours. Both the Canadian Food Inspection Agency (2003) and the Food Safety Network state that generally freezers can keep foods frozen for up to two days. In addition, Health Canada (2003) and the Canadian Food Inspection Agency (2003) both state to discard any perishable food that is

has been at room temperature for two or more hours. However, the Food Safety Network (2003) states to discard perishable food if it is kept at four degrees Celsius for over two hours. Room temperature is generally thought of as 20 degrees Celsius. This is a difference of 16 degrees and could cause quite a difference in the amount of food being thrown out.

Information sharing was an important aspect of the news releases on August 15th. There were four updates on the current power situation given, and three messages appealing for the public to conserve hydro. Through the interviews conducted with various agencies in the City of Toronto, many people mentioned the importance of giving citizens as much information as possible. These updates all revolved around the current state of the electrical system and tips on how to conserve power. Four out of 35 news releases mentioned conservation.

The other news releases on August 15th, were from various organizations and had different messages. There was an update on the transportation system, a 911 update from the City of Toronto, a hospital update, a telephone communication update and finally one humanitarian organization, Canadian Blood Services issued a release appealing for people to give blood (Canadian Blood Services, 2003a).

Overall a lot of different messages were given to the media on August 15th. Below is a listing of 17 different groupings of message themes.

- What should be in an emergency kit (Canadian Red Cross, 2003; ICLR, 2003).
- Do not call 911 unless it is an emergency (OMCSCS, 2003c; OMCSCS, 2003e).
- Conserve electricity (OMCSCS, 2003f; Hydro Ottawa, 2003a; Toronto Hydro,

2003a).

- Promoting Telehealth Ontario, (OMCSCS, 2003d; Community Information Toronto, 2003).
- Hospital updates (North York General Hospital, 2003; University Health Network, 2003a).
- Restoration efforts (Hydro Ottawa, 2003a; EMO, 2003).
- Food Safety (Food Safety Network, 2003; Canadian Food Inspection Agency, 2003; Canadian Council of Grocery Distributors, 2003; Health Canada, 2003).
- Transportation; railway and air plane (Air Canada, 2003c; Air Canada, 2003d; Air Canada, 2003e; Via Rail, 2003b; British Airways, 2003).
- Ministry of National Defence Statement updating public on transportation, border services, financial markets and public services (Ministry of National Defence, 2003).
- Communications Update (Bell Canada, 2003c).
- Keeping cool (City of Toronto, 2003a; City of Toronto, 2003b).
- Urgent call for blood donors (Canadian Blood Services, 2003a).
- Highlighting the need to be prepared for any emergency (ICLR, 2003; CCEP, 2003).
- Message to municipalities to pass along to the public. These messages include, conserve water, stay off roads except for emergency purposes, check on elderly relatives and neighbours (Ontario Ministry of Municipal Affairs and Housing, 2003).
- Liberal party encouraging the authorities to keep the public informed (Liberal Caucus Bureau, 2003).
- Shoppers Drug Mart informing customers that stores are open if people need to fill a prescription (Shoppers Drug Mart, 2003).
- Chief Julian Fantino addressing the public on the way the crisis was handled to date (Toronto Police Services, 2003).

Many of the news releases came from different agencies, but covered the same topic. In some cases, such as the appeals to call 911 only in emergencies, there were two separate news releases issued from the same agency (OMCSCS, 2003c; OMCSCS, 2003e). While there was more than one agency giving out the same information in some

cases, there was a consistency of the messages throughout the news releases. The only inconsistency was found in four separate news releases on food safety. While all delivered the same basic message, a guideline on how to tell whether food should be thrown out, as mentioned above, there were two small inconsistencies in the timing of food spoilage (Food Safety Network, 2003; Canadian Food Inspection Agency, 2003; Canadian Council of Grocery Distributors, 2003; Health Canada, 2003).

The ICLR and CCEP stated that emergencies often happen without warning and being prepared is essential (ICLR, 2003; CCEP, 2003). However, the ICLR news release went into greater depth with information on what to put into an emergency kit (ICLR, 2003). The City of Toronto gave out two news releases on keeping cool in an emergency, but these releases were the same, only one was an updated version, released later the same day (City of Toronto, 2003a; City of Toronto, 2003b).

In summary, because August 15th was the first day after the blackout and some areas still were without power, a lot of different information was vital to give to the public, hence the multitude of news releases. However, overall the basic message of these news releases was the importance of health and safety, transportation and communication updates. There may have been overlapping information in the various press releases, but the common theme behind them remained consistent throughout the various organizations which issued press releases. Overlapping information is beneficial because this increases the chance of the public receiving this information. However, inconsistent messages may pose a conflict for the media in choosing what release may hold more accurate information.

On August 16th, 2003, there were nine news releases issued, 11 percent of all releases studied in this thesis. These news releases were centred around power conservation and safety tips, with four out of nine releases discussing conservation (IMO,2003d; IMO, 2003e; OMCSCS, 2003j; OMCSCS, 2003k). Four releases gave safety tips including more information on safe food handling and the dissemination of important phone numbers such as Telehealth Ontario and a general inquiry line for residents of Ontario to telephone if they had any questions (OMCSCS, 2003h, OMCSCS, 2003i; OMCSCS, 2003l; OMCSCS,2003m). The last news release was an update on the current power situation (OCIPEP, 2003).

On August 17th, 2003 there were 13 news releases issued, or 14 percent of the total. Six out of 13 news releases studied were written to urge the public to conserve power (Hydro Ottawa, 2003b; IMO, 2003f; IMO, 2003g; Toronto Hydro, 2003b; Toronto Hydro, 2003c; City of Toronto, 2003d). In addition to these releases, there were two hospital, one transportation and four general power consumption news releases (Hospital for Sick Children, 2003c; University Health Network, 2003b; Toronto Transit Commission, 2003b; Government of Ontario, 2003a; OMCSCS, 2003n, City of Toronto, 2003c; City of Toronto, 2003d). All of these were updating their respective services.

By August 18th, there were only four news releases issued, representing five percent of all releases analysed. Four of these news releases were written for the purpose of updating the public on how much energy was being used and urging the citizens of Toronto to conserve power (City of Toronto, 2003e; City of Toronto, 2003f; IMO, 2003g). There was one news releases from the Hospital for Sick Children, updating the

services available for the following day (2003c).

After August 18th, there were too few releases issued each day to discover a daily trend. However, the releases issued after this date all provided information on continued conservation and updating what services are available. For instance, on August 19th, there were two news releases issued. One was from Canadian Blood Services, appealing to the public to donate blood and a second release from the City of Toronto, discussing how to reduce the chances of a heat related illness (Canadian Blood Services, 2003b; City of Toronto, 2003f). On August 20th, there was an announcement from the Government of Ontario regarding a public services update and there was another release from the City of Toronto reminding residents to conserve energy (Government of Ontario, 2003b; City of Toronto, 2003g).

In analysing the overall content of all news releases, there were three general categories that the majority of the news releases fit into; conservation efforts, updates, and safety tips. The news releases that involved conservation efforts became more frequent in the days after the blackout as more areas had power restored. There were no releases that appealed for conservation efforts the day of the blackout. On August 15th, there were four releases. There were nine releases that asked for conservation both on August 16th and August 17th. The number of total news releases started to decline on August 18th, but the content of news releases issued were mostly regarding conservation.

Forty four or 54 percent of news releases were written to update a situation, such as transportation. Also many releases attempted to inform the public that there would be

more information given as it became available. Most releases gave some sort of update of various services, from transportation networks and telephone networks to the current state of the power system in Ontario. Air Canada, the Toronto Transit Commission and VIA rail were the three transportation agencies which provided multiple updates, informing the public of the availability of their services. This included giving information to the public regarding service delays or possible future service interruptions

Forty nine news releases gave some type of safety tip. These safety tips were not just about being prepared for a blackout, but also what can be done after a blackout to keep safe. There were issues such as heat related illnesses and food spoilage that were potential problems in the aftermath of the blackout and the news releases attempted to increase public awareness of these problems.

5.5 Analysis of News Releases By Category

Overall, 81 news releases were studied from 10 different organizational categories. Initially the news releases were studied for content the day they were released and then the releases were studied according to the criteria in Table 5.1. The goal of analysing all news releases using the criteria in Table 5.1 is to get an overall impression of how closely the content of the releases related to content suggested by the literature.

5.5.1 Inclusion of Specific Criteria in News Releases

There were six categories that were chosen as valuable criteria to include when communicating risk information to the public. This criteria was developed from the literature review (See Chapter 2). The categories used are: the seven criteria that should

be in a news release as suggested by FEMA, Rowan's (1991) five goals of risk communication, misconceptions and unknown or uncertain information. The following table, Table 5.2, lists all eighty one news releases and a check mark is placed in each box if the news release included the criteria outlined in section 5.3.

Table 5.2: Overall Tally of News Releases

News Release	Seven Criteria Outlined by FEMA							Risk Communication Goals		Other Criteria Examined	
	Descriptive Headline	Statement to garner attention	Who, What, When, Where	Why Important	Summary	Aim of organization	Contact information	Increase awareness	Strategies to reduce risk	Misconceptions	Uncertainty
Province Wide News Releases											
1 (OMCSCS, 2003a)	✓	✓	✓	✓					✓		✓
2 (OMCSCS, 2003b)	✓	✓	✓		✓		✓	✓	✓		
3 (OMCSCS, 2003c)	✓	✓	✓				✓			✓	
4 (OMCSCS, 2003d)	✓	✓	✓	✓	✓		✓	✓	✓		
5 (OMCSCS, 2003e)	✓	✓	✓				✓				
6 (Ministry of National Defence, 2003)	✓				✓		✓				
7 (OMCSCS, 2003f)	✓	✓	✓	✓	✓		✓	✓	✓		
8 (OMCSCS, 2003g)		✓					✓	✓		✓	
9 (Ontario Ministry of Municipal Affairs and Housing, 2003)	✓				✓		✓	✓	✓		
10 (Canadian Food Inspection Agency, 2003)	✓	✓		✓	✓		✓	✓			✓
11 (Liberal Caucus Bureau, 2003)	✓	✓	✓				✓	✓	✓		
12 (Health Canada, 2003)	✓	✓			✓		✓	✓	✓		
13 (OMCSCS, 2003h)	✓	✓	✓		✓		✓	✓	✓		
14 (OMCSCS, 2003i)	✓	✓			✓		✓	✓	✓		
15 (OMCSCS, 2003j)	✓	✓			✓		✓	✓	✓		

16 (OMCSCS, 2003k)	✓	✓	✓		✓		✓		✓			
17 (OMCSCS, 2003l)	✓		✓		✓		✓	✓	✓		✓	
18 (OMCSCS, 2003m)	✓	✓			✓		✓	✓				
19 (OMCSCS, 2003n)	✓	✓	✓	✓	✓		✓	✓	✓			
20 (OMCSCS, 2003o)	✓		✓	✓	✓		✓	✓	✓			
21 (Government of Ontario, 2003a)	✓		✓		✓		✓					
22 (Government of Ontario, 2003b)	✓	✓	✓	✓	✓		✓					
23 (EMO, 2003)	✓	✓			✓		✓	✓	✓			
24 (Office of the Premier of Ontario, 2003)	✓		✓	✓	✓		✓	✓				✓
Total (24)	23	18	15	8	19	0	23	17	15	2	3	7

News Release	Seven Criteria Outlined by FEMA							Risk Communication Goals		Other Criteria Examined		
Citywide News Releases	Descriptive Headline	Statement to garner attention	Who, What, When, Where	Why Important	Summary	Aim of organization	Contact information	Increase awareness	Strategies to reduce risk	Misconceptions	Uncertainty	
25 (City of Toronto, 2003a)	✓	✓	✓	✓	✓		✓	✓	✓			
26 (Community Information Toronto, 2003)	✓		✓	✓	✓	✓	✓	✓	✓			
27 (Toronto Fire Department 2003)	✓	✓		✓	✓			✓	✓			
28 (City of Toronto, 2003b)	✓	✓	✓	✓	✓		✓	✓	✓			
29 (City of Toronto, 2003c)	✓		✓	✓	✓		✓					
30 (City of Toronto, 2003d)	✓	✓			✓		✓	✓	✓			
31 (City of Toronto, 2003e)	✓		✓	✓	✓		✓					
32 (City of Toronto, 2003f)	✓	✓	✓	✓	✓		✓	✓	✓			
33 (Ministry of Health and Long Term Care, 2003)	✓		✓		✓		✓	✓	✓			
Total (9)	9	5	7	7	9	1	8	7	7	0	0	

News Release	Seven Criteria Outlined by FEMA							Risk Communication Goals		Other Criteria Examined	
Transportation News Releases	Descriptive Headline	Statement to garner attention	Who, What, When, Where	Why Important	Summary	Aim of organization	Contact information	Increase awareness	Strategies to reduce risk	Misconceptions	Uncertainty
34 (Air Canada, 2003a)	✓		✓	✓	✓		✓		✓		✓
35 (Via Rail, 2003a)	✓	✓	✓	✓	✓		✓				✓
36 (Transport Canada, 2003)	✓	✓		✓	✓		✓		✓		
37 (Air Canada, 2003b)	✓	✓	✓	✓	✓	✓					✓
38 (Air Canada, 2003c)	✓	✓	✓	✓	✓		✓				
39 (Toronto Transit Commission, 2003a)	✓	✓	✓	✓	✓		✓				
40 (Via Rail, 2003b)	✓	✓	✓	✓	✓		✓				✓
41 (Air Canada, 2003d)	✓	✓	✓	✓	✓		✓	✓			
42 (British Airways, 2003)	✓	✓	✓	✓			✓	✓	✓		
43 (Air Canada, 2003e)	✓	✓	✓	✓	✓			✓	✓		✓
44 (Toronto Transit Commission, 2003,b)	✓	✓	✓	✓	✓		✓				
Total (11)	11	10	10	11	10	1	9	3	4	0	5

