

Noise Pollution: Causes, Remedies and Legal Provisions



Noise Pollution

- **Definition-** sound that is unwanted or disrupts one's quality of life is called noise.
- **Source of noise pollution-**
 1. Industry
 2. Road traffic and air traffic and sea traffic
 3. Construction and Public works
 4. Indoor sources(air conditioner, air cooler, radio, television)

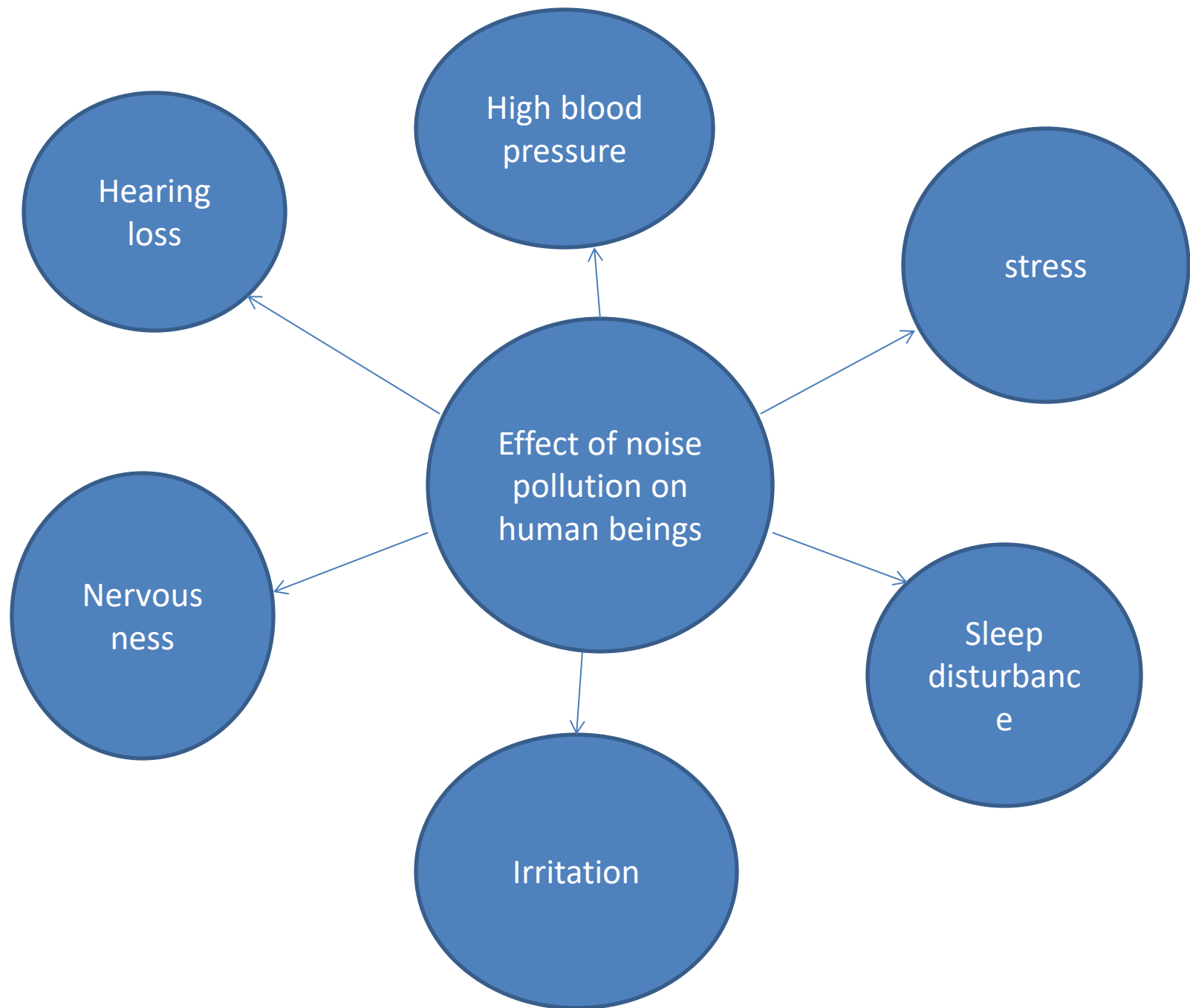


Effect on Human beings

Noise pollution level in decibel(db)	Effect on human
95	Hearing loss
150	Ear drum rupture

The human ear can detect sound in the frequency range about 20 to 20000 Hz.

