Disaster Lifecycles

Human Disaster: - Chernobyl disaster

This has been one of the most catastrophic or worst nuclear incident in the nuclear power plant history and until today there are tons of radiation emitted from the power plant such as: Alpha, beta, and gamma radiations. This accident took place in 1986 when a group of scientists decide to do couple of experiments which are not authorized by the government or the committees as well as were againts the safety rules and regulations that resulted in a meltdown in the core of the reactor in the nuclear power plant. Also, since it is the most catastrophic event occurred in the nuclear history due to high losses in costs and causalities. There are many long term effects on the environment and on humans’ health such as the change in color of leafs due to change in the structure or the biological profile of plants and due to high radiation levels the chances of an individual having cancer is very high and also a change in biological structure might occur resulting in the growth of different organs.

- Mitigation:

Many safety procedures has been placed and enforced by the government and the agencies in order to provide safety to the environment and workers in the nuclear power plants in case of any sudden disaster. Different types of laws are passed to ensure or prepare for unexpected event that might occur at the nuclear power plant. Some of these safety procedures are to ensure that valves, pumps, and control rods are used to shut down during any unexpected accident that may occur. In addition, in case of a reactor core meltdown there are many several things taken into consideration such as the valves are closed and a certain amount of pressure is maintained so that the situation can be maintained in order not to get worse. Also,
the containment building is fitted with special devices such as water sprinkles and other devices that can assist during a reactor core meltdown. Moreover, the design of the containment building can be helpful since it prevents the radiation from inside going outside so it is considered to be the primary barrier between the outer environment and the inner from any radiation leakage or other hazardous materials. Another thing to consider is the computers or equipements the nuclear power plant is equipped with which really helps a lot because these equipments can be used without any confusion or doubt since they are well-programmed and labeled for the purpose and when to use and also there is a special button used in emergency situations in the control room called scram.

- Preparedness:

The design of this type of nuclear reactor was RBMK not the best during that time and also was an unusual structure of the reactor since it has many different characteristics than the usual nuclear reactor designs. On the other hand, still the design of the plant plays an important role for preparation to any disaster as well as monitoring and testing different parts of the reactor because this gives the workers in the reactor a clear idea if there is any unusual activity or significant changes in pressure or temperature and analyze the situation and see if there is a need of an immediate shut down to the powerplant. Also, the government is aware of the required actions needed in case of an emergency situation which require evacuation of the people living near by or people from near areas to evacuate the area to ensure that there is no great percentage of losses and damage to people’s health. Also, a plan has been set-up by officials so that in case of an emergency situation such as reactor core meltdown or radiation leakage the site will be closed and the areas surrounding it so that no one would have access to it.
- Response:

This disaster resulted in many in many individuals leaving their homes, schools, and companies and search for a safer place to leave whereas many other people suffered from these dangerous radiations. Individuals knew as soon as the evacuation started because high doses of radiations were leaking from the power plant and the government started evacuating the area and take actions to keep people safe. Also, everything surrounding the power plant was closed and the government decided to evacuate all people ASAP and to ensure no one is left but still many passed away the moment they were exposed to those radiations. Workers from the nuclear power plants were placed under health and physical examination to observe what they suffer from such as the different symptoms of radiation sickness and also to help relief their injury or minimize the pain. Also, officials went straightforward into the plant site and closed all the area surrounding it till 30 km from the plant. Fire fighters went to help people left at the power plant but the situation worsen and they couldn’t help others since the radiation doses were extremely high and they started vomiting and got the sickness as the workers. Moreover, the former Soviet Union sent many firefighters and emergency workers to help in containing the fire inside the reactor and the radiation as well and reduce the amount of leakage to the environment and also they buried the radioactive equipments since the radiation takes longer time to be removed.

- Recovery:

There are some strategies took place to reduce the effect of radiation emitted from Chernobyl nuclear power plant. Moreover, many agencies and governments from different parts of the world till today are trying hard to figure out a way to stop those radiations from being emitted into air but still research is in progress but they came up with a temporary solution but this won’t last for many years in which they covered the nuclear power plant with brick walls in order to block some of the radiation to minimize the effect. Also, the use of huge tomb-like
places to store all radioactive devices and equipments is another strategy done to reduce the effects of the disaster and the international community is now funding the construction of another tomb to store tons of radiation which can eventually help in minimizing the radiation doses and emissions from the reactor. Also, many affected areas are providing social rights and welfare payments to survivors and individuals suffering from the disaster and in many other affected area they provide them with special housing and medical care in order to improve their live and relief their stress and other psychological side-effects as a result from the disaster.

**Natural Disaster:- Japan Tsunami**

I. **Mitigation** - There is a monitoring tsunami warning system in Japan as this country can experience an earthquake every five minutes. Japan has also built innumerable concrete breakwaters and floodgates with the aim to protect coastal areas and ports around the country. However it was not enough to prevent the disaster.

II. **Preparedness** - Thanks to monitoring warning system in Japan, the citizens obtained a minute of warning before the earthquake hit the city. The stringent seismic building codes also could preclude many deaths caused by the earthquake. In this case, factory assembly lines and high-speed trains were stopped working. Japanese received messages in a form of alerts about the earthquake warning on their mobile phones.
III. **Response** - The disaster killed about 18,000 people, most of them died by drowning. The tsunami flooded 561 square kilometers of Japanese area, destroyed several defensive tsunami seawalls, and three-storeyed buildings that were constructed for human safety. Current disaster caused a failure of the cooling system at the Fukushima Daiichi Nuclear Power Plant. As a result, hundreds of tons of radioactive water flew into the Pacific Ocean, affecting marine life.

IV. **Recovery** - Researchers dropped special sensors along the fault line with the aim to measure the power that caused the earthquake. They also studied the tsunami deposits that will help to understand the origin of the deathly waves. After examining the damage, the engineers are looking for ways to construct the buildings more resistant to tsunamis and earthquakes.

Two years after the Japan disaster, 300,000 people who have lost their houses, were still living in temporary homes. There is also earthquakes debris on North American beaches that are washed up by the waves till nowadays. The world experts are assessing the history of last Japanese tsunamis with the aim to predict the local earthquake risk in future.
References: