

# The Calamity of Disaster - Recognizing the possibilities, planning for the event, managing crisis and coping with the effects

By Jamey Perkins  
Contributing Author [www.publicsafetydegrees.com](http://www.publicsafetydegrees.com)

## What is considered a disaster?

When most of us think of the term "disaster", we think of such things as hurricanes, tornados, floods, and plague. However, the term actually refers to any type of tragedy that involves at least one life, or creates a problem that affects the livelihood of at least one victim. Victim is not even defined as only pertaining to human victims, but rather any living entity or ecology. If a flood occurs in lifeless areas and causes no damage, the term disaster would not apply. However, if that same flood occurs and drastically affects the livelihood of any species of plant or animal or creates a change in ecology that has an extended effect; it could be considered a disaster. Simply defined, a disaster is any incident that creates a victim of circumstance.



## Types of disasters

Disasters can be broken down into two basic categories. Man-made disasters are those which occurred as a result of human intervention, or lack of intervention. They occur as a result of the influence of man, and the affect of mankind's existence. Natural disasters are those which are caused as a result of any natural hazard. Natural disasters can be a result which is completely benign to any human influence, but can also be an indirect result of human interaction. Scientists theorize that global warming is a natural disaster brought about indirectly by human influence. Of these two types of disasters, there is a list of which can occur:

- Chemical
- Earthquake
- Fire
- Flood
- Hazardous material
- Heat
- Hurricane
- Landslide
- Terrorism
- Thunderstorm
- Tornado
- Tsunami
- Volcano
- Winter Storms
- Mechanical

Alternatively, a cross-over affect or side affect can occur with any disaster. In fact, many of the nation's historic disasters report a more substantial impact on the natural, social and economic outcomes as a direct result of cross-over effects, rather than original cause of a disaster. In 2005 Hurricane Katrina left a path of devastation that stretched from the Bahamas through Cuba, Florida, Louisiana, and almost all of southeastern and eastern North America. Although a great

many lives were lost as a direct result of flooding and the winds that occurred, a far bigger impact was felt in the many other disasters caused by Katrina as a result. Economical, environmental, and social effects from the storm were felt around the world. Such things as disease, poverty, unemployment, biological and ecological damage, and a break down in the structure of emergency response can all be attributed to the hurricane.

## **The evolution of man and nature as a direct result of disaster**

Throughout the history of the world and of man, proof of evolution as a direct result of disaster is apparent. Whether written by fatalism or created as a result of nature and mans interaction, the world is subject to change when disaster occurs. Even before the existence of human beings, disasters changed the shape of animal cultures, which would forever have an impact upon the inevitable future of the world. Volcanoes, earthquakes, floods, and wind continue to change the shape of land, giving way to new existence of life. Changes in climate limit the types of life in certain areas and dictate the future of entire regions. Dinosaurs once inhabited the earth, but could man have evolved and coexisted? The disaster that resulted in the extinction of the dinosaurs eventually paved the way for the existence of other life.

So too have changes resulted from man's experience with disaster. Surely early disasters forced human beings to make adjustments in their social and living habits. Shelter became a means of avoiding whether, and proof of early medicinal remedies shows us that humans began forming preparedness plans for protection and treatment against disaster. Every type of calamity has had an effect on its victims, and forced changes to accommodate the results and make preparations for future happenings.

After the powerful tsunami that struck Indonesia, Thailand, Sri Lanka and many other communities in 2004, it became resoundingly clear that animals were able to foresee the coming disaster. During the cleanup efforts, the number of death among animals was astonishingly minimal. Although there is a large population of elephant, deer, leopards, black bears, sloth bears in the areas that were hit the hardest, not a single carcass was discovered after the event. Reports later came in of animals fleeing areas long before the tsunami hit. Some even report elephants carrying people off to safety.

*“It is in periods of apparent disaster, during the sufferings of whole generations, that the greatest improvement in human character has been effected.”*

*Sir Archibald Alison*

Also as a result of the tsunami, governments from all over the world began to form a more useful early detection and warning system for areas that never before had such technologies. Researchers began to focus on tsunamis as a more widely recognized form of disaster, and not just a rare phenomenon. [DART](#) buoys were later deployed to assist in these early warnings. The social changes that happened as a result of the disaster were far reaching. Interaction among countries that formerly had little contact began to arise. New political and economic relations came about as a result, and cultural changes took shape.