WHO says that is 1.1 billion and young adults are at risk of developing hearing loss due to the unsafe use of personal audio devices and expose to damaging level of sound in noise environment venues



Effect of noise pollution on Fauna

- Physical damage to ears
- Stress responses
- Fright flight responses
- Avoidance responses
- Changes in behavioral responses, such as foraging
- Changes in vocal communication
- Changes in reproductive success
- Potential changes in population
- Interference with the ability to hear predators and other important sounds



Noise level chart

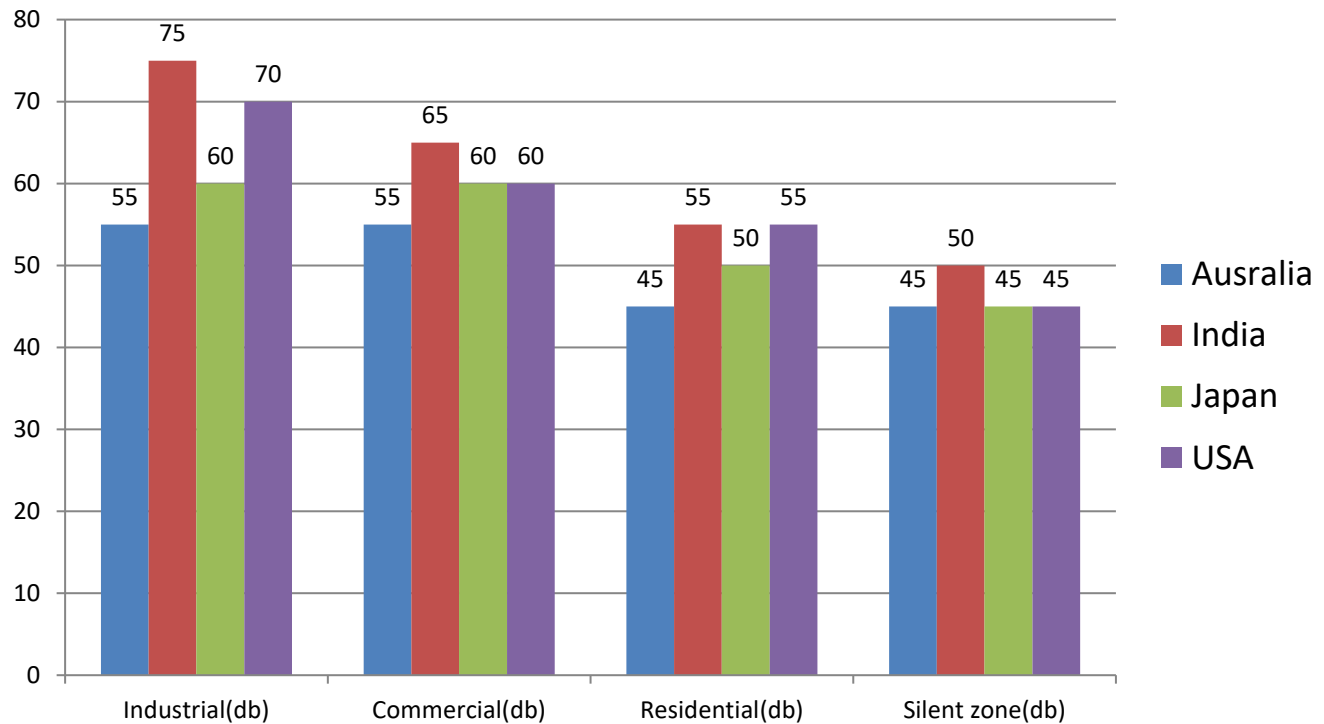
db	Example
80	Alarm clock
105	Sporting event
110	Rock band
140	Jet engine at takeoff
100	Motorcycle
180	Rocket launch
145	Firecracker

