



# SNS COLLEGE OF TECHNOLOGY



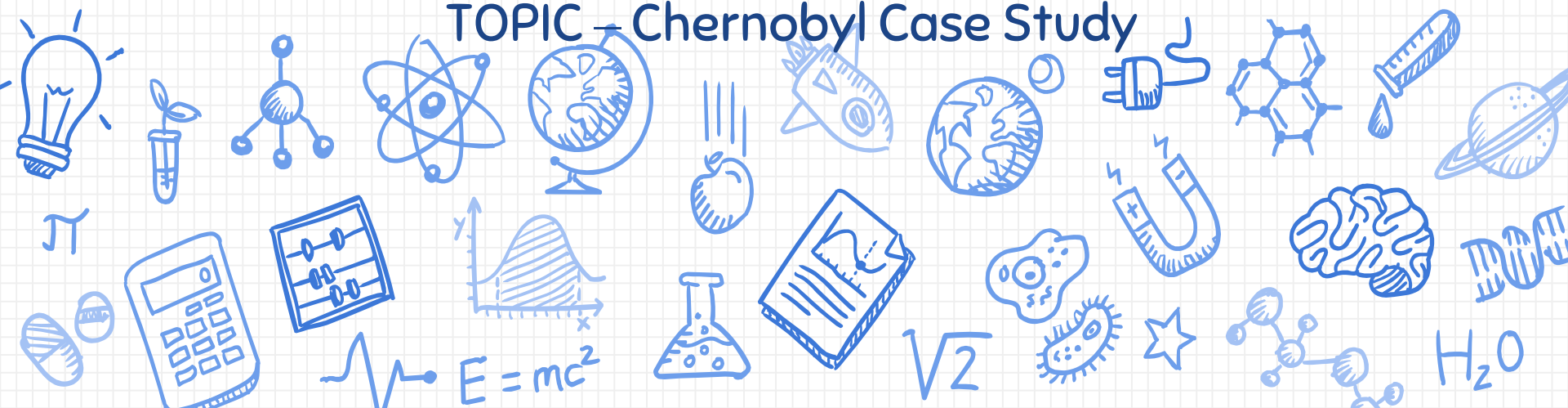
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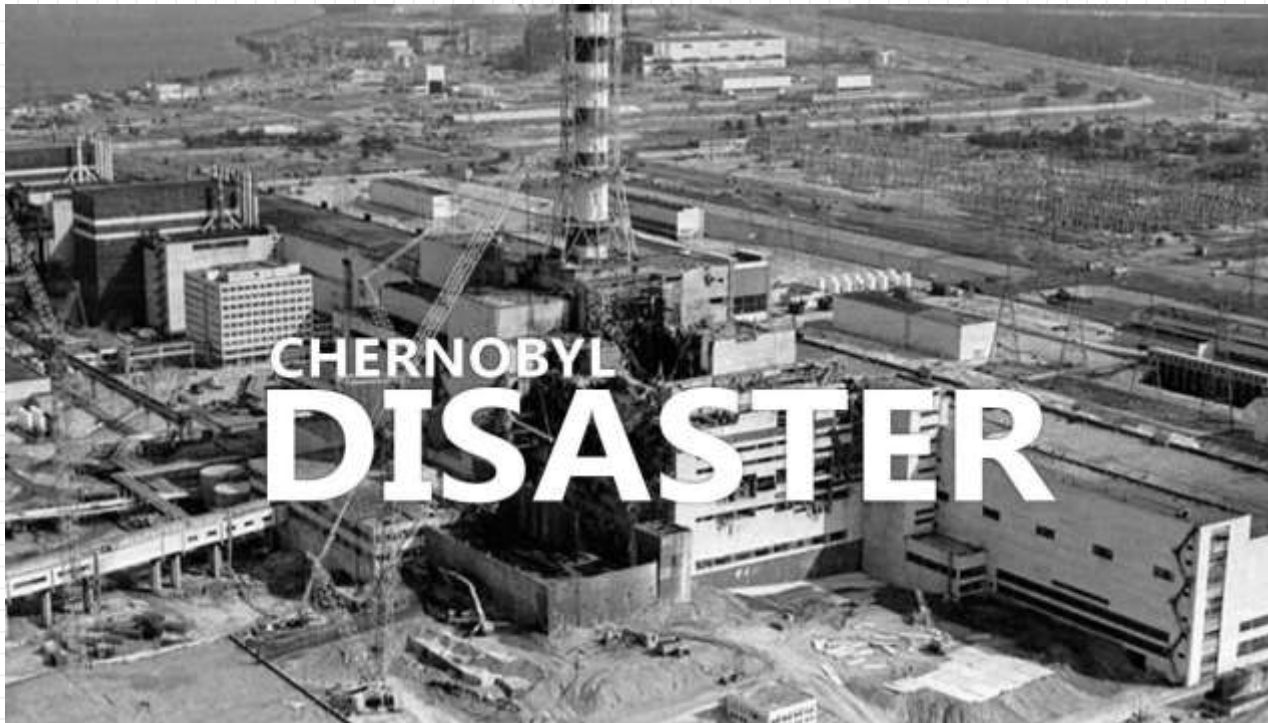
## DEPARTMENT OF MECHANICAL ENGINEERING 19GET201 – PROFESSIONAL ETHICS & HUMAN VALUES IV YEAR VII SEM