The effects that hurricane Katrina had on society not only had an impact on those directly hit by the storm, but by those hundreds and thousands of miles away. New Orleans was already known to have a high rate of crime and poverty, but the events after Katrina only served to help spread the problem. As many outlying communities began to open its doors for those fleeing from the storm, new problems began to take shape. In an interview with Rachel Strong, a resident of Shreveport, LA, we can learn a lot of how lasting effects can occur from a disaster. Rachel claims that although efforts were made to help those victims of Katrina, the "thoughtfulness and caring of the community was short lived". She goes on to explain that many of the people that fled from New Orleans simply settled down to live in Shreveport. This huge influx of people that had lost nearly everything caused an even more widespread problem of poverty to an area already in distress.

Mrs. Strong explains that local programs were set up to help care for the new residents of Shreveport, and that many centers were created to take and distribute donations for those in need. However, it soon became apparent that many were simply abusing the system, and that the economical and social impacts on that area would have a severe impact. The cross-over effects of Katrina would quickly create another type of disaster.

Not all outcomes of a disaster have a negative impact. Many believe that disasters are just a natural part of evolution, and in the grand scheme of things, they are the building blocks of nature and human culture. A look back into some of the most extraordinary disasters reveals some truth to this idea.

The ancient civilization of Pompeii was buried and virtually frozen in time when Mount Vesuvius erupted on August 24, A.D. 79. Though it was a tragedy that so many lost lives in the event, the result of the eruption became a miracle that would be studied and awed upon forever by modern culture. Because of what happened, scientists are able to research what happened and to use the data collected to form new ways of prevention and protection for future civilizations. Even the local economy has gained from the historical eruption. The site is now a landmark that attracts thousands of visitors that bring money to the region and helps boost the economy.

Perhaps the largest effect of a disaster can be seen by studying the changes in plant and animal life. Mt Kilauea in the Hawaiian Islands has been erupting for over 25 years. Though most of its eruptions are not considered major in the sense that they cause devastation to human population in the area, these eruptions are constantly changing the face of plant and animal life in the area. Even the landscape of the Hawaiian Islands continues to change on a daily basis by the spread of molten lava that is rapidly cooled by coastal waters, forming new land.

Because of the changing structure of the coastal areas, as well as the aging of inner land masses on the islands, Mt. Kilauea serves as a sort of biological and ecological study site for scientists. On its fringes, barren landscapes house animal life that thrives on the rich mineral deposits given off by the gases and rock deposits. Meanwhile, erosion helps to create fertile soil in which other types of plant and animal life can flourish.

## Managing a Disaster - Four phases of success (Mitigation)

Essentials for successful handling of a disaster are largely dependent on the responder's ability to efficiently manage such an event. As we will demonstrate, managing a disaster encompasses a cycle of four phases to complete the process: Mitigation, preparedness, response, and recovery.



It is only through careful study, planning, and execution that any response to an emergency can be effective, efficient, and result in successfully reducing the amount of property damage and loss of life.

### Mitigating Damage

Mitigation is an attempt to negate or reduce the amount of damage caused by a disaster, or to even prevent such a disaster from even happening. When thinking about mitigation, one must first recognize what risks are present, and what types of disaster could occur. It would be impossible to create long term strategies for mitigation, without first knowing what type of emergency could happen.

On May 15, 1929, a fire broke out at the Cleveland Clinic in Ohio, and 125 people lost their lives in the fire. It was determined that deterioration of nitrocellulose film occurred, resulting in a flameless combustion. It was the release of nitrous fumes that became the root cause of the majority of deaths, and not the actual fire associated with the event. A look back at the event reveals several key mitigation standards not employed at the time, could have prevented the disaster, as well as reduce damage and loss of life caused. These tactics though were not commonly practiced then, are now part of standard safeguards today.

1. The safe storage and disposal of hazardous agents
2. Education about hazardous substances at a location by occupants, as well as public labeling of such properties, so that those around can readily identify possible hazards
3. Structural design of public buildings to expedite safe evacuations
4. Efficient alert systems and evacuation plans
5. Informed response and recovery teams

On April 15, 1912, over 1500 passengers lost their lives aboard the Titanic ocean liner. Several factors contributed to the sinking of the Titanic, as well as the death toll that incurred.

- Complacency about the possibility of the ship sinking. Deemed “unsinkable”, many did not heed safety regulations in place for such an event.
- The structure of the Titanic allowed for a chain event to occur, once flooding started in the lower bulkheads.
- Inadequate training for lifeboat launches lead to confusion of launch processes, as well as capacity standards for each boat.

- The lookout officer, Fred Fleet, could have spotted the iceberg that ultimately caused the sinking much sooner, had he been oriented on where to locate binoculars commonly used by the lookouts.

Unfortunately, many of today's regulatory standards have been placed due to the learning curve of experience associated with studying past disasters. However, with proper planning, most disasters can be mitigated, and the cost associated with damage from these calamities can be reduced significantly.