Central Pollution Control Board, Delhi Deepawali Monitoring Report: 2016

Ambient noise level data on during pre - Diwali and Diwali days

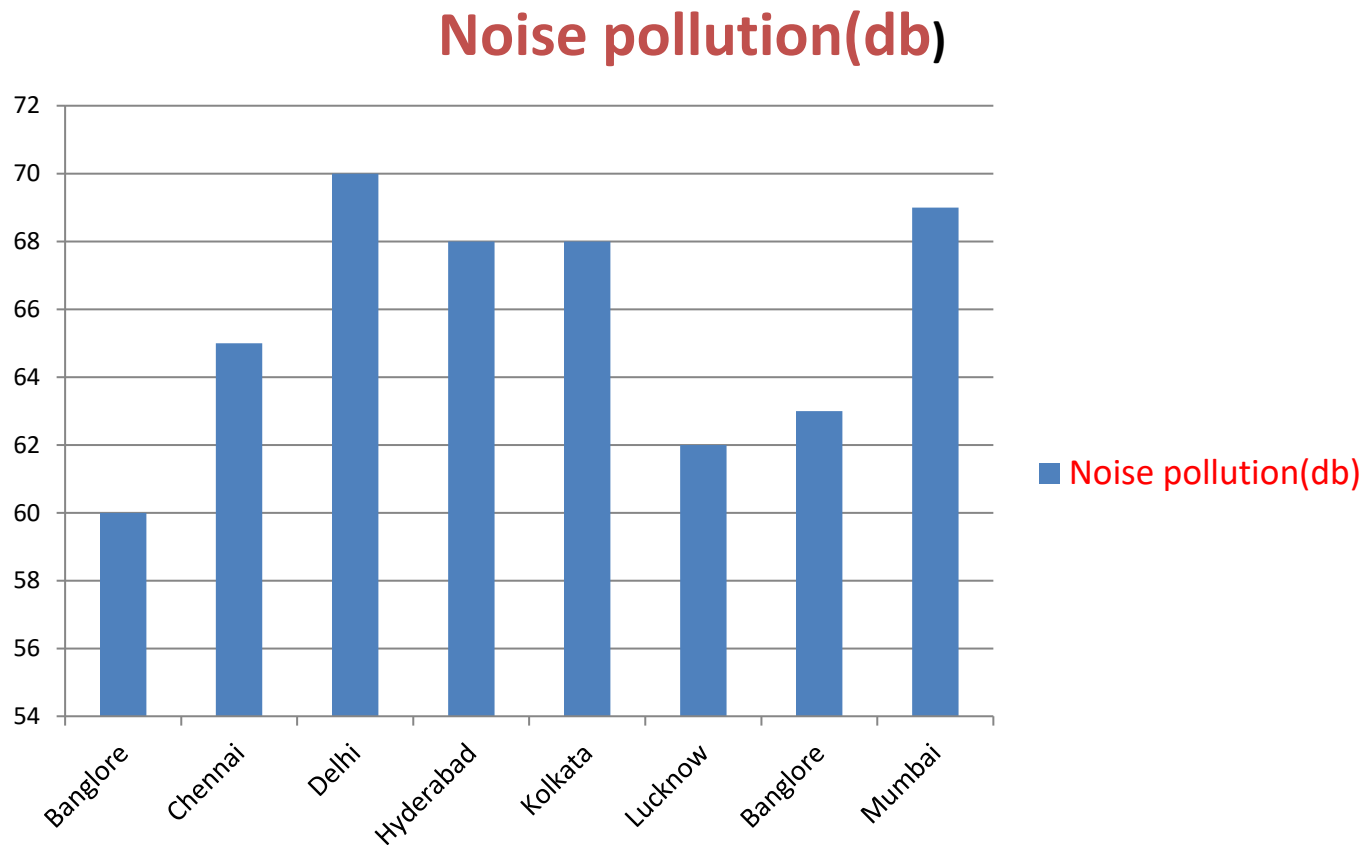
Sr. no.	Monitoring station	Pre Diwali Days	Diwali Days
1	Lajapat Nagar(R)	55	76
2	Mayur Vihar Ph- 2(R)	59	80
3	Pitam-pura(R)	43	ID
4	Kamalanagar(R)	60	74
5	Janakpuri(R)	59	75
6	Okhla(I)	74	86
Note: all values are in Leq db(A), ID – insuffecient data			

Country wise noise pollution data (db wise)



Source: international journal of environment research and public health,2015

Noise pollution of different indian cities (db wise), 2016



The Noise Pollutin (Regulation and control) Rules, 2000

It comes under section 6 and section 25 of environment protection act – 1986

Motor Vehicle Act, 1988

Section 119 and 120 of the Central Motor Vehicle Rules, 1989 leads with reduction of noise from motor vehicle

Ambient air quality standards with respect of noise (Notified under Act, 1990)

Area code	Category of area / zone	Day time (db)	Night time(db)
A	Industrial area	75	70
B	Commercial area	65	55
C	Residential area	55	45
D	Silence zone	50	40

Suggestions

- Control by Act
- Planting, bushes and trees in and around sound generating sources is an effective for noise pollution.
- Regular service and tuning of automobiles can effectively reduced the noise pollution
- Social awareness programs should be taken up to educate the public about the cause and effect of noise pollution



