FROM DEVELOPMENT TO DISASTER

DISASTER MANAGEMENT RESEARCH

In a modern, fast-paced, developing world, we are bound to natural calamites and unforeseen consequences in nature. It is likely that humanity's development will end up in a disaster. What is a disaster? What can it entail?

Continue reading to find out!

Research project beautifully composed by AR Nadal Verma.

WHAT IS A DISASTER?

An unexpected catastrophe damaging infrastructure and life is a disaster. A disaster is called a catastrophe. A disaster is of two types—man-made and natural.

MAN-MADE DISASTER

A **man-made disaster** is one that has a human cause. For example, a person's decisions of an industrial area defines the region's likelihood of ending up in a man-made disaster.

NATURAL DISASTER

A **natural disaster** is one that has been caused by nature or its entities, other than humans. For example, a landslide may occur near a hill that is undergoing an earthquake. And, an earthquake is caused by the moment of plates underground. These calamities do not have a human cause, and therefore are natural disasters.

DISASTERS IN OUTER SPACE
Disasters do not occur on Earth alone. The entire universe may face multiple disasters at once. Supernovae, or the explosion of stars, is a natural disaster. It is caused when a star consumes all of its energy, or when it collides into another.

This research project is inclined to earthquakes and oil and chemical spills.

EARTHQUAKES

An **earthquake** is an unexpected and sudden vibration caused on objects over the planet's surface. It is usually **natural**, but it may also be **man-made** as well.

Natural earthquakes are caused when tectonic plates under the planetary surface collide against or slide over each other. **Man-made earthquakes** are caused due to human activity. This includes explosions of a human cause, or industrial calamities.

OIL AND CHEMICAL SPILLS

Oil and chemical spills are **man-made** disasters that chemically and sometimes physically hurt life. Chemical spills are not just liquids, it can also be gaseous or a solid. Oil spills are always liquid, however. It is usually caused on a water body, when oil leaks from a ship.

The Deepwater Horizon accident in 2010. Pictured by the U.S. Navy.

CAUSES AND EFFECTS OF DISASTERS

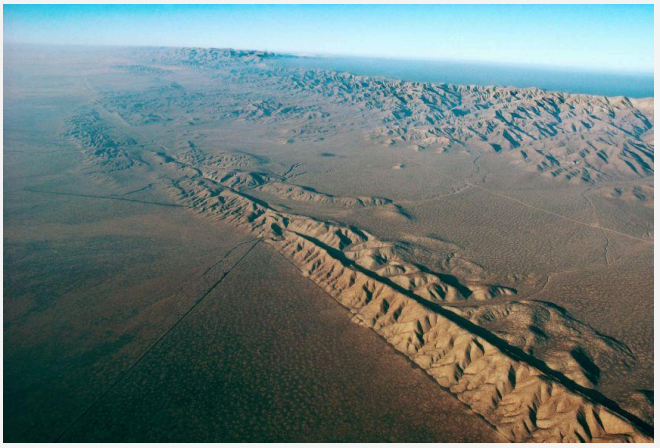
The cause is what initiates or triggers the disaster. On the other hand, the effect is the consequence or the result of the disaster.

CAUSES

The **cause** of a disaster defines the type of disaster it is—man-made or natural. Common causes of earthquakes include movement in tectonic plates underground, an explosion underground or on the surface, a meteorite or asteroid strike, or any large-scale vibration caused on the surface by any entity. People's decisions can be the cause of a disaster, too.

EFFECTS

The **effect** of a disaster is the loss or damage life or infrastructure has received. Effects happen to be immediately after the disaster, or sometimes after ages. An earthquake's effects include repeated vibrations being felt by objects and life under and on the surface. This happens almost immediately, at the speed of sound. An oil or chemical spill may occur in a water body with no life, and if left unmanaged, it can exceed to water bodies with life later.



A fault at San Andreas. The terrain of this region has been influenced by earthquakes. Pictured by Georg Gester.

MOUNTAIN-BUILDING EVENTS
Disasters may not be necessarily disadvantageous. Sometimes, earthquakes inaugurate mountain-building events on Earth's crust near vast regions. The Himalayas to the north of the Indian subcontinent is an example of a mountain built due to an earthquake. That earthquake was caused when India crashed into and joined the Asian continent.

In the picture shown above, the earthquake was the **cause**, and the creation of the fault was the **effect**. The fault is currently short. Millenia later, its height will increase as earthquakes continue to frequent the region.

...TILL NOW, WE HAVE BEEN DISCUSSING THE PROBLEMS. WHAT ABOUT THE SOLUTION?