News Release	Seven Criteria Outlined by FEMA							Risk Communication Goals	Other Criteria Examined	
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Province Wide News Releases	Descriptive Headline	Statement to garner attention	Who, What, When, Where	Why Important	Summary	Aim of organization	Contact information	Increase awareness	Strategies to reduce risk	Misconceptions	Uncertainty
45 (Bell Canada, 2003a)	✓			✓			✓				
46 (Bell Canada, 2003b)	✓	✓	✓	✓	✓	✓	✓				
47 (Bell Canada, 2003c)	✓	✓	✓	✓	✓	✓	✓	✓			
Total (3)	3	2	2	3	2	2	3	1	0	0	0

News Release	Seven Criteria Outlined by FEMA							Risk Communication Goals		Other Criteria Examined	
Hydro Related News Releases	Descriptive Headline	Statement to garner attention	Who, What, When, Where	Why Important	Summary	Aim of organization	Contact information	Increase awareness	Strategies to reduce risk	Misconceptions	Uncertainty
48 (IMO, 2003b)	✓		✓				✓	✓			✓
49 (Hydro Ottawa, 2003a)	✓	✓	✓	✓	✓		✓	✓	✓		
50 (IMO, 2003c)	✓	✓	✓	✓	✓		✓	✓	✓		
51 (Toronto Hydro, 2003a)	✓	✓	✓	✓	✓		✓	✓	✓		
52 (IMO, 2003d)	✓		✓	✓	✓		✓	✓	✓		✓
53 (IMO, 2003e)	✓				✓		✓	✓	✓		✓
54 (IMO, 2003f)	✓	✓			✓		✓	✓	✓		✓
55 (IMO, 2003g)	✓		✓	✓	✓		✓		✓		
56 (Toronto Hydro, 2003b)	✓	✓	✓		✓		✓		✓		
57 (Hydro Ottawa, 2003b)	✓	✓	✓	✓	✓		✓	✓	✓		
58 (IMO, 2003h)	✓	✓	✓	✓	✓			✓			✓
59 (Toronto Hydro, 2003c)	✓	✓	✓		✓		✓	✓	✓		
60 (IMO, 2003i)	✓		✓	✓	✓		✓	✓			
61 (Hydro One, 2003b)	✓	✓	✓	✓	✓	✓	✓				
62 (IMO, 2003j)	✓	✓	✓	✓	✓		✓				
Total (15)	15	10	13	10	14	1	14	11	12	0	5

News Release	Seven Criteria Outlined by FEMA							Risk Communication Goals		Other Criteria Examined	
Hospital News Releases	Descriptive Headline	Statement to garner attention	Who, What, When, Where	Why Important	Summary	Aim of organization	Contact information	Increase awareness	Strategies to reduce risk	Misconceptions	Uncertainty
63 (Hospital for Sick Children, 2003a)	✓	✓	✓	✓			✓				
64 (North York General Hospital, 2003)	✓	✓	✓				✓				
65 (Hospital for Sick Children, 2003b)	✓	✓	✓	✓			✓	✓			
66 (University Health Network, 2003a)	✓	✓	✓				✓				
67 (University Health Network, 2003b)	✓	✓	✓	✓			✓				
68 (Hospital for Sick Children, 2003c)	✓	✓	✓				✓				
Total (6)	6	6	6	3	0	0	6	1	0	0	0

News Release	Seven Criteria Outlined by FEMA							Risk Communication Goals		Other Criteria Examined	
Police News Releases	Descriptive Headline	Statement to garner attention	Who, What, When, Where	Why Important	Summary	Aim of organization	Contact information	Increase awareness	Strategies to reduce risk	Misconceptions	Uncertainty
69 (Toronto Police Service, 2003)	✓		✓	✓	✓		✓			✓	✓
Total (1)	1	0	1	1	1	0	1	0	0	1	1

News Release	Seven Criteria Outlined by FEMA							Risk Communication Goals		Other Criteria Examined		
Other Organizations	Descriptive Headline	Statement to garner attention	Who, What, When, Where	Why Important	Summary	Aim of organization	Contact information	Increase awareness	Strategies to reduce risk	Misconceptions	Uncertainty	Scientific Language
70 (Coleman Powermate, 2003)	✓	✓	✓	✓	✓	✓	✓	✓	✓			
71 (Food Safety Network, 2003)	✓	✓	✓	✓	✓	✓	✓	✓	✓			
72 (Canadian Council of Grocery Distributers, 2003)	✓		✓	✓	✓	✓	✓	✓	✓			
73 (Canadian Food Inspection Agency, 2003)	✓	✓	✓	✓			✓	✓	✓			
74 (Canadian Food Inspection Agency, 2003b)	✓		✓	✓	✓	✓	✓	✓	✓			
75 (Shoppers Drug Mart, 2003)	✓	✓	✓	✓	✓	✓		✓	✓			
Total (6)	6	4	6	6	5	5	5	6	6	0	0	

Legend: A ✓ indicates whether a news release met the criteria outlined in Chapter 2.

Shaded text over the scientific language box denotes the presence or absence of scientific language only. Because there are two views regarding the use of scientific language, it is not deemed unacceptable if it is preent.

5.5.2 News Release Content Requirements from FEMA

FEMA states that there are seven pieces of information that should be on every news release. Of the 81 news releases examined in this study, only five met the criteria outlined by FEMA. There were three news releases categorized under ‘other’, one from the communications category and one from the hydro category. The first media release to meet all criteria came from a private company, Coleman Powermate. The content was the safe use of generators. A toll free number and website were provided in the release for the public if there were any questions and there was a statement about Coleman

Powermate, what it manufactures and its facilities (Coleman Powermate, 2003). The second release which met all criteria was from the Food Safety Network. One goal of this organization is to give information on the safe handling of food, as stated at the end of the news release (Food Safety Network, 2003). The body of the news release informed people how to keep food safe during and after a power failure as well as giving a toll free number and a website address if the public had any additional questions or would like more information. The third news release was from the Institute for Catastrophic Loss Reduction (ICLR), (ICLR, 2003), which gave advice on what to do in a general emergency, including encouraging citizens to remain calm and cooperate with officials and information on what should be included in a disaster safety kit. In addition, the ICLR stated its history, goals and funding sources (ICLR, 2003). The fourth news release was from Bell Canada, giving information updating residents about telephone service (Bell Canada, 2003a). It encouraged people to use 911 for emergencies only and avoid dialling 611 if there is no telephone service (Bell Canada, 2003a). Bell Canada's statement also conveys Bell Canada's business interests. This is a news release that is mainly an update. It is fairly short with 14 lines of text. However, it meets FEMA's criteria. Finally, the last news release that covers all seven criteria is from the Hydro One media centre news release area on the Hydro One website. This news release was actually written later than most others, in November of 2003. It is in response to the Blackout Report.

However, all criteria outlined by FEMA are met in this release. It should be noted that this news release is the only news release on the blackout available on the Hydro One website.

In terms of an element by element analysis; only one news release did not have a headline or a secondary line describing the type of information found in the news release. This was a provincial news release and entitled, "Public Service Announcement from Premier and the Government of Ontario, August 15th, 2003" (OMCSCS, 2003d). The information in the release was about the 911 system. However, this title does not give any clues to the information contained in this news release. Forty three news releases had a short secondary statement that gave a little more information about what was contained in the news release. Some of the releases that did not, seemed to have included enough information in the main headline and omitted this step.

The four "w's" listed by FEMA; who, what, when and where ,are the next set of criteria listed in FEMA (FEMA, 2004). Fifty three news releases included a statement explaining why the information in the news releases is important. People may not be aware why a certain message is relevant to them, but if the connection is explained they become aware of the importance and heed the message. If the message does not seem important, the information will be discarded. Almost all news releases did put in the four "w's" at some point, but the 4 "w's" should be contained in the first paragraph. Some did not include this until the third paragraph. Some failed to

include all four. A Bell Canada news release was issued appealing to people not to use their telephone lines unless necessary. However, there was no information in the news release regarding what geographical region Bell Canada was appealing to (Bell Canada, 2003b). Transport Canada issued a news release informing people that there were some air transport and driving problems as a result of the blackout, but it did not mention where these problems were occurring (Transport Canada, 2003). However, this release does advise all people flying into or out of Ontario that flights have been disrupted (Transport Canada, 2003).

Overall, very few agencies put a statement about their organization on the news release. There were only 13 organizations which had this statement. Giving out this information could be seen as a method for people to judge, evaluate, legitimize and determine if they trust the contents of the news release.

There were six news releases which did not give information as to how the public can find more information. There were numerous advertisements of telephone numbers and website addresses that most news releases put into their information. However, five news releases did not have this information. Two transportation news releases, one news release from the 'other' category, one from the province, one hydro agency and one from the city were each missing this contact information. While every news release had a media contact listed for more information, these five were missing contact information for public

dissemination.

If the seven criteria are broken down according to the category of news releases, the provincial news releases met the least number of criteria. Overall, provincial agencies put out 24 news releases and 13 of them met four or less criteria. The main problem with provincial news releases was their length. Most stated a fact and did not give any reasoning behind the information. One news release was only two sentences long and met only two of the seven criteria. It advised people not to call 911 unless necessary (OMCSCS, 2003c). The headline stated that the news release was a public service announcement from the Premier. There was no secondary headline stating the information contained in the news release. Nothing was written to state why calling 911 was not advised. There was also no summary or statement informing people of the aim of the Ontario Ministry of Community Safety and Correctional Services.

Most news releases from the province were missing the second paragraph stating why this information was important. Only nine of 24 releases had this statement. The majority of these provincial news releases were missing contact numbers for the public to call. However, all provincial news releases did have a media contact number listed.

In all of the provincial news releases, there was only one alternate number given to phone if general health information was needed. This

number, Telehealth Ontario, was publicized by the province on August 15th. This number had been in service before the blackout, but it was not advertised publically until the second day of the blackout. It was not until August 16th that the Province of Ontario provided one news release, which gave the public three telephone numbers to call if they had questions. The first number was a toll free, general inquiry phone number specifically given to answer questions from the public. Normally this line is a health care line for senior citizens of Ontario to call if they have questions about their Ontario Health Insurance Plan (OSS, 2002). The second number provided was Telehealth Ontario, which had been in use in Ontario prior to the blackout. The third number was for the Ministry of Agriculture. These numbers were broadcast to the public relatively late. It seems strange for one of the provincial telephone numbers to be an Ontario Health Insurance Plan telephone number normally. To publicize this number in a crisis, and to use these types of agency numbers during an emergency may cause complications. What occurs when there is more of a return to normalcy and some people are calling the line for health insurance information, and some still have questions related to the blackout? Emergency Management Ontario should have a dedicated line prepared in case of an emergency. Perhaps a suggestion for future emergencies would be for the province to have a pre-assigned telephone number that is only activated during emergencies. This number could be advertised as part of public awareness campaigns for emergency preparedness. This telephone number could be

publicized within hours of the emergency instead of days afterward.

In contrast to the province, the City of Toronto issued a news release on August 15th that provided residents with two telephone numbers. One telephone number was 211, which is a joint effort between the United Way of Toronto and Community Information Toronto (Community Information Toronto, 2003). The second number was for Access Toronto. The website for Access Toronto states it is a “general inquiry service for Toronto” (Access Toronto, 2004). Generally, Access Toronto deals mainly with government and municipality related issues.

The City of Toronto, met most of the FEMA requirements. All had the headline describing the topic, but four out of nine releases were missing a secondary line to catch the reader’s attention. Only two news releases were too short to fully explain the four w’s. Further, only one news releases did not discuss the importance of the information contained in the news release. All releases provided a summary although only one organization did have a paragraph regarding their aim and goals. However, all City of Toronto organizations had a contact number listed.

There were 11 transportation news releases. Generally, these releases were the most complete, although the sixth criteria, a statement describing the aim of the organization, was only in one release. Most of the transportation related news releases covered six criteria. Only one release was missing a

second headline to catch the reader's attention. No releases were missing a statement discussing why the information is important, but two releases were missing a summary.

As for the other eight categories, few patterns emerged. None of the six hospital news releases included a summary of the information or the aim of the hospitals. All but two of the 15 hydro related news releases included a summary. Because the category 'other' had only six news releases to examine, it is difficult to state firmly, but the releases contained in the category 'other organizations', such as businesses were very thorough in their news releases. All but one included a statement outlining the aims and goals of the organization. This category was quite complete with respect to having most of the seven FEMA criteria included in the releases.

5.5.3 Goals of Risk Communication

Overall, 53 out of 81 press releases informed the public that there was some type of risk due to the power failure. An example of educating the public about a risk came from the Toronto Hydro Corporation. This news release informed the public about the possibility of rotating blackouts. The news release then continues to give information about why this risk is still present. This release stated that, while power had been restored to most areas, the demand would increase and could strain the current supply of electricity, requiring rotating blackouts to reduce the strain (Toronto Hydro Corporation,

2003b).

Eighteen out of 24 provincial news releases mentioned emergency preparedness education. The City of Toronto news releases had seven out of nine releases which attempted to increase public knowledge about risks during the blackout. However, the city had more information to get to the public than just information on the power situation. There was information on who to call for help and how to stay cool with no electricity. The one EMS news release attempted to educate the public on how to stay cool in the aftermath of the blackout (City of Toronto, 2003h). Hydro news releases had 10 out of 15 which attempted to educate the public in some way. The transportation related news releases only had three out of 11 releases attempt to educate the public. A media advisory from Transport Canada issued a statement which advised travellers of some transportation concerns during the power failure. One of these concerns was about railway grade crossings with Transport Canada cautioning drivers to be extra careful at all rail crossings (Transport Canada, 2003).

The volunteer organizations category only had one out of four releases giving information related to education. The only category that fared extremely well was the category of 'other'. Because this category encompassed organizations such as ICLR and CCEP, which are organizations dedicated to emergency management, five news releases did attempt to educate the public on risk.

The categories of hospitals and communication each had only one release mention the possibility of educating the public on risks. The Toronto Police Service release did not mention any aspects of education. Aside from these two categories, most of the news releases in the other categories did release information regarding some type of risk. These risks focussed on continuing power failures, rotating blackouts, safe food storage and heat related illnesses.