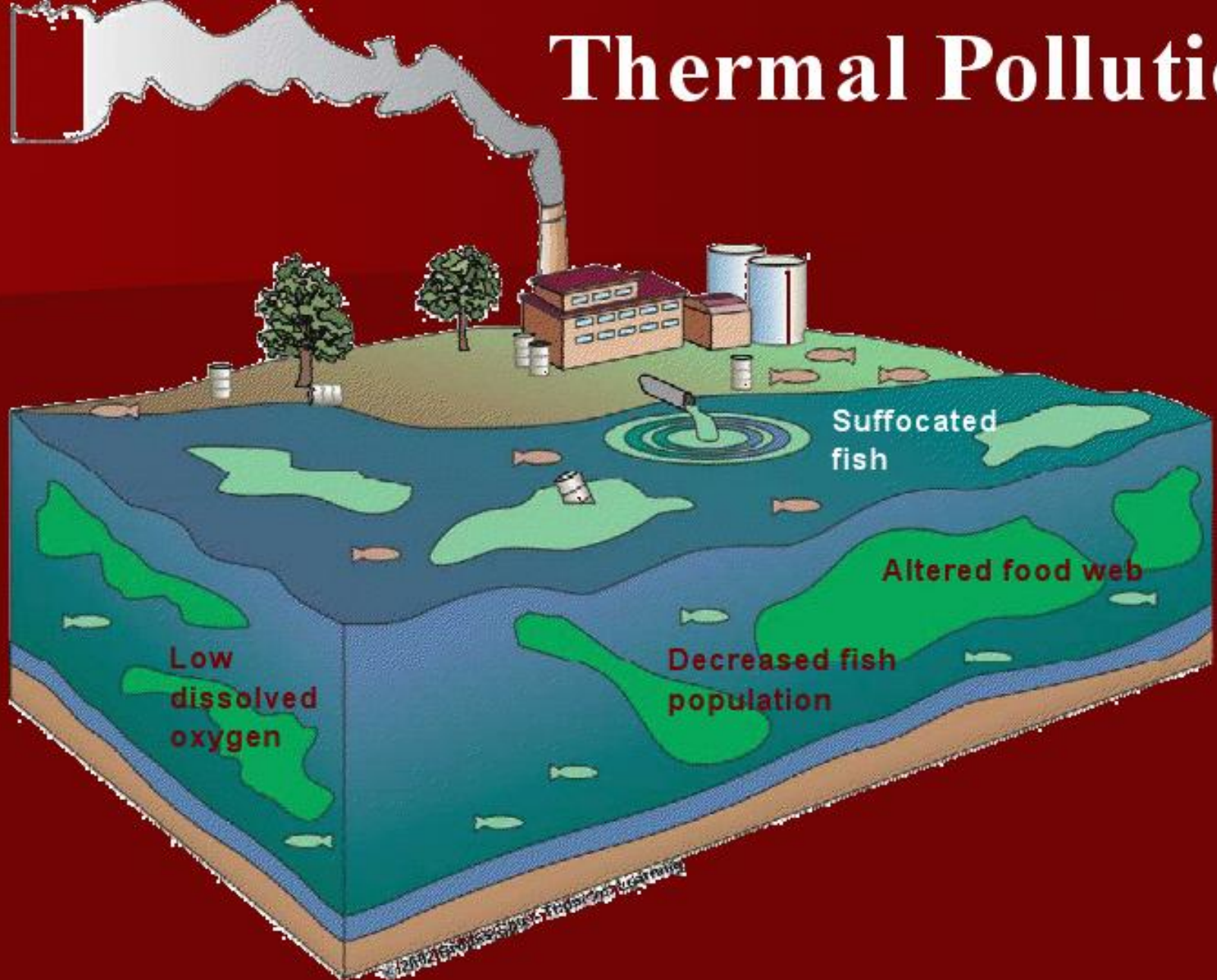
Battery bus service at Taj Mahal



Battery Rikshaw service at Taj Mahal

More use of renewable energy vehicles with less to moderate sound quality.

Thermal Pollution



DEFINITION OF THERMAL POLLUTION:

- Thermal pollution can be defined as the phenomenon by which the normal temperature of ambient sources of water face an increase in temperature.

Sources of thermal pollution:

- Removal of trees along the shore line increases solar incidence and hence warms up the water along with deforestation
- Power plants , nuclear and coal use thousands of gallons of water for their reactor but return water is much hotter.
- Dumping of waste warm water by nuclear plants.

Effects of Thermal Pollution

- **Sudden and periodic increase in temperature producing a thermal effect**
- **Changed dissolved oxygen**
- **distribution of organisms among major and minor communities.**
- **Death of steno thermic animals**
- **Changes to reproductive powers and increased susceptibility to disease**
- **production of heat shock proteins for thermotolerance.**
- **changes in migration time and pattern may be affected.**
- **Bio indicators are the first to show the effects**
- **Decrease in productivity of the water body .**
- **Economic and environmental damage**

- Water Use 2.5 billion gallons/day twice NYC's total daily consumption.
- Fish-kill Over 2 million fish and over 300 billion fish hatchlings are killed each year, along with eggs and larvae.
- Thermal Pollution Every two hours – all day, every day dumps as much heat as the Hiroshima bomb explosion into the river.