FROM PROBLEM TO SOLUTION

We must navigate to a solution after discussing the problem. That is what we will achieve in this column.

PREPARING IN ADVANCE

We should always prepare in advance to combat such problems, for they are unexpected.

EMERGENCY KITS AND EQUIPMENT

Common solutions that are worth trying at home include having a **first-aid kit**, and other **emergency equipment**. These could be kept in one of the most commonly-visited and easy-to-reach rooms. The items in the first-aid kit should be periodically checked.

INFRASTRUCTURAL FEATURES FOR SAFETY

The architecture and structure of the building, and placement of furniture and objects can also provide virtues in surviving a disaster, such as an earthquake. For instance, some buildings have **basements** or **bunkers** embedded in them, underground. They are useful places to cover yourself during an emergency. **Supplies** should be present in the basement or bunker of a building, requiring periodic maintenance.

DO NOT BE THE CAUSE

In one's everyday life, it is always important to not be the cause of any disaster. Remember, precaution is better than cure.

SAFETY AT INDUSTRIES

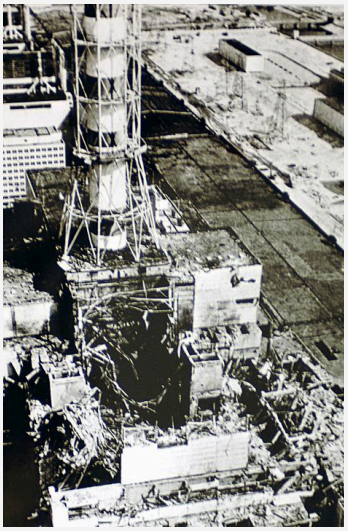
Industries should task experienced workers and staff members with high-level applications. For example, an industry should assign the ultimate decision-maker's role to one who has the most wisdom in the work and prioritizes safety. This prevents a man-made disaster.

The architecture of an industrial area greatly influences the damage caused during a disaster. In 2011, the Japanese nuclear power plant at **Fukushima Daiichi** melted down after a tsunami damaged the industry's infrastructure. Following the tsunami came a massive explosion emitting radioactive dust into the air. The tragedy at the power plant is an example of a gaseous chemical spill.

STORY: THE CHERNOBYL DISASTER

On 26th of April, 1986, the Chernobyl Nuclear Plower Plant in Ukraine faced a catastrophic end when one of its reactors exploded. There were two causes for it to happen:

- **Wrong decision-making:** The chief operator made wrong decisions and put the reactor on the brink of its destruction.
- **Unsafe structure:** The structure of the reactor had flaws that the U.S.S.R. recognized but neglected assuming its safe.



Chernobyl's exposed reactor the morning after the explosion.
Courtesy of the International Atomic Energy Association (IAEA).

DEDICATED ORGANIZATIONS

Some **non-governmental organizations** and **other institutions** are dedicated to providing **first safety**. They are the first ones to respond and help at the call of disaster. In India, the **National Disaster Response Force** (NDRF) is one of the largest relief organizations. There are organizations that help other countries, too, and these do not necessarily have to be inter-governmental organizations.

The official logo of the National Disaster Management Authority (NDMA) of India.

NDRF IN ACTION

The **National Disaster Management Force** has been internationally recognized as an aid force. In 2023, NDRF deployed rescue teams in Türkiye during catastrophic earthquakes, winning global acclaim. This operation was called **Operation Dost**. Similar efforts by the NDRF were seen during the Nepal Earthquake of 2015, too.

SUPPORT IN OIL AND CHEMICAL SPILLS

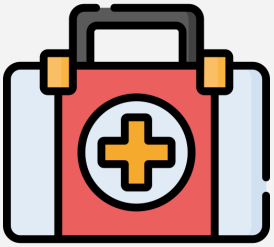
NDRF is expected to bring support to regions and water bodies affected with oil and chemical spills. If an oil spill occurs over sea, especially near India or the Indian Ocean, the Indian Navy will also come into action. The **Indian Coast Guard** is another organization dedicated to providing assistance during such a calamity.

47 rescuers from NDRF in Türkiye 2023 with rescued dogs before returning.
Courtesy of Asian News International (ANI).

Most organizations are spread across multiple cities in a country, or in multiple countries around the world. Although, organizations are always ready to serve to our safety, we must also understand that we should be cautious in every act, and be extra careful than affording cure later.

EMERGENCY KITS

Having emergency kits in possession is key. This column will explain more about what they are and how you can claim one of your own.



WHAT ARE EMERGENCY KITS?

An emergency kit is a collection of useful items that may be consumed, used, or equipped during an emergency. Emergencies can include earthquakes and other damages. However, emergency kits may not be always be useful in the situation of an oil or chemical spill. A first-aid kit is also an emergency kit.