The second subcategory of risk communication goals is risk mitigation. Forty eight releases gave the public this information. The province wide news releases had 18 out of 24 releases give some information on how to mitigate the effects of the blackout. The City of Toronto had seven out of nine releases mention this. The category that fared the best was the category of 'other'. It had all six releases mention some information on how to reduce personal risk. Some risk mitigation examples involved encouraging people to reduce their personal risk included cautionary warnings about using candles and generators (Coleman Powermate, 2003).

The transportation category had only four out of 11 releases give ways to mitigate risk. Most of the news releases in this category discussed calling ahead to find out if flights were cancelled. One news release states that there have been some major disruptions in the aftermath of the blackout and not come to the airport (Air Canada, 2003e).

The hospital, police, communication and EMS categories had no releases that mentioned mitigation. However, in the category of other, all six news releases mention ways to mitigate risks, including information regarding what to put into an emergency kit or what to have on hand if a disaster threatens.

Overall, there was very little information given in the news releases to encourage the public to prepare for a generic emergency. In the aftermath of a disaster, people are often motivated to prepare themselves in case of future disasters. Because people may be more motivated in the initial weeks and months after a disaster, it is important to encourage this emergency preparedness behaviour and give information on how to prepare and where to get general emergency preparedness information (Turner, Nigg and Paz, 1986).

In the news releases analysed, only two stressed the importance of being prepared for any type of emergency and stressed educating the public on future risks and preparedness. The Institute for Catastrophic Loss Reduction released information on what safety equipment should be in the home, what food and water supplies are needed, and other essential items required in an emergency. It also gives information on how to store these supplies and to rotate them every six months (ICLR, 2003). The Toronto Hydro Corporation release included listing items that should be in an emergency preparedness kit. However, its main focus was on how to prepare for future blackouts and what to do if a prolonged blackout occurs (Toronto Hydro Corporation, 2003c).

While general emergency preparedness information for a prolonged power failure or loss of power was abundant in the news releases, information on how and where to find more emergency preparedness information was not advertised in any of the news releases. This seems like a lost opportunity, because as discussed in Chapter 6, some people (e.g. interviewees 4-11) interviewed believe that the best time to advertise emergency preparedness information is in the aftermath of a disaster

Overall, 24 news releases did not contain any one of these two goals of risk communication. Transportation, communication and hospitals were the three categories that had the lowest number of criteria met for the two categories. Some news releases were very short and did not have any extra information at all. Of the six hospital news releases, only one news release had any of the risk communication criteria included. The three communication news releases did not include either aspect of risk communication. These releases were more concerned with telecommunications than risk communication.

While over half of the news releases attempted to increase public awareness of the risk, some did not continue past this point to educate the public or give information on how to reduce their risk. However, 39 releases that educated people on the risk also discussed ways to mitigate the risk as well. Overall, the categories that fared the best on the two goals of risk communication were the Citywide news releases and the news releases

analysed under the category of 'other'. All of these releases carried information on how to increase awareness of a potential hazard as well as strategies to reduce risk.

5.5.4 Misconceptions

Only four news releases mentioned the possibility of misconceptions in their news releases; Province of Ontario, police and humanitarian/volunteer.

Both the provincial and Toronto Police Services releases mentioned the importance of 911 and some misconceptions that may occur. Interviews were done with people who worked with the 911 operating system during and after the blackout and it was found that the 911 telephone system was being used to report blackouts and other minor problems (Interviewee 9). This resulted in a large increase in the volume of calls, and a lot of overlapping information.

There were two news releases from the government of Ontario which addressed the potential use of 911 when it is not needed, such as to report power outages (Government of Ontario, 2003a). This information must be given to people in such a way that they understand the reasoning behind the information. People must be given an alternative number and it must be clearly explained why calling 911 is problematic. The third news release that addressed misconceptions was from the Toronto Police Service website. It was a press release from the Chief of Police, Julian Fantino stating a misconception about 911, when to call it and when not to call it (Toronto Police Services, 2003). The Canadian Centre for Emergency Preparedness

(CCEP) discussed misconceptions regarding the three levels of government and their respective roles in emergency preparedness (CCEP, 2003).

Chapter 2 discussed misconceptions mentioned in academic literature. The misconceptions that were valid in the case of the blackout were: panic, price gouging, looting and criminal behaviour, shortage of goods and resources, people are too shocked to help themselves, disasters are random, life gets back to normal quickly and technology has eliminated communication problems. The news releases were analysed to determine if authorities addressed this misconception in an attempt to educate the public, or there were occurrences of these behaviours.

The first misconception is people will be more likely to panic in a life threatening situation, such as a fire or earthquake. People are commonly affected by power failures and generally do not perceive them as a disaster situation. Authorities probably thought that panic was not a possibility as no news releases were issued to remind people to stay calm.

The next misconception that price gouging occurs, was not addressed in any news releases. It did occur in some places, especially with the price of gas (Toronto Star, 2004). Because people seem to be concerned about price gouging, this issue should have been addressed. The authorities could have stated the ramifications of price gouging to shop owners considering raising prices to an unreasonable level as well as given the public a means of

communicating this price gouging to authorities. In Ontario, the *Business Practices Act* (2002) prohibits activities such as price gouging. It was not until August 23rd that a telephone hotline was given for the public to lodge complaints against businesses who took advantage of the blackout to raise prices unjustly.

The issues of looting and disasters bringing out the worst in people were addressed by the Chief of Police in a news release. He mentioned how most people were behaving and more uniformed officers were on duty to protect the streets. However, this message feeds the misconception rather than addresses the fact that crime usually is not widespread in the aftermath of a disaster. Most likely, in a disaster, the authorities and the public feel that being prepared for increased crime is essential.

Because there was uncertainty when the power would be fully restored, a shortage of goods and resources after the disaster may have been a valid concern for some people. This was not addressed in any news release. In addition, the misconception that people will be too shocked to help themselves may have been a valid concern in areas where power was out for an extended period of time. However, news releases were written with the assumption that people were taking care of themselves. This misconception was not addressed because it did not seem as if the authorities had considered people would be unable to care for themselves.

The misconception that disasters occur randomly means that people are not able to prevent a disaster from occurring. A disaster may not be prevented, but the loss of life and property can be. Proper emergency planning by both authorities and the public can reduce some of the loss. While this was not addressed as a misconception, only one news release issued information on how to prepare an emergency kit (CCEP, 2003). Another misconception that was not directly addressed was that life gets back to normal in a few weeks. It is difficult to judge through news releases the extent of long term damage to Toronto. However, as time passed, the number of news releases regarding the blackout decreased and the releases dealt mainly with conservation of power. The extent of the long term damage to the city is too difficult to quantify in this thesis using news releases.

The final misconception, how technology has eliminated communication problems, was not addressed in the news releases. Information was given by Bell Canada, asking people to refrain from using the telephones unless necessary. However, for a misconception to be addressed, people need to be shown why their thinking is incorrect. No releases directly address the problems related to communication, possibly continuing the myth that the present communication system is capable of handling the increased number of telephone calls when it is not.

In conclusion, misconceptions regarding the extent of price gouging, looting and other deviant behaviour, a shortage of goods and resources and

technology has eliminated communication problems were not addressed.

Some other misconceptions that were discussed in Chapter 2 may not have fit the blackout situation exactly. Therefore it was difficult to determine if the misconception was ignored by authorities or not addressed because authorities assumed the misconception was not applicable to the blackout scenario.

However, authorities in Toronto were able to raise other concerns that were valid. Of the two types of misconceptions addressed in the news releases, neither misconception was found in any literature on typical misconceptions in a disaster situation.

5.5.5 Unknown/Uncertainty

Trust between the general public and the authorities is crucial. If information is not known, it is important to state this, otherwise there may be problems where people feel that the authority is withholding information. As seen in Table 5.2, the agencies which issued releases reporting that certain information was not known were the transportation and hydro categories. The transportation agency had five out of six releases mention uncertainty. The hydro category had five out of 16 releases mention uncertainty. Instead of speculating, these agencies stated clearly in their releases that they were unsure when service would resume. For instance, the Independent Electricity Market Operator (IMO, 2003a) stated in a news release, “At this time, the cause of the outage is not known. There is also no indication as to how long the restoration process will take.”

Air Canada news releases outlined that there was an electricity shortage and certain flights in the affected area were cancelled. The releases also used the phrase, “Until further notice” to inform their customers that they are working on the problem and could not predict a definite time when the airline would resume these flights (Air Canada, 2003c).

In addition to these two categories, the province had three out of 24 releases and the humanitarian agencies had two out of five releases mention uncertainty. Two provincial releases dealt with not knowing when the power would be restored (OMCSCS, 2003a; OMCSCS, 2003l). The Canadian Food Inspection Agency, (2003), relayed uncertainty to food spoilage.

The Canadian Red Cross issued a news release informing people that they were working closely with municipal governments and were unsure of their official role in the blackout (Canadian Red Cross, 2003). In addition, the ICLR discussed uncertainty regarding the return of the power grid to normal operations (ICLR, 2003).

While the above news release all mention some unknown information, there may have been much more information that was unknown or authorities were uncertain about. The following is a list of possible unknown information in the immediate hours after the blackout.

- When will the power come back on?
- Why is the power out?
- Are there any deaths related to the failure?
- Is the water supply safe?

- What public transportation is still available?
- Are hospitals still open?
- Is there a problem with the nuclear reactors?
- Was this an act of terrorism?
- Is crime a problem?
- Are gas stations open so I can travel home?
- Are banks open to get money?
- Are grocery/hardware stores open to get supplies?

The first question is answered by many news releases. Because there was no guaranteed time that power would be restored, all hydro news releases were upfront about the uncertainty. The Ministry of Community Safety and Correctional Services also stated that there would be more information given to the public as it became available (OMCSCS, 2003a; OMCSCS, 2003b). No other agencies, including the City of Toronto addressed this uncertainty. All releases studied did not discuss or speculate reasons why the power failed. In addition, two news releases discussed the scope of the failure. The first was a private company, Coleman Powermate, issued a news release on August 14th, 2003, which stated that power was out from Detroit, Michigan to Toronto (Coleman Powermate, 2003). The second news releases was not issued until August 16th, from the Office of Critical Infrastructure Protection and Emergency Preparedness. It stated the cause of the failure was a disturbance in the mid-west United States (OCIEP, 2003a). In the case of the blackout, it was most likely that reporters received information as it came in and it was presented directly to the public through press conferences. In the days after the

blackout there were numerous newspaper articles citing possible causes of the large scale failure but the information was not given to the press in news release form.

The next two questions, were there any deaths attributed to the blackout and concern over the safety of the water supply, no releases addressed this information. Again, this information may have been covered in a press conference. However, drinking water safety can be seen as an important issue and it may have been in the best interest of the Toronto agency in charge of drinking water to issue a statement stating the drinking water is not contaminated. This would reduce some fears.

The two questions relating to transportation and hospital usage were both covered well by the news releases. Via Rail, Air Canada, Transport Canada and the Toronto Transit Commission all issued news releases on August 14th and 15th, updating the status of their respective travel schedules (Air Canada, 2003a; Via Rail, 2003a; Air Canada, 2003b; Transport Canada, 2003a; TTC, 2003a). In addition, the Hospital for Sick Children issued an update regarding elective surgery and out patient clinics on August 14th and 15th (Hospital for Sick Children, 2003a, Hospital for Sick Children, 2003b; Hospital for Sick Children, 2003c). The University Health Network updated its appointment schedule via news release on August 15th (University Health Network, 2003a). These two agencies continued issuing news releases in the week following the blackout and kept citizens updated on changes in operation

as the conservation measures changed following the blackout.

The next three questions: was it terrorism, are the nuclear reactors safe and is increased crime occurring, only the issue of crime was addressed in any news release. The Ministry of National Defence did issue a news release, but did not discuss terrorism (Minsitry of National Defence, 2003). Not one news release, including the hydro releases mentioned nuclear reactors. These two issues may not have been mentioned because the authorities may have been worried about increasing public fear. However, these were valid concerns and perhaps the issues should have been addressed through a reputable governmental agency. The only news release that discussed crime was from the Toronto Police service, and it stated that extra officers would be on duty for the evening of August 14th (Toronto Police Services, 2003).

Because the blackout occurred without warning, many people did not have enough gas to get home or money to buy emergency supplies. Most stores were only able to accept cash transactions. This issue was not dealt with in any news releases. Some people were stranded at their place of employment and were not able to go home. There were no news releases issued to help these people find a place to stay or a method of transportation to get home.

In some areas, it was evident that the power failure may last for at least twelve hours. This would prompt different questions such as:

- Am I considered an essential worker and therefore are to report to work?
- Is public transportation running yet?
- How do I determine if I should throw out my perishable food?
- What do I do if I have no food?
- Where can I go to keep cool if I cannot run my airconditioner?
- What measures can I take to reduce the threat of rolling blackouts?
- What governmental agencies are open?
- Are hospital patient schedules back to normal?

The first question about being considered an essential worker was discovered during the interviews with City of Toronto authorities. The earliest news release that asks for all non- essential public servants to stay home was from the Ministry of National Defence on August 15th (Ministry of National Defence, 2003). However, there is no clarification of this statement. As stated during the interviews, many people were unsure if their jobs were considered “essential”. (Interviewee 4, 8 and 9). This statement came from a provincial mandate, however the City of Toronto did not send out a clarifying news release for its citizens. This may have helped reduce the confusion.

The next two questions regarding public transportation and food safety both had multiple releases issued by various agencies. Throughout the week, the Toronto Transit Commission, VIA rail and Air Canada all provided news releases updating their respective situations. In addition, there were four separate agencies that issued news releases about safe food handling. However, as stated during the interviews, some people were without food due

to improper food storage and were calling Access Toronto to see what agency could help them (Interview 8). There were some problems that the City or Province did not foresee and advertising a telephone number for people with questions such as this was done.

Residents were asked not to run air conditioners as a conservation measure. To help residents stay cool, the Canadian Red Cross ran cooling centres. This was broadcast August 15th, and the City of Toronto opened splash pools at citizens request as well as advertised cooling centres to prevent heat related illnesses. The City of Toronto also issued a press release with fifteen different precautions to take to avoid heat related illnesses (City of Toronto, 2003b). As the electricity grid slowly returned to normal, there were 18 news releases asking people to conserve energy, with only one of the 18 releases not giving information on how to conserve electricity. The final two questions, what governmental agencies are open and are hospital schedules back to normal were answered in the news releases. Both the Provincial Government and the City of Toronto provided updates daily on what was open and what governmental services were available. In addition, the hospitals also provided daily updates to keep the public informed.