Mitigating an emergency can drastically reduce the final financial numbers associated with a disaster. In the US, hurricanes hold a resoundingly large amount of the most expensive disasters in history. With an estimated cost of over 125 billion, Katrina tops the list. However, with mitigation plans, those numbers could have been significantly higher, and with continued planning, could be dramatically decreased.

To help organizations better prepare and initiate effective mitigation protocols, funding and grant programs have been put into place, and many are a result of the [Robert T. Stafford Disaster Assistance and Emergency Relief Act \(Stafford Act\)](#).

- [FEMA Pre-Disaster mitigation Program](#)
- Federal low interest loans
- [Hazard Mitigation Grant Program \(HMGP\)](#)
- [Flood mitigation Assistance \(FMA\) program](#)
- [Severe Repetitive Loss Program](#)
- [National Flood Insurance Program](#)
- [Repetitive Flood Claims Program](#)

## Managing a Disaster - Four phases of success (Preparation)

### Preparing for disaster

Preparing for a disaster is essential for surviving one. Preparedness plans, and plans of action must be put in place to not only help prevent a disaster from happening, but also to help mitigate the damage caused when one does occur.

On July 28th, 1976 the city of Tangshan, China was completely destroyed by a magnitude 7.8 earthquake and it is estimated that up to 700,000 people lost their lives in the quake. The Great Tangshan Earthquake struck at approximately 3:42 AM. Though some scientists made attempts to warn of an impending earthquake in the area, the earthquake hit with virtually no warning, and at one of the worst possible times, as most residents were asleep and could not react fast enough to get to safety. Since it is obviously not possible to prevent such an occurrence from happening, it is possible to be better prepared for such events.



The responsibility of creating plans for preparedness and action to disastrous events lies on not only government leaders, but also on local leaders and even members of each household. As we have discovered through past experiences, the key to surviving any disaster or decreasing the amount of damage and destruction it causes, is for people to come together and work as a group.

Overall, there are 5 steps of planning for a disaster. Families should create a plan to prepare members of their household in the event of an emergency, as well as all branches of government and business. Those steps include:

1. *Identifying possible risks* - By identifying what types of catastrophe you may be exposed to, you can create an effective plan for preventing and mitigating the dangers associated.
2. *Create a plan of action* - Devise a plan that places welfare of life over property. This plan should also include certain methods of monitoring and predicting risks.
3. *Create a checklist* - A checklist of supplies, equipment, and resources will reduce the amount of confusion associated with such events, as well as aid you in creating and maintaining your plan of action.
4. *Practice your emergency plan* - An enormous amount of confusion will be present during any calamity. The most effective way to reduce that confusion is for all involved to be familiar with the emergency plan.
5. *Update your plan and checklist* - As the environment and risks change, so will your emergency plan. It is important to keep your plan of action maintained, so that revisions can be implemented to accommodate any recent changes in risk or supplies needed. Even simple things such as phone numbers and expiration dates should be checked. [Home disaster kits](#) are an excellent idea for any household.

Disasters come when we least expect them. Often times, they will strike with little or no warning. Our experiences with nearly every recorded disaster prove that lack of preparation leads to the greatest loss of life and property damage.

## Managing a Disaster - Four phases of success (Responding)

### Response to a disaster

The most important rule to remember when a disaster strikes is to follow your emergency plan, which should first require you to seek safety. However, if you are part of an emergency response team that has been called upon to aid in a disaster situation, the sequence of events becomes immensely more complicated.

Emergency situations are handled by various point of government and private response organizations. Ambulance Services, Fire Departments, Search and Rescue, Law Enforcement, and Hazardous Materials teams are just a sample of those which may respond to a crisis. One problem that can



occur during large multi-departmental responses is that lack of continuity and organization among agencies can lead to confusion and lack of efficiency.

On April 1, 1979 the US created (FEMA) the Federal Emergency Management Agency by [Presidential Order](#). Its goal was to coordinate the response to emergencies among federal, state, and local authorities. This began a new era in how emergency responses were handled, and started to create a forum that allowed for guidelines and standards to be written to better organize all branches of responders.

On November 25, 2002 the (DHS) Department of Homeland Security was created by the [Homeland Security Act](#). The intention of this new division of government was to help consolidate various agencies that would be responsible for responding to emergency situations into a single government cabinet. Among those absorbed into this new branch was FEMA.