Remedies

- Use less electricity. Save electricity save rivers.
 - Cool down hot water before dump into rivers or avoid to dumping into rivers.
 - Rule and regulation should be strongly follow.
 - Move toward green energy like wind energy, tidal energy, solar energy, geothermal energy etc.
- Construction of cooling ponds --artificial water bodies for cooling due to radiation, convection and radiation.
- Construction of cooling towers .

Legal provisions

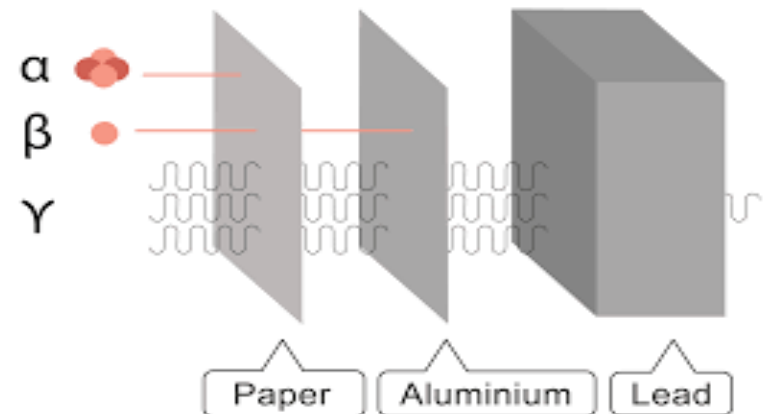
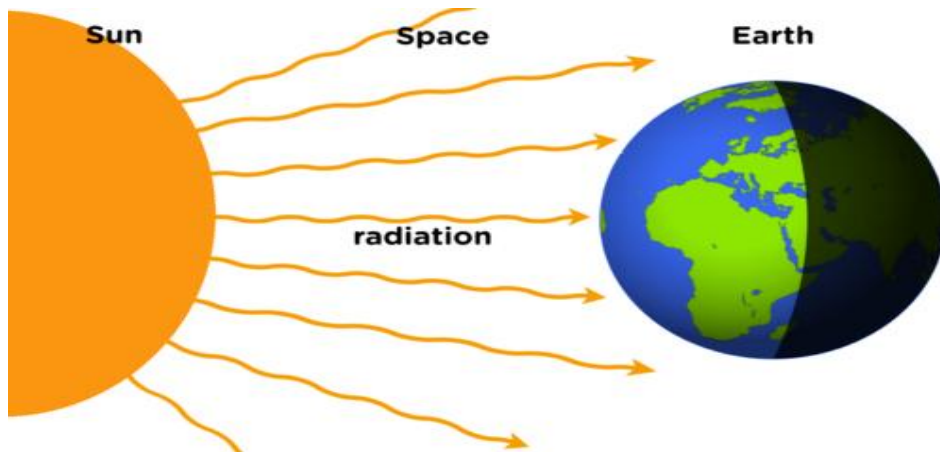
- The Water (prevention & control of pollution) Act, 1974
- EPA – 1986
- Subsequent Rules and Regulations

RADIATION POLLUTION

What is radiation ?

DEFINITION:- *Emission of high energy particles or radioactive substance*

→ It is classified into being ionizing and non ionizing



SOURCES

→ Natural sources of radiation

Cosmic radiation

Terrestrial radiation

Internal radiation

→ Man made sources of radiation

Nuclear power plant

Nuclear weapon

Mobile tower

Disposal of nuclear waste

Uranium mining

Medical waste

Industrial radiography (X-ray imaging)

Cell phone



EFFECT OF RADIATION

→ On human being

Cancer (skin cancer ,lungs cancer ,thyroid cancer)