There was a lot of unknown information relating to the restoration of power and authorities were forthcoming with this information. However, some information that the authorities did know was not being broadcast to the public. There were no news releases stating the safety of the water supply or

nuclear reactors. In addition there were no releases reassuring the citizens that terrorism was not a cause of the blackout. The cause of the blackout was unknown for the first day, but when it became clear that terrorism was not involved, this could have been broadcast. There were two other problems that were not addressed in the news releases. Some people were stranded away from their homes and in the days after the blackout and it was unclear who was considered an “essential worker”. These two problems can be considered unknown information to the citizens, not authorities. However, this means that there was insufficient communication between the citizens and authorities because of these two problems that the authorities did not recognize.

5.5.6 Scientific Language/Statistics

Only nine news releases used any type of scientific language or statistics. Hydro was the only category that used scientific language on a regular basis. All but one of these news releases was from the Independent Electricity Market Operator (IMO). The last news release was from the Federal Office of Critical Infrastructure Protection and Emergency Preparedness (OCIPEP, 2003c). However, this organization cited IMO in their news release. These news releases used words such as transmission lines and voltage. The agencies also gave statistics, such as the number of megawatts of power that was currently in use. These news releases did compare statistics. For example, IMO gave examples of the normal megawatt demand for a day and compared it to what the current megawatt use was (IMO, 2003d). There

were no explanations regarding how electricity works or defining terms like megawatts. If this was unclear to people reading the news releases, information would have to be sought from an independent source to clarify details. When this occurs, there is an increase in the possibility of developing misconceptions or having a preconceived notion about the current state of power and misinterpreting the data that was provided. Also, if the information provided through the news releases is not understood, the importance of the need to conserve after the blackout may not be understood by the people who read the information.

5.5.7 Second Language Availability of News Releases

Only the provincial news releases informed the public of the availability of their press releases in a second language. Even then there were only five out of 24 press releases, all from the Ministry of Community Safety and Correctional Services, that advertised the availability. There was a link on their web page in a corner with the word *français*, directing people to the news releases. There was no indication that news releases were available in another language on the releases from Canada News Wire. The only other category that indicated there was help for people who did not speak English was a release from the City of Toronto. However, the press release itself was not available in a second language, the City of Toronto was advertising its 211 information number and mentions that this line is multilingual.

According to interviews done with people involved in writing and relaying news releases, the reason for the lack of press releases available in other languages was due to the fact that the information was changing so quickly (Interviews 1, 3,4, 9,10). There was no time to have people translate this information. A lot of information during the blackout that was received by minorities was translated by people in the broadcasting industry. Most radio or television stations which broadcast in different languages, received the press release in English. The release was then translated to another language by that station to be given verbally for their listeners. Perhaps future studies could be undertaken to determine if the information coming from English speaking authorities did make it to minority language homes and it was understood. Questions should be raised regarding the acceptability of the authorities practice of depending on minority language media to relay the information.

5.6 Discussion

From the results of this analysis, it can be seen that in the period during the blackout and the immediate aftermath, the main theme of the news releases focussed on safety, transportation and communication. As the crisis continued, there was a shift to updating information for the public in news releases. On August 15th, there were 20 out of 35 news releases that provided an update on either the power situation, hospitals, communication or transportation. There was also a shift to emphasise power conservation from various agencies. On August 15th, the Toronto Hydro Corporation, ICLR, IMO and the Onario

Ministry of Community Safety and Correctional Services issued separate news releases encouraging conservation. The peak number of news releases on conservation occurred on August 17th, with nine releases. However, as the blackout restoration efforts continued in the days after August 17th, there were fewer news releases in total, but the majority of these news releases were on conservation of energy.

When the news releases were broken down into categories, the provincial news releases met the least FEMA criteria overall. In contrast, the category of other, which included businesses and groups such as the Canadian Centre for Emergency Preparedness and the Institute for Catastrophic Loss Reduction met the most criteria in this analysis. Overall FEMA's criteria for inclusion in a news release was adhered to more than the goals of risk communication. Regarding second language availability, the Province was the only organization to state how a news release could be found in French. This does not deal with people who do not speak either English or French. Only four news releases addressed possible misconceptions people may have. One release was from the hospital category, one was from the other category and two were from the provincial category. More news releases did address the issue of uncertainty. Fifteen releases addressed this problem. Five releases were from transportation, five were from the hydro category, one was from the police category and one was from the Humanitarian/volunteer category. However, the safety of the water supply, threat of terrorism and nuclear reactor

safety as well as the definition of an essential worker and measures taken to help people stranded were not discussed in news releases. In each of these cases the information was known to the authorities, but they did not broadcast this information via news releases. This could have contributed to future trust issues between the authorities and the public because the public may have assumed that the authorities were trying to hide certain information.

Only nine news releases used scientific wording. This wording was used only with reference to hydro related news releases. There were two categories outside of hydro who used scientific wording, one from the province and one from the humanitarian/volunteer category. But both of these used scientific wording and statistics related to hydro. Every news release which used scientific wording also used statistics to back up the information.

There is no generally accepted guideline for writing risk communication news releases. FEMA does outline some guidelines, but they are not followed by many agencies. Very few agencies addressed misconceptions. However, this may be due to the fact that there is uncertainty as to what misconceptions were present in this type of emergency. As emergencies unfold quickly, there often is not time to try to determine what misconceptions people have. Also, transportation and hydro agencies were the most likely to address uncertainty because the questions posed would most likely require an answer that they were unsure of. The agencies were not going to guess when the hydro would be back on.

Most news releases regarding the blackout did not come in multiple languages due to the immediacy of the information that needed to be given. Most agencies that gave out releases depend on minority language media to interpret the release and give information to people who do not speak language. This may be a potential problem for emergency communication.

Different agencies independently issued news releases and as a result, there was some overlapping of information. For example, there were four agencies who released information about food spoilage on August 15th, 2003. In addition, there were two points of inconsistency regarding their content. There is little time for organizations to coordinate their messages in the aftermath of a disaster and it is better to have information repeated than to not hear it at all. However, this information must be consistent. Also, when the same message is being repeated by multiple agencies, such as the message to conserve, the message seems more credible and important to the general public. However, the City of Toronto was able to provide telephone hotline numbers for the public to call if they had any questions or concerns quicker than the province. Perhaps the province should attempt to attain an emergency hotline number that is only activated in emergencies, and is not used for any other communication.

There were provincial agencies, the City of Toronto, and hydro agencies all giving news releases on the importance of conserving power. Overall, the important messages were given out by multiple agencies but it was

not determined if the public received these messages.

Within Chapter 7, recommendations are made to utilize FEMA's seven pieces of information that should be in a news release. Each piece of information relates to another piece, making a cohesive statement regarding the message the agency is attempting to send. Without the headline and short statement to catch the reader's attention, some important information may not be read because the reader may misinterpret the headline. In addition, the follow up, importance and summary of information give the reader more substance to ensure they understand the information and do not interpret it incorrectly. Finally, the aim of the organization allows the reader to determine the trustworthiness of the organization and the contact information can show the reader where they can go to attain more information if needed. I feel that all seven criteria should be used in news releases all the time. News releases can still be short, but this way there is less danger in the reader ignoring the release or misinterpreting the information.

The next chapter discusses additional information that was obtained through semi structured interviews with various agencies who were involved in emergency risk communication to the public during the August 2003 blackout.

Chapter 6 - Analysis of Interviews Conducted with Various Agencies

6.1 Background

Because of the unexpected nature of the blackout, the general public could not be warned in advance and authorities needed to decide what emergency information would be passed to the general public as the event unfolded. This was done through the Emergency Operations Centre, a central command centre. Media helped spread the messages given to them by the Emergency Operations Centre, often in the form of news releases as elaborated in Chapter 5. However, the news releases do not tell the complete story as to how messages were constructed.

As a complement to the structured analysis of news releases, interviews were conducted in order to further explore how the various agencies communicated information to the public in the aftermath of the blackout. This chapter involves an analysis of interviews with people who were involved in disseminating emergency preparedness information to the City of Toronto. There were 13 interviews done with three different types of agencies; the City of Toronto authorities; humanitarian or volunteer agencies and the media. Due to confidentiality agreements, no agencies can be given any identifying characteristics in this thesis. However, in Appendix C, there is a non identifying list of agencies interviewed and each interviewee's title in the company. For reference, the number beside each description in the appendix is indicated in brackets, e.g., (interview 4) in this analysis.

This analysis attempts to determine if the agencies were giving information in the proper ways as suggested by the literature review (Chapter 2). The same protocols used

to analyse the news releases are used in this chapter to structure the discussion of the interview findings. The first section considers how agencies determine what information should be in a news release; these are compared to FEMA's seven criteria. The next section discusses public education and risks- two goals of risk communication as identified by Rowan (1991). Then, four additional issues identified in the literature reviews- misconceptions, uncertainties, use of scientific language and language gaps are discussed. The final section discusses three issues not mentioned previously in this thesis that emerged during the interviews. The issues include what methods were used to disseminate information to the public, what information was given to the public and what information did the public want to know that was not being disseminated?

It should be noted that some of the interviews were conducted with agencies that did not issue press releases themselves but rather allowed Corporate Communications Toronto to release information for them. Corporate Communications Toronto is a division of City Hall that releases all information regarding current issues and services as well as programs and policies (Corporate Communications Toronto, 2004). In these cases, senior personnel from the various agencies met at the Emergency Operations Centre to determine what needed to be done. Corporate communications then issued news releases based on input from these agencies. In other cases, news releases were issued directly through the individual organizations

6.2 Information that Should be in a News Release

FEMA suggests that news releases related to emergencies should have seven components- a headline, a short statement that summarizes the message, follow up

materials, a statement of why this information is important, a summary, information on the aim of the organization releasing the information and contact information.

Interestingly, none of the agencies interviewed stated that they followed FEMA's guidelines or any set pattern in writing a news release. However, one person from a communication agency stated that in an emergency situation, the following information should be included; " what the emergency is, if the emergency is currently occurring, what to anticipate and what can be done to prepare or protect yourself".

Interviewee number 12, from a humanitarian organization stated that it is important to have a press release issued as soon as possible after the emergency occurs. The only requirements for press releases from this agency is that more than one person must read the release. In addition, if multiple news releases are being issued in a day, they include the word 'revised' at the top of the release so the media will see that it is a new message.

The media agencies that received the press releases had different ideas on what should be included in a press release. One individual from a media agency (Interview 1) stated that news releases must include the following information; who, what, when, where and how this information affects the city. A second person from the media stated (Interview 3) a good news release will provide background information solely for the reporters and there should also be a media contact telephone number at the bottom of each news release in case someone would like clarification. A third media interviewee (Interview 2) stated that the basic facts about the emergency should be included and this information should be dealt with honestly. They also stated that they often do not utilize

news releases arguing that releases are more appropriate for smaller organizations that do not have enough reporters to send to press conferences as well as the other newsworthy events that are occurring at the same time. The same person also stated that when they look at a news release, they look for a catchy title that states there is new information on a subject. They also look for the time that something will be occurring or if additional information will be passed out to members of the media only if they attend an event such as a press conference. However, one problem with the releases during the blackout, as stated by this person, indicates that the press releases did not give enough information for the reporters to clearly understand the topic. The press conferences were much better, because reporters could ask questions for clarification.

One member of the media did state that they found the news releases could be vague at times (Interview 2). This may be the reason why FEMA states that there should be a background paragraph that informs the reader of any other information that may be required to understand the news release better. In addition, some elaboration on the importance of the information in the news release should be included. Only 50 out of 81 news releases included these details. (See Chapter 5 for more details) Perhaps this is why this media person felt news releases did not give enough information.

Not one agency indicated that they used any written set of criteria for preparing a news release. All organizations felt that it was important to have more than one person read the release, but information that is familiar to the people reading the release may be confusing to others. Enough information may not be getting to the media, and the media may have to take extra time to clarify news releases, which means that the public will not

get the message as quickly as possible.

6.3 Education

The second theme analysed was public education as adapted from Rowan's (1991) goals of effective risk communication. Did the agencies attempt to educate the public on risks from a blackout as well as other possible hazards? All organizations, except for the media, had general emergency preparedness information available to the public. Most agencies use emergency preparedness documents from OCIPEP (Office of Critical Infrastructure Protection and Emergency Preparedness) and the Provincial Government. Some agencies indicated that they write their own emergency preparedness information about topics that their respective agencies would normally handle.

Most agencies rely on shopping mall displays, or public appearances to inform the public that emergency preparedness information is available (Interviews 4-13). A person from a City of Toronto communication agency stated that often different departments cross reference information (Interview 8). If one department is attempting to increase public awareness of a specific issue and some part of emergency preparedness fits into the campaign, that department will give out emergency preparedness information as part of their campaign. Departments do share information and attempt to distribute this information as much as possible. As well, links to emergency planning information are posted on multiple departmental web sites.

The City of Toronto authorities and the humanitarian agencies both stated that advertising through the media is another way to publicize that emergency preparedness information is available to the public. While the humanitarian agencies interviewed

(Interview 12, 13) do not have a budget for advertising, a lot is done for them free of charge through the media. If information from the humanitarian organizations contains newsworthy content, the media may decide to broadcast the story.

One last question regarding education was, “What type of people typically ask for emergency preparedness information in times of normalcy?” One humanitarian agency and three City of Toronto based agencies were able to answer this question and stated that it was mainly organizations that ask for this information, such as teachers, Girl Guide and Scout troops, as well as some volunteer organizations (Interview 13). Many agencies did not know who was requesting this information.