On March 1, 2004, Homeland Security Secretary Tom Ridge released a new framework by which overwhelming crisis situations would be handled. The National Incident Management System (NIMS) was a result of Homeland Security Presidential Directive (HSPD-5), and was created in an effort to better organize a more standardized response to emergencies by all levels of responders. This system covers all facets of a response, including preparedness and mitigation programs, and is designed to be used as an all encompassing readiness and response plan. With training programs in place, all personnel in federal, state, local, and private response agencies that may be called to respond to an emergency will be given until October 1, 2006 to complete the training.

Although the attention of responses to emergency situations has been in the forefront of many government discussions, much evidence still looms as to how effective our current methods really are. Surely there will always be room for improvement, especially due to changes in behaviors and trends in terrorism and natural disasters.

In 2005 FEMA came under extreme scrutiny for their response to Hurricane Katrina in the Gulf of Mexico. At the time, the responsibility of FEMA's actions lay on director Michael brown. Accusations of a slow response by the Federal Government, as well as the lack of education among responders, would eventually lead to Michael Brown being relieved of command of the Katrina response, and eventually his resignation. Although so many things went wrong during the response to the hurricane event, one major factor that could have played a key role is that responders had not yet had time to meet the training requirements set forth by NIMS. This could also partially be blamed on procrastination among agencies to administer training to their personnel.

In 2008, the [National Response Framework \(NRF\)](#) replaced the National Response Plan (NRP). Formerly, the NRP was focused largely on Federal roles and responses. The newly formed NRF is designed to create a sort of blueprint for all organizational and tribal approaches to emergencies and disaster. It outlines roles and responsibilities, response actions, preparedness structure, and resources for federal, state, local, tribal, and individual approach to crisis. It was formed on the backbone of the events that transpired during and after the World Trade Center Disaster on September 11, 2001 in New York City.



An effective strategy for responding to any crisis, no matter what the size, is the ability of those responding to communicate and to work together to accomplish a common goal. Learning from our mistakes in history often provides us with the knowledge and tools necessary for effectively handling and identifying events that will surely occur in the future.

## Managing a Disaster - Four phases of success (Recovery)

### Disaster Recovery

Disaster recovery involves setting in place the results of mitigation, response, and preparatory efforts, in that its outcome is often ultimately based on the effectiveness of the previous. If one thinks of recovery as a simple cleanup effort designed to restore an area to its previous existence, they would be failing to consider the permanent and long standing repercussions associated with those efforts.

Let's first draw attention to a basic recovery scenario. On March 24, 1989, the Exxon Valdez oil tanker collided with Bligh Reef. The collision caused the spill of 10.8 million gallons of the ship's 53.1 million gallon cargo which eventually covered 11,000 square miles of sea. The result led to the largest and most expensive oil spill recovery effort in history, and was led by the US Coast Guard.



After an investigation by the National Traffic Safety Board, both the Exxon Shipping Company and the United States Coast Guard were at fault for the accident. Exxon's fault lay on the improper navigation of the vessel and the possibility of the ship master being under the influence of alcohol. The blame on the US Coast Guard lay upon the failure to provide an effective vessel traffic system.

Twenty years after the event, scientists are still studying the effects. The destruction to coastal areas and to wildlife has exceeded all early expectations, and as of 2007 it is estimated that more than 26,000 gallons of oil still remains embedded in the soil of the coastal areas.

Although the basic cleanup of the oil was mostly successful, the fallout damage associated by the spill is irreparable. The ecological effects from loss of microorganisms and wildlife in the area are still yet to be determined, and the costs associated with trying to repair the damage are still continuing to grow.

*Conclusion* - Had proper mitigation, preparatory, and response systems been in place, the recovery efforts would have been minimal in comparison. Appropriate precautions, both by Exxon and by the US Coast guard, could have not only prevented the accident, but also could have made the cleanup effort more successful and with a much more reduced number of wildlife casualties and minimal destruction of environmental surroundings.

In general, the recovery effort of any disaster or emergency scene can begin once all threats to life have been resolved. It is important to start this process as quickly as possible to reduce the chance of long lasting effects caused by the crisis. It is also during this phase of a crisis that



important mitigation measures can also begin to take shape. By documenting efforts and resources needed to accomplish the recovery, it makes it possible to better plan for any future incidents.

Disaster recovery can involve all levels of government and local organizations. The size of the recovery effort is determined by the resources needed, and the assistance available. While a great deal of any recovery assistance will come in the form of local donations of money, supplies, and workforce, there is also a substantial supply of federal assistance available. Some of that assistance is:

- The Individuals and Households Program (IHP)
- Disaster Unemployment Assistance (DUA)
- Disaster Relief Employment Assistance
- Public Safety Officers' Benefits Program
- Public Safety Officers' Educational Assistance Program
- Crisis Counseling
- Tax Relief
- Public Assistance (PA)
- Reimbursement for Firefighting on Federal Property
- Fire Management Assistance Grant Program
- Economic Injury Disaster Loans
- Emergency Loans for Farms – (EM) Loans
- Other General Assistance Programs with eligibility requirements.