WHAT SHOULD BE CONTAINED?

An emergency kit should always contain the following resources...

- Water
- Non-perishable food
- Bandages and gauges
- Dust mask
- Flashlight
- Extra batteries
- Backup battery for mobile phones or cell phones

If there is space for more, try adding other accessories, toiletries, and important medical documents to it.

MAINTENANCE

The possession of an emergency kit comes with certain responsibilities. The kit must be periodically maintained, and all items should not have an expiry date shorter than a month.

EQUIPMENT

Additionally, you may be interested in having additional equipment at home or at work ready to use in case of any emergency. Equipment could include a helmet, a rope, and so on.

ACCESSIBILITY

An additional responsibility that you must acknowledge is to ensure your emergency kits are easy to reach and accessible. You do not need to hard-code or protect an emergency kit behind a lock, safe, or password. Keep it near your most common rooms. While having at least one emergency kit should suffice, having another will not hurt. You might be interested in having multiple emergency kits secured in various places around your house.

DISASTER MITIGATION

If you have been through a disaster, you must also find ways to mitigate the consequences. Some disasters may be severe and require more time for the affected area to recover. Mitigation is much easier when you are in a team of other helpers who are making your way out of the disaster. It is a useful skill that you can pursue if you or someone else is in an emergency.

To mitigate disaster once it occurs, you will first need to analyze the situation and understand the disaster. If you feel unexpected vibrations in the building you are in, you should assume it is an earthquake. Take shelter under compatible furniture such as table immediately if possible. You can also quickly exit the building.

Rescuers attempting to curb the loss of oil. Picture is of the Chennai Oil Spill.

To mitigate oil and chemical spills, pipelines are set over the sea to restore the loss. Most oil and chemical spills are extremely dangerous and may also cause burns on the skin. Therefore, adequate equipment should be carried and used during the process of mitigation. Before starting to mitigate such a disaster, the leak should first be stopped. The ship has to be repaired to prevent further loss of resources. Sorrounding sea life may perish, and that unfortunately cannot be undone.

CHENNAI OIL SPILL

The Chennai Oil Spill, also known as the Ennore Oil Spill, was a catastrophic accident that caused oil to be spilled near the Bay of Bengal, near the coastal region of Tamnil nadu. The incident was caused when two ships collidded, kicking off the leak. The leak is still being mitigated.

DO'S AND DON'TS

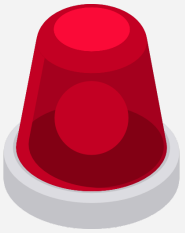
An individual must practice conduct during an emergency situation. Here is some advice...

DO'S

- ✓ Ensure others' safety and presence.
- ✓ Search for your emergency kit, if possible.
- ✓ Analyze the situation.
- ✓ Call for help and remain connected.
- ✓ Remain in a safe shelter.
- ✓ Encourage others to follow the conduct.
- ✓ Use a staircase during an earthquake.

DON'TS

- ✖ Panic, as it may make you and others more uncomfortable.
- ✖ Attempt to venture into a hazardous area without being accompanied.
- ✖ Send someone for the lookout on their own without being accompanied, unless you are confident it is safe.
- ✖ Force anyone to venture to anywhere unsafe unless it is necessary and agreeable.
- ✖ Use a lift during an earthquake.



CONCLUSION: "STAY SAFE!"

This is a commonly-spoken phrase. Adherence to it should only benefit you. Remember, precaution is better than cure. Avoid being in situations that may be dangerous, and keep safety first.

During a disaster, do not panic and follow basic conduct. Attempt to mitigate it, and reach out via phone call or radio for assistance. You can always find verifiable sources for assistance on the Internet, which is now available to almost everyone. Make wise use of the resources you have during any emergency.

These steps are not just to be undertaken. Encourage others to learn more about safety during an emergency. Schools and institutions are already taking steps to increase awareness of disaster management.

CREDITS

Credits to **International Atomic Energy Association (IAEA)**, and **Asian News International** for provision of information.

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"TOGETHER, WE CAN MAKE EARTH A BETTER PLACE. IT REQUIRES A LITTLE EFFORT OF YOUR OWN TO BE CAUTIOUS, AND REST IS OTHERS' ASSISTANCE WHEN YOU ARE IN. NEVER TRY TO EXCHANGE TRAGEDY FOR SUPPORT."

EMERGENCY?
In case of an emergency, contact emergency. You can dial the police or an emergency helpline. Then, seek for self-support and assist others affected. Follow the conduct mentioned in this article and mitigate the disaster!

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