Finally, most of the authorities interviewed mentioned increased attempts are made through the media to publicize emergency preparedness information in the aftermath of a disaster when the general public is more receptive to receiving emergency preparedness information (Interviews 4-11). When asked if there was an increase in the number of people looking for emergency preparedness information during and in the initial two months after the blackout, the people who were able to respond to the question indicated that there was an increase. However, there were only three news releases that attempted to provide general emergency preparedness information to educate the public on generic disaster planning.

6.4 Misconceptions

Dealing with misconceptions is an important aspect of effective communication as outlined in Chapter 2. The question “How do you deal with people’s misconceptions? Are you aware of them?” was asked. Seven interviewees were able to discuss four types

of misconceptions (Interviews 4- 9 &11). The first is; the individual's perception of an occurrence makes it a disaster or not. During the August 14th blackout, many people held barbeques, met neighbours and had small parties. For these people, the blackout was not seen as a disaster. Some people felt differently as businesses lost money and some people are dependent on electricity for survival. As well, another interviewee mentioned that for some cultures, disasters are just events that occur (Interview 13).

A second misconception, some people think a disaster will not happen to them, was also mentioned. It is interesting to note the literature suggests that while people feel they are more at risk in society today than in the past, they also feel that disasters will not happen to them (Slovic, 1994). As well, it was stated by interviewee number 13, from a humanitarian agency, that people see others affected by disasters such as flooding and think that it was their choice to live in a flood plain and they should have expected it. Finally, another misconception related to perception is that once the clean up is completed, the disaster is over. However as the interviewee pointed out, there are often long term impacts that can continue long after the media coverage is over. Some issues take years to resolve, but often these long term impacts are not widely publicized. One beneficial impact of the blackout in Ontario was the blackout highlighted weaknesses in existing emergency plans and encouraged businesses to update emergency plans (Toronto Star, 2004).

The third type of misconception mentioned deals with deviant behaviour in a disaster, such as looting. Chief Fantino, of the Toronto Police Services discussed how the police force increased the number of uniformed officers to deter criminal behaviour

during the blackout (Toronto Police Services, 2003). There were 38 arrests attributed to the blackout, but no looting was reported and widespread criminal activity did not occur (Toronto Police Services, 2003). However, disasters do occur where people do take advantage of the chaos. During the 1977 New York City blackout thousands of stores were looted (Time Magazine, 1977).

The most frequently mentioned misconception was regarding the use of 911. It was mentioned in three separate interviews as well as in multiple news releases (Interviews 4,8 &9). Interviewee number nine stated that during the blackout, many calls were made to 911 about non emergency matters, such as to report power outages within the city. This may result in fewer people connecting with 911 who have a valid emergency. Interviewee number four suggested that a change in the way the 911 system is advertised may help reduce the number of repeat phone calls. Because 911 has been marketed as the place to call if there is any emergency, perhaps clarification of this statement is needed so true emergencies can be responded to better. During the blackout there were multiple press releases issued asking the public to refrain from calling 911 to report power outages and other non emergency information. However, there was not a clear designation of what was considered an emergency.

There were two misconceptions brought up regarding cellular telephones and disasters (Interview 7 & 13). The growing number of cell phones in use, means that it is more likely that people will be near a telephone to report any accident or problem to 911, as with World Youth Day, in Toronto where hundreds of thousands of people gathered in Downsview Park in 2002 (WYD, 2002). During the event, there were people calling 911.

However, because the area was so large and there were so few landmarks to identify where the caller was coming from, dispatchers receiving the calls were unsure if each call was for a different person, or if there were multiple phone calls for the same injury. Cellular networks can also become overloaded and stop working. This has happened with the terrorist attacks of September 11th, 2001 as well as during the blackout (CNET News, 2003).

Only two people interviewed suggested ways to reduce misconceptions (Interviews 4 & 9). Interviewee number nine stated that education is a key resource in battling misconceptions. Everyone must be allowed to discuss their point of view and then the educator needs to clarify the person's beliefs by stating the correct information. The second person discussed the importance of clarifying misconceptions because if people are unable to find a clear and concise answer, they will come to their own conclusion. Even though misconceptions are known to the authorities interviewed, none stated that they are actively attempting to reduce misconceptions through education.

6.5 Uncertainty

The review of the literature in Chapter 2 provides many examples of authors who agree that the dissemination of unknown information is crucial to ensuring public trust (Frewer, 2004; Rowan, 1991, Bier, 2001). The three different types of agencies interviewed all approached the idea of unknown or uncertain information in a disaster differently.

As stated by one person from a first responder agency, as well as in the article by Rowan (1991), it is important to show the public that the authorities are not withholding

information (Interview 6). This person stressed the importance of not making up information or trying to circumvent the question. This can lead to mistrust between the agency and the public. One interesting contrast in credibility was discussed by an interviewee in the news media who stated that timely and accurate information was not given by the province (Interview 3). However, they did not state what type of information was withheld or why it was withheld. This person claimed that the municipalities had the information quicker and were able to report this information to the public. Giving timely and accurate information is another component of trust and credibility. However, all authority agencies stated that when writing news releases, information that is unknown is never mentioned.

Media outlets had a different opinion on what to do when faced with uncertainty. Sometimes there are differing accounts as to what is actually occurring during a disaster. Both accounts are reported with the disclaimer that there is uncertainty about which report is accurate. One reporter from the news media stated the importance of confirming the facts with more than one source (Interview 2). There are multiple people in the Emergency Operations Centre, but they are concentrating on getting the information straight. So is it counted as one source? Because the blackout spanned Canada and the United States, it was mentioned that Canadian members of the media had difficulty getting in touch with American officials. Telephone numbers were either out of date, or unavailable. It was also found that some ten digit telephone numbers for citizens to call for information were advertised for the residents of Toronto. However, the telephone numbers were for the Greater Toronto Area, which requires a different area

code.

There was a lot of speculation occurring in the early hours of the blackout, when different politicians on both sides of the border were giving different reasons why the blackout occurred (CBC, 2004). Canada's Minister Responsible for Emergency Preparedness, John McCallum, stated that the blackout was caused by a fire in a Pennsylvania power plant. However, Foreign Affairs minister Bill Graham stated that a Niagara Falls, New York power plant was struck by lightning (CBC, 2004). Interviewees who discussed this, denounced the speculation and stated that it caused officials who speculated to lose credibility (Interviews 1,3,4,8,9).

A humanitarian agency (Interview 13) stated that if there are unknowns, they are not discussed. These agencies deal only with known information by only giving information to the public that would help them get through an emergency situation. These agencies also stress the importance of only releasing information if it has been confirmed. This may present the appearance that the agency is not being forthcoming, but releasing unconfirmed information that may prove to be false can be very damaging to public trust.

The organizations interviewed each had a different approach to the issue of unknown information or uncertainty. The City of Toronto authorities interviewed stated the importance of telling the public if they do not know the answer (Interviews 4-11). The media agencies stated confirming the source or attempting to find people who will speculate. The humanitarian agencies discussed the importance of only dealing with known information (Interview 12 &13). Honest communication between authorities and

the public can help build and maintain trust. The authorities must be seen as competent. If the authority attempts to guess answers and is not truthful that there are unknowns, trust may be broken (Lofstedt, 2003).

6.6 Scientific Language

There are two methods of thought regarding scientific language in risk communication. Some authorities refrain from using any scientific language to avoid confusing the public. Others feel that giving this information allows people to make up their own minds. Each organization was asked if they use scientific language in when communicating to the public. Every agency stated that they try to avoid any use of words that may be difficult to interpret.

Authority agencies interviewed, stated that when they write information for the public, they attempt to avoid using any scientific language at all (Interviews 4-11). For example, during the blackout, there was a lot of scientific information regarding hydro usage that was given to the public through the media. Before this information was released to the public, writers would take the information and simplify it. Their information would be filtered so the general public could understand the information. One agency mentioned the importance of using this simple language because there can be a language barrier and scientific wording may confuse some people (Interview 5).

During the blackout, there was some scientific language given to the media by hydro agencies to highlight the amount of electricity used as well as to provide an overview of what caused the blackout. In this case, the media stated that they were able to either ask questions at a news conference, or telephoned a source to help make the

information clearer. One member of the media stated that once they have received clarification they will utilize such tools as analogies to make the language easier for the average person to understand (Interview 1). Another member of the media suggested that some scientific language may actually help illustrate a story better (Interview 2). In many news releases, numbers were used to illustrate how much hydro was being consumed by the people of Ontario during the appeal to conserve. For example, the IMO (Independent Electricity Market Operator) issued a release stating that the maximum amount of electricity generated on August 18th, 2003 was estimated at 19, 700 Megawatts. Typical electricity use on August 18th is between 22, 000 and 24, 000 megawatts. (IMO, 2003h). This media person stated that this type of visualization is a great way for people to understand how much their conservation efforts were working. In addition, these numbers can be seen as an update on the current situation.

However, the media also stated that there was one problem with using numbers. In the blackout, different members of the media were giving out different numbers for the same concept. Because there were news conferences, press releases and other ways to disseminate information to the public, different people would be in charge of giving out the numbers and on occasion the numbers would be incorrect. This media interviewee understood that this was a quickly evolving story and the numbers were changing constantly (Interview 3). Also members of the hydro services were working long shifts, with very little sleep and made errors. This person felt that the public was forgiving of these errors because most of the information was correct. In addition, an agency within the City of Toronto discussed the importance of having all news releases distributed

internally to the various agencies, boards and commissions so every person within the organization will have the same information. This aspect of consistency also is an important factor in trust. Different authority agencies who give out conflicting information can be seen as untrustworthy. As stated by Frewer (2004), the public may then actually strengthen their beliefs in the reverse direction from the information that the authorities give.

The humanitarian agencies avoided using any scientific language if possible. One person interviewed stated that situation reports are given to the agency, but these already have most of the scientific language removed and these reports are reader friendly (Interview 13). If members of this agency write a release, they are careful to write the information in layman's terms. The humanitarian agency will go to the media with the information that is written without scientific language. In addition, the humanitarian agency stated that scientific language is not used because, to catch the listener or reader's attention, the information has to be very short and catchy (Interview 13). Often, if there is a lot of information given, people will not listen to the entire piece and will only focus on a segment. In addition, two people who were interviewed, one from the media and one from a humanitarian agency both stated that different agencies should use the same terminology, as not to confuse people (Interviews 3 & 13). One interviewee discussed Rocky Lopes (2002) paper on the Eleven C's of Community Disaster Education. Lopes (2002) states that some people may have difficulty distinguishing between the words 'preparedness' and 'mitigation'. Mitigation may mean something different to a disaster professional than to the general public. Two other interviewees agencies stated the

importance of using the words, “chance of” something occurring instead of “probability” because of the different connotations of each word (Interviews 8 & 9). There is a program in the United States, called the National Disaster Education Coalition (NDEC, 2004), which attempts to persuade different agencies to use the same terminology when writing emergency communication. However, this project is not planned for Canada.

Overall, there was very little scientific language used in public information provided after the blackout. If it was used in technical briefings, the speaker would break the information down into easier terms. If not, a member of the media would most likely ask them to explain it in layman’s terms. Scientific language was avoided for the most part. As one person stated, the idea is to avoid writing anything you would not say in conversation.

6.7 Other Languages

It is vital that agencies who deal with getting emergency information to the public are able to communicate with people who speak different languages. Most agencies had something in place to communicate with people who speak other languages, such as a subscription to a translation service. If someone calls an agency and cannot speak English, a translation service is accessed. For emergency situations which take place over a longer time span, this service works fine. For example, during the Severe Acute Respiratory Syndrome (SARS) emergency in Toronto, transcribing text documents into other languages was done.

During the blackout there was so much information being broadcast and the information was changing so quickly that translation services were not used. All agencies

interviewed stated that there was no time to do translations. Most agencies who issued information to minority language communities gave the information to a minority language newspaper or radio and these agencies translated the information to give to the public.

Another general problem about communicating with people who speak other languages emerged from these interviews. A first responder agency noted that people who do not speak English may not feel comfortable calling a telephone service because they are afraid they will not be understood (Interview 4). If these people do call, the person who received the call must be able to determine what language is being spoken. Most people are able to at least state their native language to the person who received the call.

With respect to general emergency preparedness information, all agencies stated that they had prepared material in numerous languages. Some agencies specifically mentioned if a certain area is targeted for proactive emergency planning and a large number of people in that area speak another language, there will be special translation services done for this area. One agency mentioned that if someone is looking for information about a specific topic, translation will be done in a particular language for that person (Interview 9).

As stated in the literature review, there have been disasters in the past where certain language groups have not been given emergency information because authorities did not specifically provide information in their language (Blaikie, et al., 1994). Also, people who cannot speak English clearly may be reluctant to call and ask for emergency

information. These people may be interested in receiving emergency information, but a language barrier is stopping them. Perhaps advertising that there are translation services readily available for people who need it may be helpful.

6.8 New Themes

New problems in risk communication were discovered through the interviews conducted for this thesis. To properly explain these new themes, it is important to understand how the authorities found out about the blackout. If a disaster occurs with no warning, disaster management professionals must, on a moment's notice, be ready to help the city come through the disaster as smoothly as possible. In most technological disasters, such as a chemical spill, no warnings are given. In the case of the blackout, the City of Toronto authorities found out about it as everyone did. The authorities interviewed all stated that they first assumed the power failure was a local problem and would be resolved quickly (Interviews 4-11). Most of these people first heard the news that the blackout was widespread through talking with others. No agency indicated that they were heard the news about the extent of the blackout through an official source, such as a news conference or from the mayor.

New ideas regarding communication and emergencies were revealed during the interviews. One of these themes, was the sources of information that gave messages to the media and the public. Another theme that evolved from the interviews related to the role that the media played in the blackout. The third theme revolved around the difference between Canadian and American methods of dealing with an emergency. The next three sections discuss these new themes discovered through the interviews.

6.9 Dissemination of Information to the Public

There were specific topics regarding safety that needed to be given to the public. The Emergency Operations Centre was the initial source of all official information during the blackout. All humanitarian and first responder agencies received information through the Emergency Operations Centre. The media used this centre to decide what information to give to the public, in addition to gathering information through independent phone calls and interviews with the general public. However, consistency between agencies in the case of the blackout, only refers to agencies within the City of Toronto Corporation. Humanitarian agencies are not included in this web of information dissemination.

The City of Toronto set up a telephone service to provide answers about the blackout for the citizens of Toronto. Media interviewee number three stated one problem with giving these telephone numbers to the public. The City of Toronto had amalgamated in 1988 and some telephone numbers were advertised to be for the Greater Toronto Area, but were actually just for the City of Toronto. This is another problem related to consistency throughout organizations. The general public must be able to trust that the authorities are giving out telephone numbers that are correct. In future emergencies, members of the public may recall that there were some problems with correct telephone numbers in the blackout and may be reluctant to call for information.

6.10 Information Released to the Media

One question asked during the interviews asked, “what kind of information did your agency give to the public? According to the interviews, the information that the

authorities initially gave to the public regarding safety includes: treating intersections as four way stops, looking in on elderly and disabled neighbours, risk of food spoilage and using caution when using candles (Interviews 1-12). While most of these safety messages were given out to the public from different agencies, the messages themselves originated from different agencies within the Emergency Operations Centre. In addition, there were some messages specifically related to the blackout. These messages involved information about rolling blackouts and conserving electricity. According to the interviews undertaken, there were also messages such as; what facilities are closed in the City of Toronto and when the power may come back on (Interview 8). The last type of information that was given out was updates. These updates included the details regarding what the authorities knew and what they did not know.

Members of media organizations would then give information to the public (Interview 2). One person described this as a 10 minute cycle of information. The same information would be repeated every 10 minutes on radio and television. For example, toll free numbers were repeated for the people listening as well as information on the state of traffic, the TTC and when the power was expected to come on. In the very early stages of the blackout, one member of the media discussed how information was being pieced together through discussions with members of the public who would call into the station or who would be interviewed on the street. However, the Emergency Operations Centre was still the main source of information as well as an official source.

Once the Emergency Operations Centre was running, most media outlets came to the centre to obtain new information to pass along to the public. The television and radio

stations also attempted to carry news conferences live to give information directly to the public. As the blackout continued, one radio station stopped all programming, except the updates and used a call in method where members of the public would call in and discuss how they were coping with the blackout. A member of this station referred to this as giving comfort to the listeners (Interview 2).

One criticism of the media came from an interviewee who worked in Toronto, but lived outside of the city (Interview 5). It seemed to them that once the City of Toronto had its power restored, the crisis was over. There were many surrounding areas that still did not have power. The different Toronto media outlets are carried throughout southern Ontario and where the City of Toronto may have been stating the crisis had passed, other areas may have disagreed.

An additional criticism about the Emergency Operations Centre came from two members of the media. Two media personnel both discussed the hard time they had finding the centre (Interview 1 & 3). The address is not published and the building is unmarked. One reporter mentioned that it would be a good idea for their media outlet to have a booklet where all important information is stored, so in future emergencies, there would be a booklet with this information near at hand. One recommendation to improve risk communication made in Chapter 7 involves keeping vital information such as this up to date. People may switch jobs and telephone numbers often change on a regular basis, making telephone numbers hard to keep up to date. Because the media play such a vital role in giving information to the public, maybe they should be more involved in the emergency planning process through the Emergency Operations Centre or the City of

Toronto emergency plan.

6.11 Public Inquiry for Certain Information

There were some issues that were raised by the public in the aftermath of the blackout. Since the public was not surveyed in this thesis, an indirect approach was taken by asking interviewees what type of inquiries they received from the public. The first issue was mentioned by a communication agency that dealt with taking telephone calls from the public. The issue was centred around what was or was not open in the city. One interviewee stated that there were conflicting reports as to which tourist spots were open (Interview 8). In addition, people were calling the City of Toronto and asking if transportation agencies such as VIA Rail and the Pearson International Airport were open. These agencies had to find out the answers by calling these places. In some cases, there were recorded telephone messages from these agencies that did not mention the blackout at all, and people were forced to call different places to find the answers. This same agency also felt that the public telephone calls about the City of Toronto's wading pools influenced the City to open the pools. Many people were contacting the city and asking if the wading pools would open because they had young children and no air conditioning. The pools were opened soon after the agency reported the large number of telephone calls to the authorities.

The biggest issue surrounding public information emerged from three different authority agencies interviewed (Interviews 4, 8 & 9). It was the statement given by the Premier of Ontario that only people who were considered "essential services" were to report to work. Many people were unsure if they were considered essential services or

not. The only suggestions the people interviewed could give was to tell the people to call their place of employment to see if there was more information available, perhaps through a recording (Interviews 4 & 8). One person interviewed did discuss a new trial system that was being distributed throughout an agency as a result of the blackout (Interview 8). Each department has a separate voice recorded message that can be recorded from anywhere and if an employee would like to know if they are considered essential, they telephone this specific number and receive a voice recorded message. Another person interviewed stated that one frontline agency in Toronto sent out a message that all employees of this agency were considered essential, not just the first responders (Interview 4). However, this was lost in the message by the Premier of Ontario, who stated that all non-essential employees were not to report to work. It is most likely that people may have decided that the Premier's message took precedence over information released by the City of Toronto stating that all employees of frontline agencies are considered essential.

This section of the thesis demonstrates that the public was not entirely satisfied with the information being communicated. City of Toronto officials attempted to ensure that citizens were able to find out information by providing emergency telephone numbers to the public (Access Toronto, 2004; Community Information Toronto, 2004). However, private companies often did not provide this service, and many people were unable to obtain needed information. In addition, there were problems between provincial and municipal authorities in delivering the message that only "essential" employees report to work. In the future this problem can be anticipated by companies

and direct communication between employers and employees can help alleviate this problem.

6.12 Governmental issues in Emergency Management

The final theme that emerged from the interviews, came from three interviews; two from first responder agencies, and one from a communication agency (Interviews 4,5 & 8). They discussed the differences between the Canadian and American methods of emergency management. While American methods can be considered top-down approaches, with heavy federal involvement, the Canadian method can be considered a bottom- up approach, with emergency preparedness starting with the individual (OCIPEP, 2004a). As a problem escalates, the municipal, provincial or the federal governments are brought in only as needed. In the case of the blackout, it was declared a provincial emergency and the provincial government took over the response (OCIPEP, 2004b). There was conflicting information at the outset of the disaster with differing reports coming from the provincial and federal governments regarding the cause of the blackout.

Secondly, two people interviewed mentioned that the provincial government did not act fast enough in getting important messages out to the public (Interview 4 &8). Some provincial agencies did not update their telephone answering systems to include information on the blackout. Because this was a provincially declared emergency, information was supposed to be passed from the province to the municipalities. Three people interviewed felt that the provincial agencies were not as quick as municipalities in collecting and disseminating information (Interview 4,5 &8). Overall, the people interviewed who mentioned this problem with the provincial response to the blackout

seemed to think that there can be improvements made to the province- wide handling of a future large scale emergency.

6.13 Conclusion

The findings from interviews with 13 different people within the City of Toronto authority agencies, media outlets and humanitarian agencies, who were responsible for communicating information during the blackout, show that there were issues regarding effective emergency communication during the blackout. Firstly, no agency interviewed uses a set pattern in writing a news release. In addition, it was found that there is emergency preparation information available from each first responder agency, communication agency as well as humanitarian agency. However, very few citizens are interested in obtaining this information except in the aftermath of a disaster.

Secondly, seven people interviewed were aware of misconceptions and how they factor into emergency risk communication (Interviews 4- 9 & 11). There were four types of misconceptions mentioned. The first one was that some people felt the August 14th blackout was not a disaster. The second misconception stated that sometimes people feel a disaster will happen to others, not to them (Slovic, 1994). Thirdly, it was mentioned that there seems to be a fear of criminals looting in an emergency situation. The final misconception mentioned was the problems with the use of the 911 emergency telephone system. However, most agencies indicated that they did not address misconceptions in their risk communication to the public.

Thirdly, there was still a problem dealing with unknown or uncertain information after the blackout. The media may be inclined to handle unknown information differently

than other agencies. Humanitarian, first responder and communication agencies all stated the importance of releasing only known information, while the media stated they would publish conflicting information and uncertain information.

All agencies interviewed stated the importance of not using scientific language. However, the media would use scientific language for illustrative purposes, only if it can be put into layman's terms. In addition, scientific language would be very difficult to understand for people who speak only basic English. There are ways to get information to people who speak other languages, but in the case of the blackout, the agencies which gave out information stated that it was too difficult to continually give out information in other languages.

Finally new themes not found in the literature review were uncovered during the interviews. The first theme was the method used to give information to the public. Secondly, the information given to the public was based mainly on safety, but the general public had other questions that were not being answered by the authorities. Finally there were some intergovernmental communication issues during the blackout. Six interviewees stated that they felt the province was not providing information as fast as it should during an emergency (Interviews 4-8, 9 & 11).

All of these themes revealed certain imperfections in the City of Toronto's emergency communications strategy. The recommendations that flow from these problems are outlined in Chapter 7.

Chapter 7- Summary of Findings and Recommendations

7.1 Discussion of Thesis

In any disaster, being adequately prepared can help lessen the impacts on a community. In a well prepared city, an emergency response starts before an actual disaster occurs. One of the first steps to being prepared for a disaster is to have a plan that encompasses the four phases of emergency management; mitigation or planning stage, the preparation stage, the response stage and finally, the recovery stage. Each phase must incorporate educating the public about personal responsibility before, during and after a disaster. Effective risk communication is critical.

This thesis analyses the risk communication methods used by various City of Toronto authorities in response to the August 14th, 2003 blackout in Toronto. In order to critique the communication methods used, a review of the current risk communication literature was performed. The outcome of this review provided a basis for evaluating news releases related to the blackout as well as interviews undertaken with various authority agencies. There were six criteria used for evaluation based on the current literature. The first criteria, the five goals of risk communication mentioned by Rowan (1991), were used as a benchmark to determine if news releases used these five pieces of information to communicate risks. Secondly, as stated on the FEMA web site, this organization has outlined seven pieces of information that should be included in writing effective news releases. These seven components were examined in 81 news releases and summarized in Chapter 5. Thirdly, uncertainty or unknown information was discussed. It is extremely important to convey information to the public and if there is unknown

information to state this. If the public thinks that the authorities are not disclosing all information, this can lead to mistrust between the public and the authorities. Fourth, the use of scientific language was analysed. There are some authorities who indicate using scientific language is helpful to allow the public to make up their own minds regarding the risk. There are others who state that the use of scientific language leads to people misinterpreting statistics or certain scientific words such as “probability” (Bier, 2001). Fifth, misconceptions were also discussed in the literature and the analysis. The existing knowledge that people have about risks, hazards and disasters may be slightly inaccurate and when these misconceptions are not addressed, they may continue to misinterpret new information. Sometimes, if the new information does not fit into the existing information, it is discarded (Lichtenstein, 1987). Addressing misconceptions is an important part of emergency communication. This was analysed in the news releases as well as discussed in the interviews. Finally a language barrier is also a problem for effective risk communication. There is a significant minority of people whose first language is not English living in the Toronto area. Everyone needs to be able to receive risk and emergency preparedness information. It is important that cities take this into account.

A case study method for this thesis was chosen because there may be lessons the City of Toronto learned that are significant to a much broader audience. Other small and large cities can see some of the communication problems that the City of Toronto had during the blackout and can modify their own emergency risk communication strategies in case of a disaster. In addition, this thesis attempts to add more information to the

study of risk communication, as it is only recently that there has been a resurgence in academic interest in this topic.

This thesis was done using a qualitative data analysis of both news releases and semi-structured interviews. Thirteen interviews were done with people who were involved in different aspects of Toronto's risk communication during and after the blackout. The people interviewed were from the City of Toronto communication agencies, first responder agencies, the media as well as humanitarian organizations. The interviews were audio taped. They were then transcribed and put into a qualitative data analysis program. Relevant information was coded into a specific theme and each theme was then viewed separately to identify patterns. This program was used because a large amount of data could be scanned, coded and relevant pieces of information could be combined.

The August 14th, 2003 blackout was not seen as a disaster by many people; however, there was a full-scale disaster response to the situation. All emergency measures throughout the City of Toronto and the Province of Ontario were undertaken. This was also a provincially declared emergency. Because of this, the August 14th, 2003 blackout was chosen as a thesis topic since much can be learned from the emergency response on both a citywide level and a provincial level. The academic literature of risk, as well as analysis of news releases and in-depth interviews with authorities within the City of Toronto have highlighted some important information that the City of Toronto may be able to use to help better prepare for a next disaster. In addition, other cities, both

large and small can determine if they are prepared for some of the problems that the City of Toronto faced. If not, they can mitigate these problems before a disaster hits their city.

7.2 Recommendations

Communicating vital information to the public is essential for any emergency situation. In the case of the blackout, there was a tremendous amount of information being passed from different agencies to the public. However, there were some problems with communication both during and after the blackout. The following lists some communication related findings that occurred during the blackout and some potential ways of improving upon the existing methods of emergency communication. This list is divided into two sections. The first section is a list of generalized recommendations that stem from both the literature review as well as resulting from the blackout. The second section are recommendations that are a direct result of communication problems during the blackout. The recommendations in both sections are listed in order of importance.

7.2.1 Recommendations Arising from the Literature

This section discusses problems that occurred in the aftermath of the blackout, but they are also generalized recommendations, which can help any city improve its risk communication strategy.

- *News releases should contain sufficient information and state clearly the message as well as action that can be taken, if needed.*

According to FEMA, seven criteria should be included in a news release (See Chapter 2 and Chapter 5). If news releases are seen as confusing to the media, proper

information may not be getting to the public. In addition, proper explanations about why something should be done, or why certain information is important, may help influence citizen compliance. When writing emergency communication news releases, all seven of FEMA's components of a news release should be used. This allows for a news release to give enough information about a topic as well as lets the public decide if the message comes from a trustworthy source.