Hair loss

Heart failure

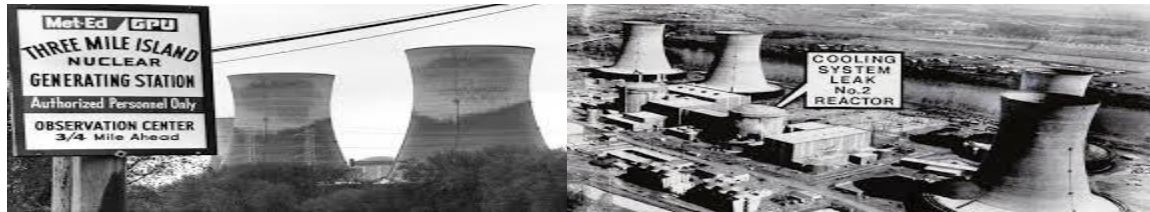
Can damage brain cell

→ On wild life / vegetation

*Mobile tower radiation on house sparrow and bee
hive*

SOME ACCIDENTAL CASES /DISASTER

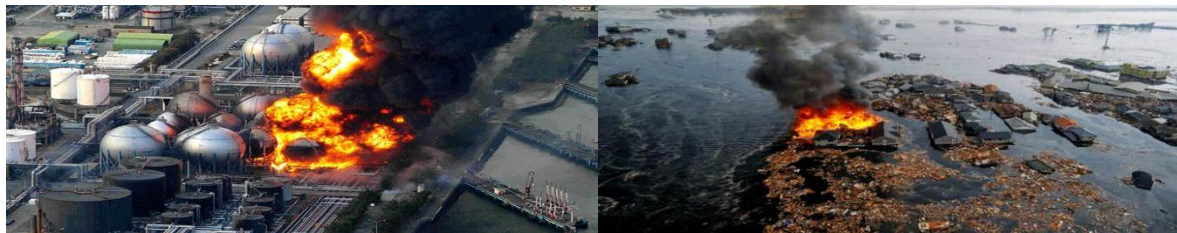
→ *Three mile island (united state)*



→ *Nagasaki – Hiroshima (nuclear bomb Japan)*



→ *fukushima daiichi (japan)*



→ *Chernobyl (ukraine)*



MITIGATION AND CONTROL MEASURES

- *Safety measure should be enforced strictly*
- *leakage have to be totally stopped*
- *Regular monitoring*
- *Waste disposal must be careful efficient and effective*
- *Safety measure should be strength against nuclear accidents*
- *fission reaction should be minimized*
- *Nuclear medicine and radiation therapy*

LIMITATION

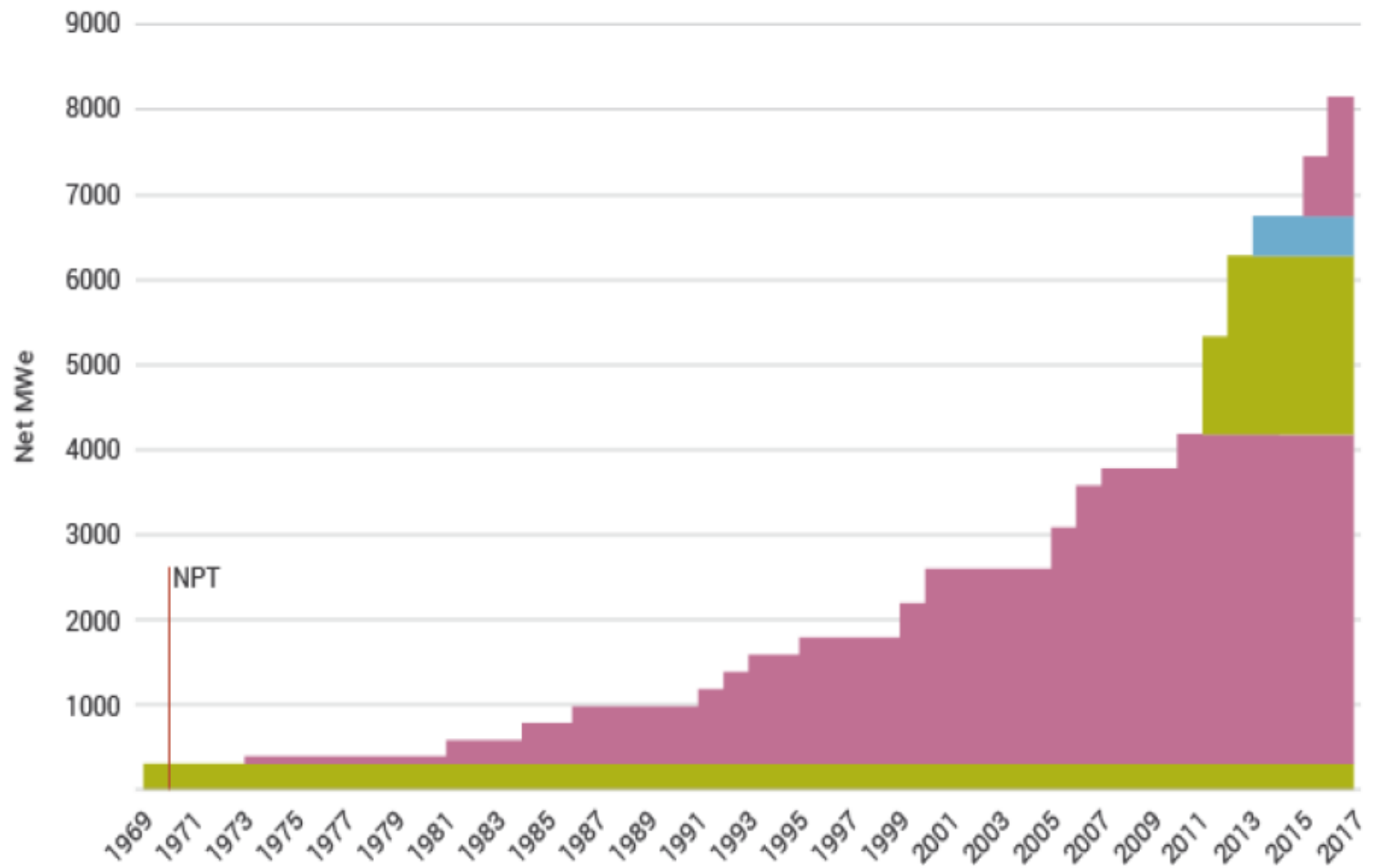
Dose limits for occupationally exposed workers and members of the public