### UNIT 2 – Engineering as Social Experimentation

#### TOPIC – Chernobyl Case Study



X The Chernobyl disaster was nuclear accident that occurred at Chernobyl Nuclear Power Plant on April 26, 1986.

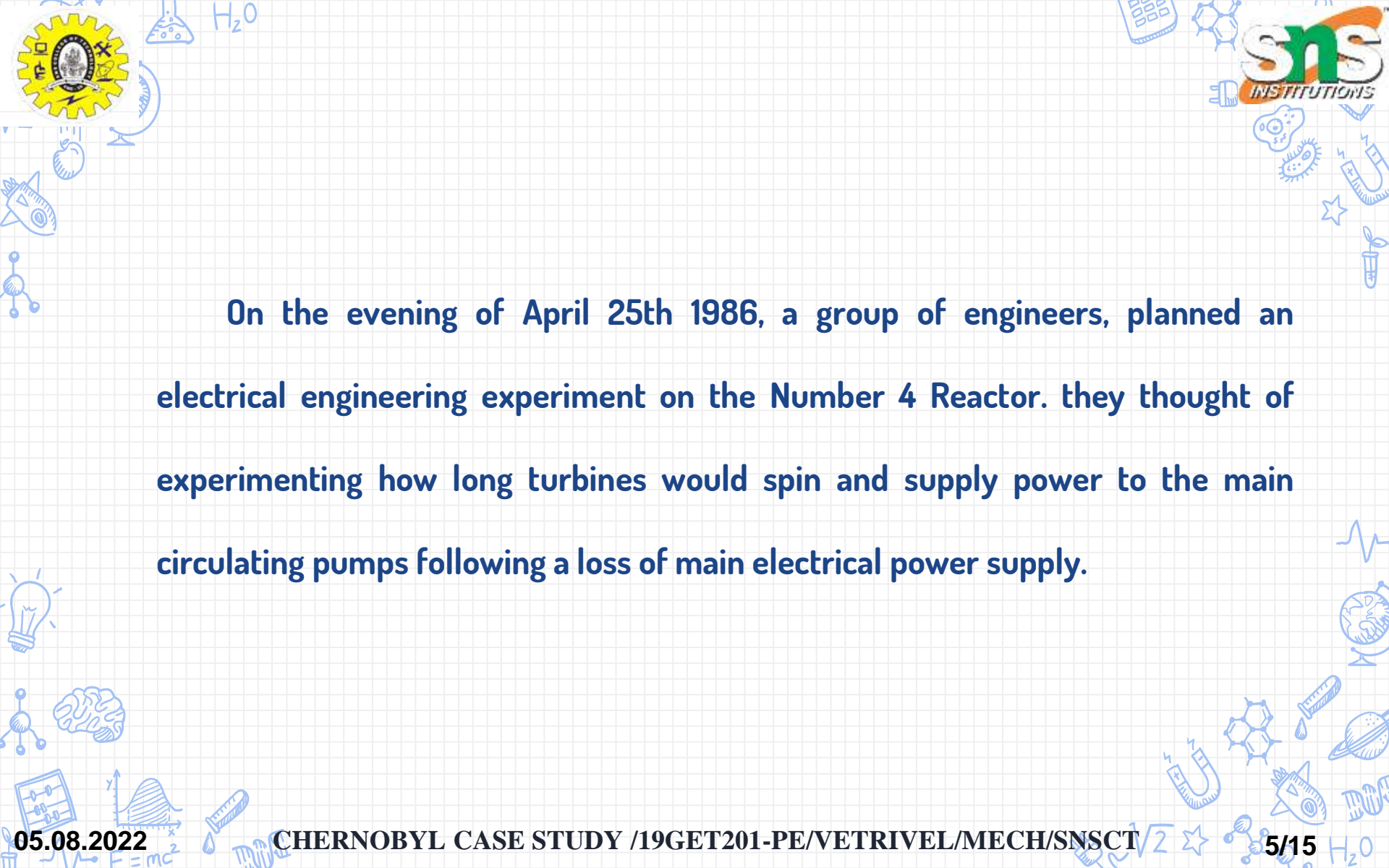


A nuclear meltdown in one of the reactors caused a fire that sent a plume of radioactive fallout that eventually spread all over Europe



