Chernobyl

Nuclear Power is one of the largest debated topics in human history. Energy is an extremely important part of today’s society. The idea of a source of energy that creates little waste and low pollution seems overwhelming in theory but is hard to achieve. Fossil fuels are currently the only source of energy that can fill the energy needs of earth. Nuclear fission however is the next fuel source that comes close. Halfway through the 20th century, nuclear power plants were placed under construction in different parts of the globe. The United States and Russia were the two large components of this nuclear installment. As each country strived to beat the other in all aspects of competition, shortcuts were taken. On April 26th 1986, one of the reactors melted down causing a large explosion, endangering many people and forever changing public opinion on nuclear power.

B) Russia began construction on the nuclear power plant Chernobyl during the year 1970. There are many safety precautions and protocol that should be met for a nuclear power plant to be built. A very useful and efficient source of power, nuclear fission can go awry very quickly. Engineers design these plants to be operated at certain conditions and need to be built very specifically. Safety personnel are also on site to make sure that the plant is running up to specifications. On the day of the accident, operators ran the plant on very low power with a lack of personnel.
The plant also needs to be prepared in case such an accident occurs. In the rare occurrence that the nuclear fuel starts to overheat, immediate precautions need to be taken to stop a meltdown. In many cases water pumps circulate water to remove excess heat from the core. In the case that these pumps fail, the chamber needs to be flooded so that the core can’t reach critical temperatures. This is the reason that plants need to be located by rivers or oceans. If these precautions fail, then the next step is for local evacuation and deployment of emergency personnel.

After it was decided that the core could not be saved, emergency response was put into effect. Authorities started evacuating people that were in the contaminated zone. Within 36 hours, 115,000 local people were evacuated. Eventually around 220,000 people were resettled by the government. Safety personnel were brought in from all over to try and limit as much damage as possible. The melted fuel was buried in a tomb of concrete and other materials to prevent further radioactive leakage into the air. These nuclear emissions are carried into the Jetstream and carried across the surrounding area. Many emergency personnel were killed during this recovery process. A crucial step to the response of this emergency was overlooked. Local wildlife, mainly cows were not properly contaminated and a large part of the public was exposed to the radioactive environment.

Unfortunately unlike most disasters, it is hard to return the local area back to normal after a nuclear disaster. Radioactive isotopes can cause damage to organic organisms for a long time, usually around 30 years for nuclear fuel. Many Residents were given new homes by the government during the recovery process. The only real counter measure of the recover process is time. There is no known way to neutralize these radioactive isotopes, the local environment
needs to be simply condemned and protective until nature can take its course and return things to normal.

These stages are crucial in understanding the effects disasters have on the human race. Two important aspects of this disaster were the prevention, and response steps. The government failed to follow several important safety procedures that could have saved thousands of lives. The National Energy Institute highlights the most important factors that Russia did not implement, that the United States does;

- Stringent emergency preparedness plans: U.S. personnel work with the local government to make sure that the public is notified in the event of a disaster.
- Alert and notification: Chernobyl Personnel concealed the disaster from local personnel and evacuation didn’t start until 36 hours after the accident.
- Protecting the food chain: The local wildlife was almost ignored even though it was definitely considered contaminated.

C: A nuclear meltdown is different from most disasters; no shelter can effectively protect the population unless it is made of lead or a similar dense material. In this situation the public was evacuated and that is really the only method of shelter. The equipment deployed was of basic nuclear technology at the time. Geiger counters were used to detect levels of radioactivity. Suits made of dense materials like lead were the best protection of workers. Concrete, metal, rebar were used to tomb the melted fuel. An interesting side note is that there is a room below the reactor where the melted fuel accumulated and solidified. Human eyes cannot look at this radioactive mass. It is coined as “the elephants foot” and is so radioactive that it cannot be looked at because it will kill the person on contact.
D:

Reactor is built → Safety precautions are made → Safety protocol is followed

Safety protocol isn’t followed → Disaster is imminent

Personnel attempt to conceal accident

Disaster occurs → Accident is somehow averted and the public has no knowledge of their possible danger

(Many military projects)

Local Government and authorities are notified immediately → Evacuation is put into effect, nature is damaged but lives are saved

Nature is damaged → People’s lives are harmed → Public opinion of nuclear energy is tainted
Hurricane Katrina

B. In the case of Hurricane Katrina, the city of New Orleans was extremely vulnerable to the effects of a major hurricane. Mitigation is described as the steps taken to reduce the vulnerability of disaster impacts. A city notorious for being located under the sea level and with a series of unreliable levees (over 50 levee failures), New Orleans was in jeopardy of a disaster for years. After getting by so long with the “if it’s not broken don’t fix it” the city received an unforgivable wakeup call as the storm picked up intensity and flooded the area. This mentality probably played the most decisive role because it led to the initial surge of chaos which the city was not ready for. In terms of educational preparation, the city probably had an idea of what to do for a major hurricane but when chaos strikes survival instincts tend to kick in. With a storm like Katrina, the combination of lack of mitigation and preparation led to a city underwater.

After the unexpected flooding the residents were all forced out of their homes and into places that could herd the masses. Arenas and stadiums could house the stranded people but food supplies and water were difficult to distribute. Prior to the relocation, people had to be picked up by boats and helicopters to be displaced to safety. With the amount of people in danger the response was a crucial stage in the casualties of the disaster. Many inhabitants were located in areas that made for difficult extractions. Resources were allocated to the pressing situation and help was sent from all over the country.

The impacts of the disaster affected the city of New Orleans for years to come. With over 800,000 homes destroyed the city called for a major reconstruction. The rebuilding process was riddled with challenges, specifically the spike in unemployment which hindered the city’s financial capabilities. The city repaired the 55 levee failures and sewage and water services were slowly restored. The reconstruction of homes was a large problem and took years to fix. Many
areas were severely damaged by the flooding which presented problems for homes to be
developed.

C. The lack of preparation led to a series of very chaotic events for New Orleans. The city did
not foresee the events that were about to occur and could not accommodate the vast amount of
people left homeless by the storm. Due to the number of homeless victims, the city housed the
citizens anywhere they could fit them which was typically large stadiums and arenas.

Sources

http://www.nei.org/master-document-folder/backgrounders/fact-sheets/chernobyl-accident-and-
its-consequences


http://www.rtno.org/get-educated/hurricane-katrina/
Hurricane forms and picks up intensity

- Lack of preparedness/mitigation
  - No defense, citizens enter danger
    - Inadequate response
      - Typically slow which leads to more casualties
        - Improper housing
          - Poor distribution of supplies which can create more chaos in the process
        - Adequate response can reduce casualties
          - Proper housing of displaced
    - Adequate response can reduce casualties
  - Proper preparedness/mitigation
    - Chaos reduced, casualties prevented

Adequate response can reduce casualties

Inadequate response

Typically slow which leads to more casualties

Improper housing

Proper housing of displaced

Poor distribution of supplies which can create more chaos in the process