Type of limit	Occupational	Public
Effective dose	20 mSv/year	1 mSv/year
Annual equivalent dose		
Lens of the eye	150 mSv	15 mSv
Skin	500 mSv	50 mSv
Hand and feet	500 mSv	

POPULATION (RADIATION) DOSE DISTRIBUTION IN VARIOUS STATES OF INDIA

S.NO	STATE	POPULA-TION IN (MILLIONS)	NATURAL RADIATION PER CAPUT $\mu\text{Sv}/\text{Y}$	POPULA-TION DOSE PERSON Sv/y
1	Utter pradesh	110.858	910	100880
2	Gujrat	34.103	610	20805
3	Uttarakhand	4.238	960	4070
4	Madhya pradesh	52.132	590	30760
5	Tamil nadu	48.198	705	33980
6	Orissa	26.272	855	22456
7	Manipur	0.188	450	85
8	Nagaland	0.200	5760	1150

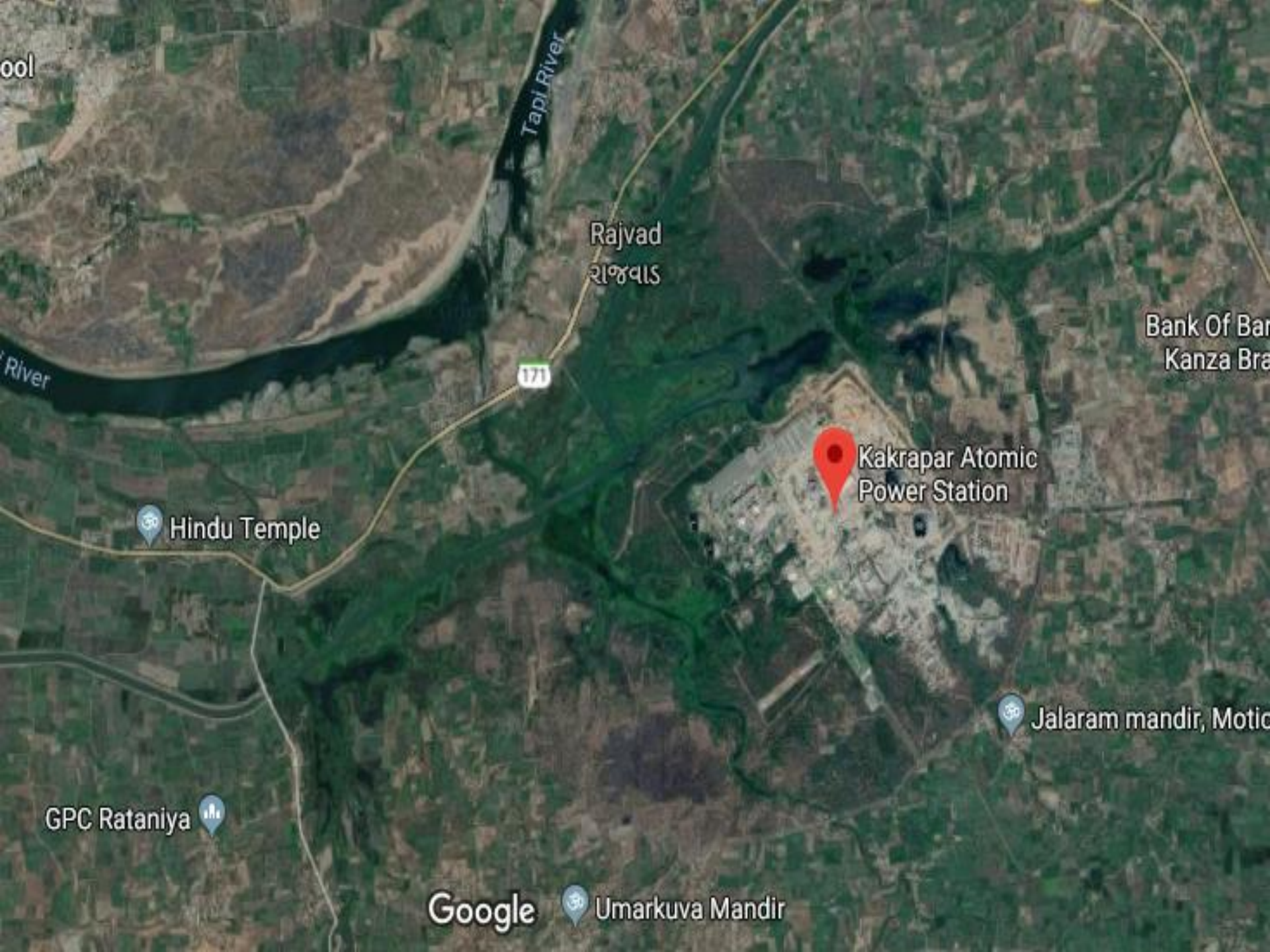
India's Nuclear Power Capacity - 25 units to 2016