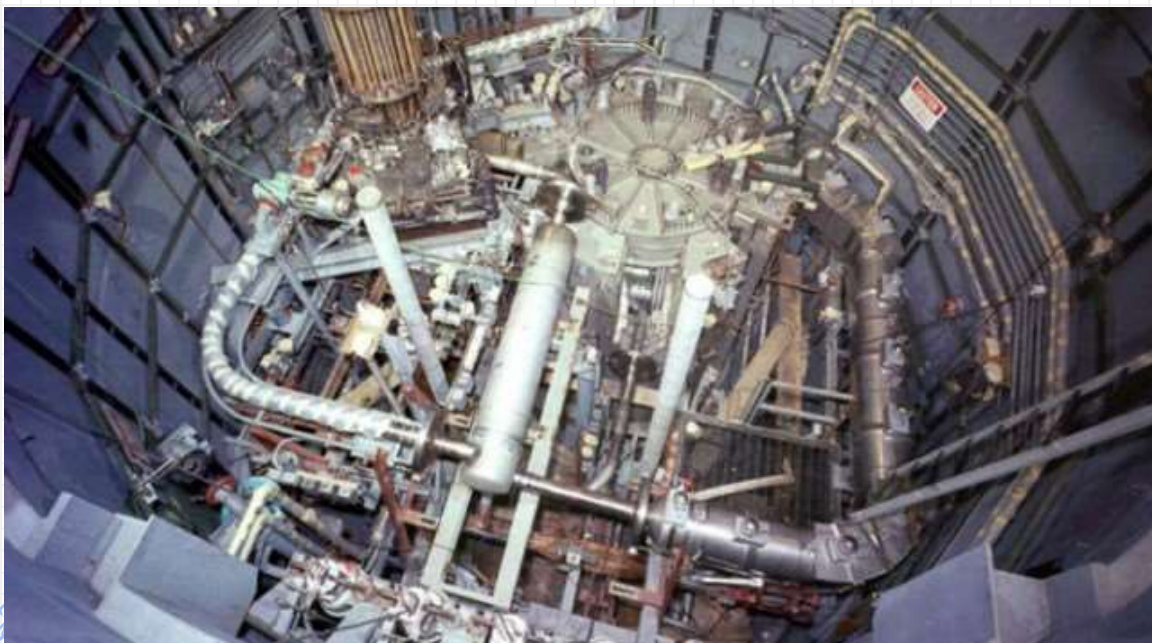
**X** Chernobyl nuclear reactor plant, built at the banks of Pripyat river of Ukraine,  
 had four reactors, each capable of producing 1,000 MWs of electric power.



The slide features a decorative border of hand-drawn blue icons on a white grid background. The icons include a yellow gear with a central emblem, a beaker with 'H2O' above it, a calculator, a microscope, a rocket, a lightbulb, a brain, a DNA helix, a graph, a test tube, a globe, a planet Saturn, a star, and a cell. The SNS INSTITUTIONS logo is in the top right corner.

On the evening of April 25th 1986, a group of engineers, planned an electrical engineering experiment on the Number 4 Reactor. they thought of experimenting how long turbines would spin and supply power to the main circulating pumps following a loss of main electrical power supply.

