

# NUCLEAR THOUGHTS

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- Son** : Dad.... I have some doubts to clear. When will you be free?
- Dad** : Why an unusual introduction?
- Son** : It's a serious matter. I am really in a dilemma.
- Dad** : If your tea is over, let us go to study room.
- Son** : Yaa..., it's over.
- Dad** : Usually you don't fall in any dilemma. What happened now?
- Son** : Right dad, but two opposing teams authoritatively depicting an issue, one in support and other in opposition respectively. Any one will fall in dilemma.
- Dad** : You are still not clearly saying what the exact issue is.
- Son** : The topic is arguments about Nuclear Power Plants. Recently a group of people started protesting against Nuclear Power Plants under construction by using Russian technology at Kudankulam. They say Fukushima like disaster may happen here also.
- Dad** : Ok, now what is the view of the supporters?
- Son** : Plants at Kudankulam are being built by Nuclear Power Corporation of India Limited, a Government of India Enterprises. They possess expertise of 40 years in this field. They handle about 20 Nuclear Power Plants either under construction or in operation.
- Dad** : Ok, What do they say?
- Son** : What they say is their Nuclear Power Plants are of International standard and never had any single accident. Nuclear Power is being generated with utmost care in those plants.
- Dad** : Son, nobody has any complaints about Nuclear Power Plants. Our scientist and engineers are well experts in this field. They will upkeep our faith.
- Son** : Those who oppose Nuclear Power Plants say, in case earthquake and tsunami like those occurred in Japan happen here, then Nuclear Power Plants near sea shore will malfunction and Fukushima like incident will repeat here also. Consequences of such accident will adversely affect human race and nature.
- Dad** : Son, I understood your dilemma. I will provide you some insight about Nuclear Power Plants.
- Son** : Ok, please tell dad.
- Dad** : As you know atom is the smallest part of an element. Splitting it will result in a lot of heat coming out. Like this if a large number of atoms are split enormous heat energy comes out.

- Son** : Is it the same phenomenon happening in the sun?
- Dad** : No, what happens in the sun is recombination of atoms which is called Nuclear Fusion. That also results in generation of heat. If splitting of atom is done in a controlled manner we can produce as much heat energy as we need. Using this heat, water can be converted in to steam. This steam when rotates the gear of a big dynamo power is generated.
- Son** : Yaa, power is generated by using dynamo. I have studied it in last year.
- Dad** : Splitting of atom which is also called Nuclear Fission can't be done in an open place. That requires a secured place. For commercial electricity generation using fission Nuclear Power Plants are required. All over the world there are about 445 Nuclear Power Plants.
- Son** : Since how many years these Nuclear Power Plants are being built?
- Dad** : More than 57 years. For constructing Nuclear Power Plants a lot of obstacles are to be overcome irrespective of the place of world. Since accident can happen if not used carefully, lot of instructions are in place by national and international regulatory agencies. Those are to be strictly followed for implementing Nuclear Power Plants in any country.
- Son** : Do you mean if utmost care is taken, there is no need of any anxiety?
- Dad** : Right. The strict procedures to be followed, starting from site selection, various phases of construction, commissioning and during continuous operation are clearly given in national and international guides. These regulatory authorities are watching alert to find any deficiencies are made by Nuclear Power Plant operators.
- Son** : Can't nuclear operators do inferior quality of job to increase their profit margin?
- Dad** : Son, do you feel any intelligent person will cut the root of the branch in which he sits?
- Son** : Not clear, can you explain?
- Dad** : There are many national and international anti Nuclear groups desperately sitting alert to find a lapse in Nuclear Power Plant operation. If any lapse is made not only whatever good name acquired will be lost but also there will be lot of hue and cry for closing all the plants.
- Son** : Dad, don't you feel it is better to have such alert groups?
- Dad** : Yes, It's good; when we feel somebody is watching us we will be much more careful.
- Son** : It seems you take nuclear accidents lightly.
- Dad** : Today the much talked about accidents are Chernobyl and Fukushima. How many lost life and still suffering from Union carbide chemical factory tragedy at Bhopal? Is anybody shouting for closure of any chemical plants?
- Son** : That's right dad, we also fall in many sorts of accidents big and small. We take utmost care not to repeat those, We learn from past experiences.

- Dad** : Absolutely correct, It's not that anybody who has money can start Nuclear Power Plants. It can be only done under the responsibility of government agencies.
- Son** : Greed for undue profit is the main reason for all accidents. Right dad?
- Dad** : Right, that's why nuclear field is under the control of government. Those who propagate '*grapes which can't be reached taste sour*' are business people who are unable to grab profit from nuclear business.
- Daughter** : I feel you are excited a lot. Why so much opposition towards business communities?
- Dad** : Daughter, why so early from college?
- Daughter** : Today there is no power in college, so they have closed early.
- Dad** : This is a very frequent problem in your college.
- Daughter** : Yes dad, power cut is a part of our daily life nowadays.
- Dad** : Sit down; Join us till mummy is ready with tea. Our present topic of discussion is also leading to power cut problem.
- Daughter** : I could hear dad saying about the rivalries among business people. I have also heard about illegal activities going on in this field.
- Son** : Dad, you tell about power cut and recent issues.
- Dad** : Can we think about a powerless era? Electricity is not something available naturally. It is something artificially made. There are many means for generating Electricity.
- Daughter** : Right dad, backing out from development is sheer foolishness.
- Dad** : This backing out resulted in 6-8 hours power cut in many states. Now I will tell about Nuclear Power Plants.
- Son** : I am afraid even to listen the term 'Nuclear Power Plants'. All of us have seen in TV, the disaster in Fukushima.
- Daughter** : That's right. After seeing that I realized, even that type of accidents also can be happened in Nuclear Power Plants.
- Dad** : You are right. Natural disasters like earthquake, tsunami, cyclone, lightning etc. will affect one and all. If you see it through the eyes of news paper/ TV media you will feel as if these are applicable only for Nuclear Power Plants.
- Daughter** : Present media culture is to disturb people psychologically.
- Dad** : Tsunami has happened in the past in India also. We have two Nuclear Power Plants very near to sea shore. Nothing happened to those plants at that time. The reason being we Indians always think far ahead.
- Son** : Those who are shouting against Kudankulam Nuclear Power Plant are saying the other side. Unpredictable severe natural calamities may happen in future. Such calamities may adversely affect the plants. Isn't it?
- Dad** : Brilliant, But don't live in imaginary fears. Wrong publicity happening there is futile effort for something which won't happen. Take utmost precautions