- *It must be made clear to the public that calling 911 is for legitimate emergencies only and to use other telephone numbers for non emergency inquiries.*

The 911 system needs to be marketed as an emergency line only. The word emergency needs to be defined through a public awareness campaign. The City of Toronto has already taken the initiative to attempt to reduce the number of non emergency calls the 911 system is receiving. A new 311 system has been approved by the Canadian Radio-television and Telecommunications Commission (Toronto Star, 2004). The idea behind this 311 telephone service is to reduce the number of non emergency calls to 911 (Toronto Star, 2004). People can call 311 and request information on traffic light failures, hazardous road conditions, as well as information on public recreation facility schedules, for example (CRTC, 2004). However, the City of Toronto is responsible for advertising this new telephone service to the public (CRTC, 2004). This service will not be operational until at least May 2005.

- *Authorities who are involved in public education regarding emergencies should use the period after a disaster or incident to educate the public in response to the public's increased interest in emergency preparedness.*

Three interviewees from City of Toronto agencies specifically stated that the times when the public is most interested in emergency preparedness information is after a disaster has struck the immediate area or has received a great deal of media attention. It is suggested that in the aftermath of a disaster, when there is increased public awareness regarding disaster preparedness, city agencies should increase their efforts to provide emergency preparedness information. These agencies should broadcast where to obtain more information and publicize basic steps to be prepared for any emergency, such as having an emergency preparedness kit. In addition, publicizing the humanitarian agencies and what services they offer in an emergency can show the citizens that there are many different resources available in the event of an emergency. Finally, the aftermath of a disaster may be an ideal time to address misconceptions about disasters, because people are generally more interested in disasters and if they are shown why their information is inaccurate, the correct information can replace the misconception.

- *Members of the media should know where the city's Emergency Operations Centre is located. Not knowing exactly where to go can hamper their ability to obtain news updates.*

The address of this building is not publicized in Toronto for safety reasons. As stated by two members of the media, there was some confusion about the exact location of the building. Most members of the media do not go to this address on a regular basis, and had trouble remembering the exact directions. It should be the responsibility of a member of each media organization to have written directions and a map to the building housed in a safe spot within the media agency. In the event of an emergency and someone does not know where to go, this information would be immediately available.

- *Citizens should be educated on the fallibility of cellular telephones and cordless telephones in disasters. Public education should be done to encourage people to have at least one corded telephone in the house for emergencies.*

It has been seen in past disasters that cellular telephone networks may not be operational due to lack of electricity. During the blackout, some cellular networks were not working because of lack of power. In addition, most cordless telephones do not work in the event of a power outage. Not having a corded telephone that works in an emergency is often overlooked when discussing emergency preparedness. This message should be widely broadcast as part of emergency preparedness information.

- *There should be sincere attempts to reproduce all emergency preparedness and risk literature in as many languages as possible, before, during and after a disaster.*

There are a large minority of the citizens of Toronto whose first language is not English, yet almost all of the press releases and news conferences regarding the blackout were given in English only. Even though the amount of information that becomes available, and the speed at which information changes in an emergency is tremendous, steps should be taken to ensure that people whose first language is not English receive timely information.

In non emergency situations, emergency preparedness information is available in many languages. The problem is that some people may be unaware that this information is available. Perhaps when municipalities or humanitarian organizations do traditional emergency preparedness and public awareness campaigns, information can go through either an interpreter or through people who work in minority language media to interpret

the public awareness information and give information to their readers. This way, advertisement of the information can be given to as many people as possible.

- *Politicians should avoid speculating on the cause of the disaster or providing information that is uncertain.*

In the case of the blackout, many politicians from both Canada and the United States publicly stated different causes of the blackout, none of which ended up being correct. Avoiding speculation is critical to maintain trust between the authorities and the public. However, during the blackout, this occurred and it caused a few federal and provincial officials to look foolish by not first confirming their information. There are no policies which can be written to avoid this. This recommendation is mainly to remind public figures of the need for public trust and to avoid speculation.

- *In an emergency, it is vital that all statistics and other information can easily be checked for errors.*

During the blackout, different people from the same hydro agency gave different numbers regarding the power failure and megawatt consumption. In addition, telephone numbers for the City of Toronto were advertised to the residents of Toronto, but the telephone numbers were actually for the Greater Toronto Area, which requires a different area code. These human errors are made due to time constraints and the stressful environment an emergency situation creates. It is difficult to suggest ways of improving these communications because they are mainly due to human error. Some suggestions for agencies who give out any information is to have all information that will be going to the public proof read by one person. This person then gives the information to people within the agency, who each independently write news releases, or give press

conferences. As for telephone numbers, all numbers should be double checked by someone before they are publicized. Numbers can be verified by looking them up in a public directory or telephoning the number to see if it is correct. There should be a ready made list of emergency numbers for the City of Toronto and for the Greater Toronto Area that can be readily accessed in times of emergency. These contact sheets can be redone every year with other routine maintenance issues.

- *Different agencies should be sending out the same information to provide a unified message.*

While overlapping information from separate agencies may send out a consistent message, contradictory information is a problem. Differing agencies within the City of Toronto did quite well in this respect. However, there was one issue regarding food safety where there was conflicting information. To reduce the chance of conflicting information getting to the public, there should be one agency within the city that is most equipped with the knowledge to handle certain facts. An example of this type of co-operation for the City of Toronto would include the Commissioner of Community and Neighbourhood services. This commissioner is responsible for interacting with social service agencies during an emergency (OEM, 2004). Perhaps it should be the responsibility of this person in each city to give out the emergency communication to both the city agencies and humanitarian agencies. For example, if a boil water order is issued, the commissioner determines the process for properly boiling water. This person then writes a news release and relays it to both other city agencies and humanitarian

agencies that interact with the public. As a result, every agency that is contacted by a member of the public about boiling water will be able to give consistent information.

- *Different agencies need to be using the same language to describe emergency preparedness.*

Two people interviewed, one from the media and one from a humanitarian agency, indicated that different agencies use different terminology, which could confuse members of the public who may think these messages are different. There is already a pilot program in the United States called the National Disaster Education Coalition (NDEC, 2004) that is attempting to bridge the gap between agencies who may be giving out similar disaster information. For instance, the Federal Emergency Management Agency, the Home Safety Council and the United States Geological Survey are all agencies who are involved in attempting to coordinate emergency terminology (NDEC, 2004). An application of this program to Canada would enable Canadians to receive emergency preparedness information which is the same throughout all agencies.

- *City authorities should attempt to reduce public misconceptions about emergencies.*

Not one agency interviewed mentioned that they are actively attempting to reduce misconceptions through education. The first step in correcting misconceptions is identifying them. Because it may be costly to set up a study to identify misconceptions, the City of Toronto can use the current literature that is available on misconceptions. Perhaps the emergency planning department, as part of their normal emergency preparedness public awareness campaigns, could pick a misconception every year to correct.

- *Cities should educate citizens on what agencies do in the aftermath of a disaster and how they are protecting citizens.*

There are some misconceptions that people may have in the aftermath of a disaster that lead to increased levels of fear, such as an increase in criminal activity. The city authorities should include as part of public education what is to be expected in the aftermath of a disaster. This would include; telecommunication systems may not work, power may fail and there may be a few crimes of opportunity. Citizens should be aware of the steps that are in place to protect them after a disaster.

7.2.2 Recommendations Resulting from the Blackout

The following recommendations stem from communication problems during the aftermath of the August 2003 blackout.

- *Many people have questions in the aftermath of a disaster and do not know who to call. A telephone line activated just for provincial emergency situations may help to provide a more efficient method of disseminating information to the public.*

Since this was a provincially declared emergency, the Province of Ontario was the lead agency in the emergency response. Yet, the province seemed to lag behind the municipalities with respect to updating information on web sites and telephones, along with giving out telephone numbers. The City of Toronto gave out telephone numbers for people to call on August 15th, 2003. The provincial numbers came out later, and the number publicized was not dedicated to emergency response or operated by EMO officials. It may be advantageous to have a telephone number dedicated to emergency inquiries when there is an emergency in Ontario. This telephone number should be publicized in times of normalcy, but only be activated when there is an emergency. This

way, the public will already be aware of the number, and it can be activated almost immediately after a disaster.

- *There should be a method in place for employers to contact employees to clarify if they are deemed essential. In the aftermath of a disaster, certain occupations are vital to the response and recovery periods. Often there is a public message that will state that only "essential personnel" should report to work, but this message may be too general and vague.*

The message regarding who is considered essential and needed immediately must be conveyed to the public. People who were employed by a front line agency, but were not interacting directly with the public, were considered essential, according to the Mayor of Toronto, but not according to the Premier of Ontario. For example, someone who works in the Toronto Police Force is employed by a front line agency. If they are not a police officer, they are still considered essential. This information could be provided at the workplace as part of a pre-disaster plan. A component of this plan could be a call fan out. The head of the corporation will make the initial call and each employee will be in charge of calling the person after them on the fan out list. Another method may be to have a voice mail for the company changed to reflect who should report to work and who should not.

- *Organizations, both public and private should have a system in place to update the status of their services to reflect the impact that the disaster is having on the organization.*

In the immediate aftermath of an event, there is confusion about what is open and what is not and where people can find out this information. An update on an organization's telephone answering machine or web site can answer the public's questions and decrease the volume of calls made to citywide emergency information

lines. These updates can be done through a change in a voice recorded message or a web site message. Almost all companies have some form of emergency situation protocol. If a disaster occurs, a person in a set position, such as manager on duty, should have the responsibility, once their own safety is ensured, to record a new voice message on the telephone and, if possible, add a message onto the website.

- *Because some disasters will cross international boundaries, it should be easy to contact peers in other jurisdictions. In the case of the blackout, some Canadian agencies were having difficulty getting in contact with agencies in the United States to obtain information.*

Because internal information from local and municipal governments is not widely broadcast to other regions or countries, officials may have difficulty contacting their equivalent in the other country in the aftermath of a disaster. Additional telephone calls must be made to find the person or agency they are attempting to speak with. This creates a higher volume of unnecessary telephone calls, which ties up telephone lines. This problem may be too large to deal with on a local or municipal level. Perhaps requirement of an up-to-date list of every governmental agency department and telephone number should be kept available online. This could be password encrypted to only allow other municipalities to have access to these telephone numbers. If there are any changes, they must be made by a designated person, e.g., webmaster or city clerk. This recommendation is based on interviews with members of the media who were unable to contact people for verification of facts. This is an important process when attempting to foster trust by giving people complete, accurate and up to date information.

- *The media should be aware that large market television stations are broadcast to the surrounding smaller cities and communities. The disaster may have abated in the large city, but the surrounding areas may still be having problems. These smaller areas do not have independent television stations and may be relying on these television and radio stations for continual information.*

During the interviews for this thesis, one person who lives outside Toronto, still had no electricity after the City of Toronto had all of its electricity restored. Listening to a news program based in Toronto, this person stated that the news programs treated the blackout as over, and were moving into the next stage of coverage. However, there were many areas still without power that needed information. The media must be cautious to remember that there is a large viewing area that depends on their broadcasting of information.

7.3 Conclusion

The August 14th, 2003 blackout could be considered a trial run for the Province of Ontario and the Municipality of Toronto to test their existing emergency plan and determine what improvements can be made. This thesis focussed on analysing the methods the City of Toronto used to communicate emergency information to the public during the 2003 blackout.

The evaluation of the risk communication strategies used by risk communicators in the aftermath of the blackout found that, overall, authorities were aware of important points such as trust, communicating uncertain information and misconceptions. However, these strategies were not well utilized in the news releases. There was a quick response by the municipality of Toronto. Public inquiry lines were set up quickly, the authorities listened to the public regarding information that was not being disseminated.

If there were relevant unknowns, most were addressed. The municipality did not speculate on causes of the blackout, although the Province of Ontario did. Speculation can lead to trust issues between the public and authorities that the City of Toronto sought to avoid by not speculating and conveying that there was unknown information.

There were some issues regarding communication that could help improve Toronto's risk communication strategy. News releases could be more detailed to reduce the chance of reporters inaccurately interpreting the story. In addition, there needs to be more of an attempt to provide news releases in numerous languages to minority news stations. Finally, there should be more of an emphasis to encourage residents to prepare for an emergency. After a disaster or situation is an ideal time for residents to be more receptive to emergency preparedness information. There was relatively little information about this passed along to residents.

This thesis contributes to the academic literature by evaluating suggestions for effective risk communication to the public found in the academic literature. The literature review (Chapter 2) discussed the current analysis of effective risk communication to the public. This thesis attempted to determine if authorities used this academic literature to frame their risk communication strategy. The results of the interview analysis and news release analysis show that authorities have the ability to adequately to communicate to the public but there are still gaps between the academic literature and practical use of this information. News releases need to be more detailed, misconceptions need to be addressed more, news releases must be available in multiple

languages, and finally, more public awareness and public education need to be done to prepare the public for future disasters.

The criteria chosen for this thesis has some limitations. This criteria does not reflect what information was given directly to the public. It focusses on the initial message and does not account for problems with third party interpretation of the information. In addition, it does not take into account if the general public understood the messages that were being given.

There is also a range of possible criteria to examine in a case study. For this study, the focus was mainly on communication in a disaster. There are a range of possible criteria that could have been addressed here, but were not. This criteria includes the wording of warning messages, determining which type of media would reach the most people and if the same methods of communication would be used in a different disaster situation, such as a tornado.

There also could have been a slightly different focus on the criteria examined. For instance, the news releases could have been analysed by specific agency that released them, such as private company, hospital, departments within the City of Toronto. Information such as date, frequency and type of company/agency could have been examined to compare in greater detail messages different types of agencies attempted to give to the public. In addition, agencies that did not issue press releases would also be analysed to determine which agencies relied more heavily on quicker forms of communication, such as press conferences.

In addition, a focus on a more detailed analysis of the precautions that people were given in the news releases would show the type of emergency information being given. This could be compared to the academic literature suggestions regarding vital information that should be given to citizens in an emergency situation. This would have refocused this thesis by highlighting the discrepancies regarding theoretical and actual emergency information dissemination.

The advantages of this combination of news release analysis and interview analysis was to determine how the communication process is initialized to find any flaws in the first step of risk communication to the public. Also, a news release analysis is a unique method of studying risk communication and this brings a new perspective to risk communication literature by determining how well news releases themselves relay information. This combination focussed the thesis by enabling a comparison to be made between the emergency information authorities chose to convey and what the academic literature states is important.