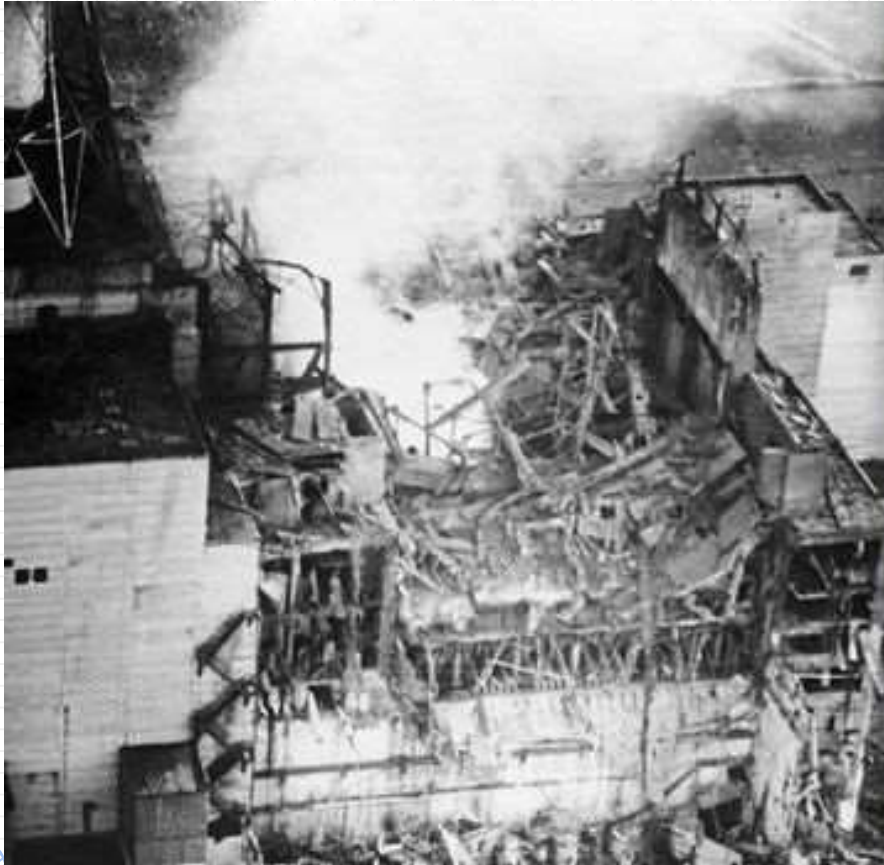
But, it was decided to take advantage of this shutdown to determine whether, in the event of a loss of station power, the slowing turbine could provide enough electrical power to operate the main core cooling water circulating pumps, until the diesel emergency power supply became operative.



The aim of this test was to determine whether cooling of the core could continue in the event of a loss of power.

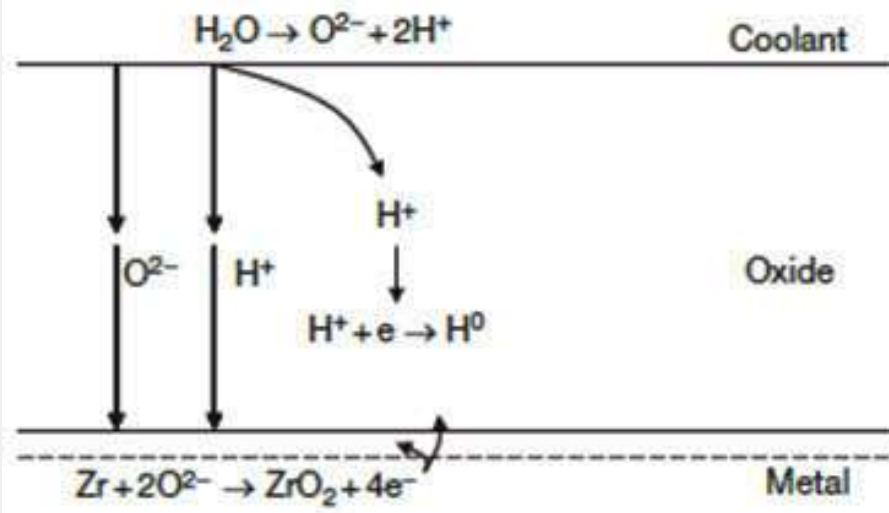


As a result, two explosions were reported.





Eventually, after two to three seconds, a second explosion took place, which could be possibly from the build-up of hydrogen due to zirconium-steam reactions.



All the materials such as Fuel, Moderator and Structural materials were ejected, starting a number of fires and the destroyed core was exposed to the atmosphere.



- X In the explosion and ensuing fire, more than 50 tons of radioactive material were released into the atmosphere, where it was carried by air currents.
- X This was 400 times to the amount of radioactive materials released at the time of Hiroshima bombing.
- X The Chernobyl Nuclear Power Plant disaster in Ukraine, is the only accident in the history of commercial nuclear power to cause fatalities from radiation.

There were many fatal effects due to the radiation released. A few of the effects are listed



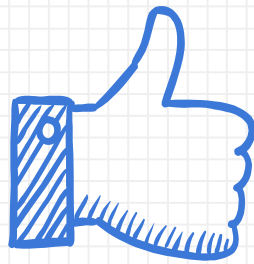
# Conclusion

- X two workers had died. One immediately got burnt to ashes after the accident, while the other was declared dead at the hospital within few hours of admission
- X 28 emergency workers and staff died within 4 months of the accident due to the thermal burns and the radiation effect on their bodies
- X Acute radiation syndrome (ARS) was diagnosed in 237 people, who were on-site and involved in cleaning up
- X The land, air and ground water were all contaminated to a great extent.

# ASSESSMENT

Debate:

**X** What lead to the destruction? Negligence or lack of safety?



# THANKS!

## Any questions?

You can find me at

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