and safety gears before proceeding to achieve any big goal.

**Daughter** : Dad, What do you mean?

**Dad** : The Nuclear Power Plant at Kudankulam is the end product of latest nuclear technology 'VVER' from Russia. Around 15 Nuclear Power Plants using this technology are working in Russia since last 25 years. They provide timely technological updates to these plants. Russia is the first nation in the world who started a Nuclear Power Plant, 5 MWe capacity Obcsinscia Nuclear Power Plant commissioned at 1954. 31 Nuclear Power Plants are working in Russia. 23 are at various stages of construction. By 2021 they will have 54 Nuclear Power Plants. Who can question their technical excellence like to mention a few, the first space shuttle they sent, satellite they launched etc.

**Daughter** : It seems you have become a spokesperson of Russia.

**Dad** : Not like that, I am just openly telling the truth. Here safety is the prime issue. The incidents in Fukushima are the main reasons for fear. Few anti development activists are making use of this for their interests. These kinds of opponents are always an obstruction for smooth implementation of any project. The main problem of those who oppose is the feeling of insecurity that if they talk in support not many will notice it. Are you aware the number of people died in Fukushima accident?

**Son** : No, But I am sure many might have died.

**Dad** : Not even one. Those who died are due to tsunami.

**Daughter** : Nuclear radiation happened. Isn't it?

**Dad** : Yes. It is true that Japanese scientists got confused since it was the first accident. But they woke up and performed. Out of 6 Nuclear Power Plants mainly 3 had problems. Everything got normal within 2 months. People start staying in their residences as earlier. None of the media is interested in reporting this. They went for searching other hot news.

**Daughter** : Then what about the problems due to radiation?

**Dad** : What we should clearly understand is the incident happened in Fukushima is not nuclear explosion similar to Nagasaki and Hiroshima. It was just hydrogen explosion which is of chemical nature. These anti-progress forces are purposely acting as if they don't know that science has progressed to very high level.

**Daughter** : In all the places in the world there are people who play this type of rebellion. In our college even some people performed a march supporting ragging. This is also one way of getting noticed.

**Dad** : Do you know what happened in Fukushima? Earthquake is a daily incident in Japan. It keeps on happening at various intensities. All buildings have been made to sustain even during earthquake. The tsunami occurred in Fukushima is due to earthquake of which epicenter was Oshika Peninsula. Tsunami hit Fukushima before the signal from the warning system reached. The Nuclear Power Plants got shut down safely. But the generator for supplying power for mechanical devices for cooling the reactor core got

flooded. That was the reason for all troubles.

**Son** : Dad, is it that people have the same kind of fear in Kudankulam?

**Daughter** : It is not the fear of people; it is the strength of those who are scaring them.

**Dad** : Absolutely ok. It is the fact that none of the Indian coasts are under the threat of the tsunami.

**Son** : Then what about that happened in Kerala, Tamilnadu and Nicobar Islands.

**Dad** : Son, you are trying to checkmate me. What I meant is Tsunami tides higher and stronger than those occurred in Fukushima. Human beings are capable of learning from accidents and mistakes. Nuclear Power Plants are able to withstand any earthquakes. Similarly learning lessons from tsunami, diesel generators are located at a higher elevation. Even if generators fail to work, in these reactors there are automatic cooling systems.

**Son** : If still much stronger Tsunami comes?

**Daughter** : In that case all of us will get flooded any way. Then why to worry about Nuclear Power Plants?

**Dad** : Fine joke. But there is a valid point in that. The rebellious forces are confusing people by asking imaginary questions. They are not trying to understand the facts but busy in searching for new questions. They don't need answers.

**Son** : Oh! Again power went off.

**Dad** : India is a developing country. It is also the fastest growing economy in the world possesses unmatched human talent and is a treasure of natural resources. Other countries are trying hard to curtail our progress. We need infrastructural development for progress. For that we need Electricity. We should make use of all options for generating power. We can make use of Nuclear technology for generation of power at lower cost. In India we are in shortage of lakhs of units of Electricity. Tomorrow it may double. Now it's half an hour power cut. If we oppose Nuclear Power Plants blindly, today's half an hour power cut will increase to one hour tomorrow and day after tomorrow it will increase to six hours or more so on.

**Mother** : Now a days as you know environmental protection is a much talked about subject. Are Nuclear Power Plants creating environmental destruction?

**Dad** : No, they are not at all creating environmental destruction. But much importance is given for environmental protection at Nuclear Power Plants sites. The ecology around Nuclear Power Plant sites is well maintained. Many plant sites are home to variety of flora and fauna.

**Mother** : Let us have some food and then we can continue our discussion.