NPP Operating and Under Construction in India



Source: World Nuclear Association



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Tapi River

Rajvad
રાજવાડ

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River

Hindu Temple

Kakrapar Atomic
Power Station

Bank Of Bar
Kanza Bra

Jalaram mandir, Moti

GPC Rataniya

Google Umarduva Mandir

ur

Khader
हकीमपुर
खादेर

Lower Ganga Canal

Lower Ganga Canal

Lower Ganga Canal

Low



Narora Atomic
Power Station

Kokilamedu
கோகிலமேடு

 Madras Atomic
Nuclear Power Station

BHAVINI PFBR
Atomic Power Station
பாலினி
முதலுறு...



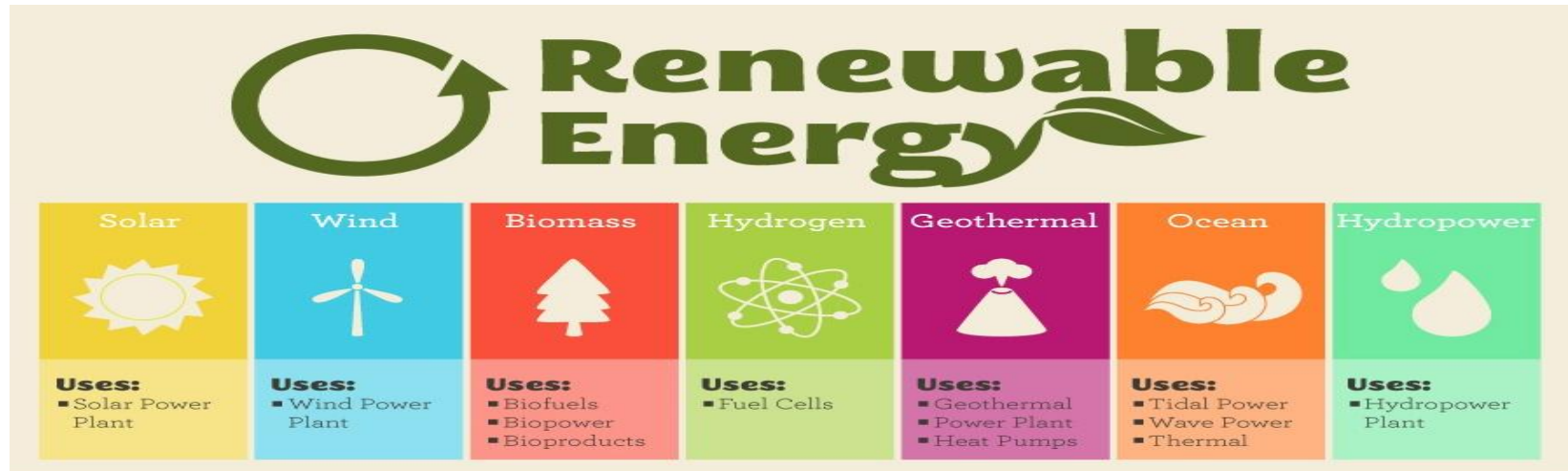
Kudankulam
Atomic Power Plants





SOLUTION

→ *Adoption of eco-friendly energy sources like solar ,tidal ,wind and geothermal energy*



→ *Offshore wind forming will be another good alternative for us*

ENVIRONMENTAL LAW AND REGULATION - 1

The Atomic Energy Act, 1962

- **The Atomic Energy Act of 1962 and the Radiation Protection Rules of 1971 governs the regulation of nuclear energy and radioactive substances in India. Under the Act, the central Government is required to prevent radiation hazards, guarantees public safety and safety of workers handling radioactive substances, and ensure the disposal of radio active substances, and the production and supply of atomic energy and nuclear generated electricity also fall within the Centre's authority.**

MOBILES TOWER IN UTTARAKHAND

→ Out of the total 668 towers sites in the affected areas of Uttarakhand, 400 sites were in Dehradun, Tehri, Joshimath, Rudraprayag, Uttarkashi And Rishikesh



Thank you