Another resource for Federal Assistance is the [Catalog of Federal Domestic Assistance](#) with over 1600 available programs listed.

## **Disaster Management - An organized structure in the midst of a chaotic event**

Disaster management, or Emergency Management, can be defined as an organized yet multi-tiered structure of trained personnel tasked with the challenge of preparing for, and dealing with disasters and the short term effects. Disaster management does not start upon the happening of a disaster, but rather much further ahead of a disaster, if it is to be effectively managed.

FEMA, working directly under the supervision of the Department of Homeland Security, is responsible for leading Emergency Management at all levels of emergency response. FEMA is also responsible for setting up parameters and guidelines in which those responders will operate, as well as educational processes.

The idea of managing an emergency is to do so at the most basic level. It would simply not be efficient or successful for emergencies to be handled by top tiered organizations within the framework of emergency responses.

Emergency Management first starts with the sole recognition of an emergency. It is then determined at what extent the emergency will have an impact, and what resources will be needed to properly handle the event. In most cases, emergencies can be sufficiently managed within the simple network of local responders, consisting of fire, medical, and law enforcement personnel. However, when an event occurs that stands to surpass the available resources of a local system or region, there are protocols in place to start a chained response to fill the needs of those involved.

The basic structure of a successful Emergency Management effort includes:

1. *Preparedness* - Being prepared for an emergency is ongoing. Responders are trained for crisis, they practice their strategies, they plan their roles, and they critique their actions in order to make necessary corrections. The goal is to create, implement, and to follow a well rehearsed scenario, so that confusion during an event is mitigated.
2. *Communication* - Perhaps the single most important factor dictating the outcome of any emergency response is communication. An effective response to a crisis of any level requires communication. Whether it simply be communication inside one department or interdepartmental communication, it would be simply impossible to perform any type of emergency management without communication.
3. *Know your resources* - It is key that all involved in an emergency have the training and ability to recognize the need for resources, as well as know what resources are available and how to obtain them. Some resources can come in the form of local logistics, manpower, more highly trained responders, or even monetary funding needed. One of the most common resources used among all levels of response is the [American Red Cross](#).
4. *Command structure* - Within any effective emergency management, must lay a preformed hierarchy of command. In the United States, the Incident Command System (ICS), has been created and standardized to alleviate any questions or concerns over how this hierarchy should be set up, and how it should change as the crisis unfolds.

[The National Incident Management System \(NIMS\)](#) was created and set up to be a template for how an emergency response should be managed. Since it is now mandatory for all professional responders to be trained in how the NIMS system is to work, those responding to an emergency can now have a firm grasp on the hierarchy of a command structure, and how to operate within that structure.

## **Disaster – An inevitable future**

As we have learned, the possibility for disaster will always loom as part of our future as human beings, and as inhabitants of a planet that was created by such events that we can only label as disaster when they invade our lives. Natural disasters formed the basic structure of the world we live in, and some scientific studies attempt to prove that the etiology of humans in general can be traced back to events of such magnitude.

It is an impending future that we must learn to live with in regards to disaster. Though some have made attempts, trying to prevent natural disaster from occurring is futile. Our history is littered with tales of disaster. Evidence of catastrophe can be found in nearly every type of rock

formation, and in the water we drink, and in the air we breathe. It can only be concluded that what we term as natural disaster could also be nature's way of evolution.

Perhaps the most dangerous disaster that we, as a human species, should concern ourselves with the most is that of which is created by mankind. Each day, we stare in the face of impending disaster, without even giving it a second thought. We send our children out to drive on the same streets as those carrying hazardous materials, and we continue to build structures that only test the laws of physics. We push the dynamics of speed and gravity to the extremes, and then are shocked by the destructive nature when disaster occurs as a result.

In August of 1945, the United States made the choice of using nuclear weapons on the Japanese cities of Hiroshima and Nagasaki. The post-war estimates of human casualties extend past 200,000 people killed in the bombings. Each year, death tolls attributed to crime, manmade sickness, mechanical accidents, and war far exceed those caused by natural phenomenon.

We live in a dangerous world that can expect to see disaster occur on a daily basis. Population increases and overcrowding only serve to exacerbate the possibilities. We have a responsibility to prepare ourselves for those events in which we not only create ourselves, but also those in which helped form the very basis of our existence.

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