While researching for this thesis, there was some potential research avenues that, due to time and monetary constraints could not be fully pursued. This approach did not take into account any advanced warning information that may be given to citizens in a disaster situation, such as a tornado. While there was no advanced warning for the blackout, there were warnings about subsequent power failures in the days after the initial failure due to the problems returning Ontario's power system to regular function. It also did not research public interpretation of the emergency information given to the public.

Further research can be built upon this thesis. In future disasters, an analysis of news releases and newspapers can be undertaken to determine if the information was staying constant through this method of disseminating information. As well, the public can be polled to determine if risk communication is actually reaching them and to what extent the public responds to the messages.

Overall, the City of Toronto handled the August 14th, 2003 blackout well. The issues that have been brought up in this thesis may allow Toronto to further strengthen their emergency plan, allowing the City of Toronto to handle the next disaster better than the blackout. This is the goal of emergency management.

Appendix A: Evaluation of Six Risk Communication Studies

Disaster Studied	September 1999 Earthquake in Taiwan: (Ho & Hallahan, 2004)
Risk Communication Evaluated	<ul style="list-style-type: none"> • Goal was to determine how corporate advertising was used to communicate hazard information to the residents of Taiwan. • Analysed themes within advertisements in Taiwanese newspapers for one month following the earthquake.
Data Gathered	<ul style="list-style-type: none"> • Paid corporate advertising analysed from two daily newspapers in Taiwan, where daily circulation exceeds one million each. • Advertisements in newspapers dated September 22 to October 21, 1999 were collected from library microfilm collections. • One hundred corporate advertisements from 83 companies, 49 from Taiwan based companies and the rest from companies in different areas around the world, were studied.
Method of Evaluation	<ul style="list-style-type: none"> • Qualitative analysis based on a system of coding. • Themes were produced through a review of the existing literature on public relations and responding to a crisis. • Advertisements were coded by one person. A second person coded 25 adverts to validate the coding work. There was an 88% overlap in coding judgement.
Strength of Evaluation	<ul style="list-style-type: none"> • Coding was verified by a second person. • Two different newspapers were used, increasing the chance that the advertisements were representative of all advertisements printed after the earthquake.
Weakness of evaluation	<ul style="list-style-type: none"> • Both directly stated and implied content were analysed. Implied content may be missed by some people.
Outcome	<ul style="list-style-type: none"> • Public relations should consider more fully the role of corporate advertising as an effective tool in a crisis. • Furthers the advance of public relations theory by highlighting the importance of motives in understanding public relations communication.

Disaster	Hurricane Hugo 1989 (Faupel & Styles, 1993)
Risk communication Evaluated	<ul style="list-style-type: none"> Examined how pre-hurricane disaster education and household preparedness affected citizens' stress response after Hurricane Hugo. Attempt to determine whether disaster education could provide victims with a greater sense of control over their environment after a disaster.
Data Gathered	<ul style="list-style-type: none"> Telephone interviews were conducted from two sample sets. First sample set involved people who had participated in disaster workshops. The second sample was a control group of people, who had not previously participated in any disaster preparedness workshops, selected randomly through the white pages.
Method of Evaluation	<ul style="list-style-type: none"> Survey data and statistical analysis. Participants were asked whether or not they exhibited certain characteristics immediately after the hurricane. If characteristics were met, people were asked to rate the severity on a scale from 0-5. Regression analysis was done to determine stress response.
Strength of Evaluation	<ul style="list-style-type: none"> There was a large enough population to randomly choose people who had previously taken a disaster education course, instead of interviewing all people who had taken a course.
Weakness of Evaluation	<ul style="list-style-type: none"> People who participated in disaster preparedness workshops signed up voluntarily, independent of this project. People who may be more likely to take this type of workshop may have naturally higher stress rates.
Outcome	<ul style="list-style-type: none"> People who participate in disaster education activities experience more stress-like symptoms after a disaster than those who did not.

Disaster	Landslide hazard in Spain (Solana & Kilburn, 2003)
Risk Communication Evaluated	<ul style="list-style-type: none"> Analysing public awareness of landslides to produce and design an effective public information program.
Data Gathered	<ul style="list-style-type: none"> Hazard awareness questionnaire attempted to determine public knowledge of; 1) what landslides are and where they occur, 2) The threat of a future landslide, 3) how people should respond in the event of an emergency. Distributed by local police to 98 permanent households in study area. Questionnaire completed anonymously to avoid interviewee reluctance to answer honestly.
Method of Evaluation	<ul style="list-style-type: none"> Random survey mailed to homes and answered voluntarily. Citizens were asked to choose an answer provided that most closely matched their own opinion. Simple quantitative analysis used to determine citizens' opinions by adding up the number of times each citizen chose a specific answer.
Strength of Evaluation	<ul style="list-style-type: none"> The last major mass movement occurred in 1956. This allows researchers to look at the public's acknowledgement of a threat that is present but who have not experienced it firsthand.
Weakness of Evaluation	<ul style="list-style-type: none"> 0.1% of population represented . Interviews may have produced more information because researchers could have asked citizens to clarify or elaborate on certain subjects. 56 of 69 surveys were incorrectly completed.
Outcome	<ul style="list-style-type: none"> Found that there was little fear of landslides among residents. Public information pamphlet was designed based on the outcome of this research. Follow-up questionnaire will evaluate the impact of this pamphlet on peoples' perceptions of landslide hazards.

Disaster	Multiple past hazard events (Freudenberg et al., 1996)
Type of Risk Communication Evaluated	<ul style="list-style-type: none"> Analyse the assumption that the mass media often exaggerate or distort risks.
Data Gathered	<ul style="list-style-type: none"> 128 newspaper reports of various hazard events, most from the New York Times. 9 reports were from other sources. Seven categories of hazard events; 1) Biocidal (e.g.guns), 2) Persistent/delay (e.g. mercury), 3) Rare (e.g. air plane crash), 4) Common life threats (e.g. smoking), 5) Global/Diffuse Hazards (e.g. ozone depletion), 6) Natural Hazards (e.g. hurricane), 7) Radiological hazard (e.g. Nuclear accident).
Method of Evaluation	<ul style="list-style-type: none"> Qualitative analysis of articles. Articles were coded independently by three different people at three different universities. Each judge was trained in a different discipline. Double blind method used. Seventeen variables were chosen for a factor analysis to determine the reliability and consistency of the ratings scale.
Strength of Evaluation	<ul style="list-style-type: none"> There is an attempt to obtain a representative sample by including all types of hazards. Attempts were made to have roughly the same number of hazards analysed in each category, hence the nine reports from sources other than the New York Times.
Weakness of Evaluation	<ul style="list-style-type: none"> Cannot extrapolate findings from print journalism to other types of media.
Outcome	<ul style="list-style-type: none"> Could not find support for the theory that the media tends to exaggerate risks.

Disaster	Hurricane Gilbert 1988 (Fischer, 1994)
Type of Risk Communication Evaluated	<ul style="list-style-type: none"> Attempted to determine if the media perpetuated disaster myths such as, looting/deviant behaviour, price gouging, mass evacuations, number of injuries/deaths, disaster shock and massive property damage.

Data Gathered	<ul style="list-style-type: none"> • 95 local television news stories and 148 network television news stories were analysed from three different counties in Texas. • 311 print stories from the local newspapers analysed. • Interviewed 53 local officials and media personnel both pre- impact and post impact.
Method of Evaluation	<ul style="list-style-type: none"> • Content analysis of broadcast and print media to determine the incidence of mythical vs. accurate portrayal of certain disaster myths. • Content analysis based on the academic literature involving myths and disasters.
Strength of Evaluation	<ul style="list-style-type: none"> • Multiple forms of media was used in the analysis. • Local and national news stories were analysed separately and together to determine if there was a difference in the perpetuation of disaster myths between the two.
Weakness of Evaluation	<ul style="list-style-type: none"> • Local media reports were not obtained in every county on every date. Researchers followed the projected track of the hurricane and compiled a local data set only when situated in each county. • Recording every radio report was abandoned due to lack of manpower. Only a sporadic sample was taken. • Readers may not be influenced by the article stating a myth. • It was not taken into account that headlines or lead stories may be more influential in informing viewer or reader perception.
Outcome	<ul style="list-style-type: none"> • Overall the media portrays accurate behavioural response of citizens to a threat. However, the media did exaggerate the rate of evacuation, population of shelter and severity of weather changes. • If disaster myths were perpetuated; looting, price gouging and panic were the three myths most perpetrated. • In 103 stories that contained a disaster myth, one third of these stories perpetuated a disaster myth.

Disaster	Proximity to magnetic fields and potential harm (Read & Granger, 1998)
Risk Communication Evaluated	<ul style="list-style-type: none"> Effectiveness of educational methods used to change lay people's misconceptions of proximity to magnetic fields and harm.
Data Gathered	<ul style="list-style-type: none"> 112 members of a community college volunteered for a study to receive five dollars upon completion. Groups received three envelopes to take home. First envelope had pretest to determine existing knowledge. Second envelope contained educational material; graph and text, picture and text, graph and picture and text, text only or no educational material. Third envelope contained a post test to take 24 hours after reading the second envelope.
Method of Evaluation	<ul style="list-style-type: none"> Subjects were divided into five groups, each receiving a different envelope containing information on magnetic field strength. The first and third envelope contained test material on magnetic fields. The answers to the test were analysed using analysis of variance to determine the degree of change from pretest answers to post test answers.
Strengths of Evaluation	<ul style="list-style-type: none"> Printed material and visual learning materials were used separately and together to determine if one method more effectively influences people to adjust their misconceptions.
Weakness of Evaluation	<ul style="list-style-type: none"> Cannot ensure that all students followed instructions regarding when to open all envelopes. Some subjects may have read the educational material before taking the pretest.
Outcome	<ul style="list-style-type: none"> Confirms earlier findings that lay people significantly underestimate the rate at which magnetic field strength decreases from distance.

Appendix B: Sample Interview Questions

General Background Questions

- What is your role as an agency as stated in the City of Toronto's Emergency Plan?
- What is the specific role of your department in an emergency?
- How did it come to your attention that the August 14th Blackout was more serious than a typical blackout?
- When it became known that this was an atypical situation, what was the first thing that happened in your agency?
- Do you have a set person or another agency that you were to report to initially to determine what was needed to be done?
- Did you report to the same person or agency for the duration of the blackout?
- Who gave the commands to tell your agency what you needed to do during the blackout?
- Were there any significant problems in your agency regarding communication with other agencies? Any overlapping of roles or putting out similar press releases for example?
- Is there a certain segment of the population who you are more specifically equipped to help?
-

Communication Questions Regarding the Blackout

- What did your agency do during the blackout in terms of giving information to the public?
- What kind of information did your agency give to the public?
- Who was in charge of writing the messages? Who was in charge of delivering the messages?
- What methods of communication did you use to give information to the public, (internet, radio)?
- What steps were made to ensure communication was made available to everyone? (Those who cannot read, or only in another language, visually/ hearing impaired?)
- Do you think that the communication regarding pertinent information made it to its intended source? Do you have any reason to believe that your communication did not make it to its intended source?
- Did your agency actively give out more information on emergency management after the blackout in an attempt to better educate people on preparing for a disaster?
- Did you receive an increase in the number of calls from the public looking for information on emergency preparedness either during the blackout or in the months since?
 - What types of questions were you receiving from the public?
 - Were they contacting the correct agency to answer their questions?
- What aspects of communication went well during the blackout? What methods could be improved?

General Risk Communication Questions

- What method of communication (television, print advertisements) would you normally

- use as your preferred method to get a certain message across? Why?
- What way does your agency find the most effective way to deliver a message so people learn about and prepare for a hazard?
 - What information and in what form do the police services find best influences the public to take a risk communication message seriously?
 - How do you attempt to motivate beyond education into influencing people to actually prepare for a disaster?
 - Are there guidelines that must be followed regarding information that must be included in writing and relaying emergency communication?
 - How do you address the issue of uncertainty (unknown information) in your communication? How do you convince the public that you are giving them all of the information that you know?
 - Do you have a ready made media contacts list to give information out to?
 - Do you have a designated spokesperson for emergencies trained in media relations?
 - Does your news releases have a sequence and certain information that has to be included? If so, what has to be included?
 - Do you have emergency preparedness information available on a regular basis?
 - Who writes the general emergency preparedness literature available from your agency?
 - What type of emergency preparedness information do you have available?
 - In what form is this information in (pamphlet, online)?
 - Do many people ask for information? Teachers, individuals or organizations?
 - What grade level equivalent is the information prepared at?
 - How do you advertise this information is available to the public?
 - What attempts do you make to reach people who for example do not have ready access to information, such as not having a television?
 - Do you have any programs in place to help people who cannot afford to undertake emergency preparedness measures?
 - How do you attempt to give information to people who do not speak English?
 - How do you make scientific terms such as “probabilities” easier for the average person to understand?
 - Do you find that trust between authorities and the general public plays a large part in the public listening to Risk Communication? For example minorities and the lack of trust towards authorities? How do you deal with lack of trust?
 - Are you aware of the availability heuristic, where people tend to overestimate events which are more easily recalled by the public who then think these events occur more often than they do?

Are there any questions that you thought I would ask and have not?

Is there anything else regarding communication that you would like to tell me?

Appendix C: Non Identifying List of Interviewee Job Descriptions

Note: all interviews conducted in 2004

Interviewee Number	Category	Job Description
1	Media	Video Journalist
2	Media	Programming Manager
3	Media	Journalist
4	City of Toronto Services	Planner
5	City of Toronto Services	Emergency Planner
6	City of Toronto Services	Manager of Public Safety
7	City of Toronto Services	Head of Emergency Management for first responder agency
8	City of Toronto Services Note: Three people were involved in one interview	Supervisor, Media Services, Manager of Public Information, Call Centre Agent
9	City of Toronto Services	Senior Planner for First Responder Agency
10	City of Toronto Services	Captain for First Responder Agency
11	City of Toronto Services	Emergency Planning Coordinator
12	Humanitarian Agency	Public Relations
13	Humanitarian Agency	Provincial manager of a humanitarian disaster service

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