

Addressing Risk in Thermal Power Stations

Taking a serious note of the occupational health hazards associated with work in coal-fired thermal power plants (CFTPPs) the Honorable Supreme Court of India has asked High Courts to examine – the safety standards, rules and regulations with assistance of the State Governments after calling for necessary reports from CFPPs situated in their respective States.

A thermal power plant uses coal as fuel for their working. Coal after burning leaves ash. Disposal of this ash is also one important task. Ash is than exposed to open environment and has adverse effects on health of Living beings. And people working under such environment may suffer from various health problems like skin diseases, breathing problem etc. Thermal power stations are also prone to hazards and accidents while maintaining and operating large scale machineries such as boiler, turbine, generator, material handling etc. This work emphasizes on identification of various occupational hazards and injuries, health risks associated with the

manpower working in a thermal power plant.

Thermal power plant can cause environmental impacts at all stages of the process to society. It can also causes various occupational diseases and injuries to the workers working. Each Occupational disease and injury has a major effect on economy due to loss of productive hour, manpower losses, compensation to the victims. Therefore, there is a need to address all occupational diseases, injuries/fatalities through corrective and preventive measures.

There are several kinds of ailments that were recorded in a thermal power plant. These included Allergic reactions that interfered with breathing, asthma, emphysema, chronic bronchitis, Lung cancer, pneumonia, tuberculosis, wheezing, stroke, Chest pain, shortness of breath, cough, irregular heartbeat, swelling in legs and feet (not caused by walking), skin allergies, High B.P, anxiety, eye irritation and fatigue. In addressing the risk, there are several legal measures which are

proposed and regulated by the government and other safety organizations. These measures are essential to be followed up for safe working operation and conditions.

Some common safety rules and regulations that are essential in the power plant to follow up:

- Factories Act 1948 & M.P. /C.G. Rules 1962;
- The Indian Boiler Act 1923 & Regulations, 1950 (Amendment 2007)
- Water Act -1974
- Hazardous Waste (Management & Handling) Rules, 1989.
- Indian Electrical Act 2003 & Rules 1956
- IS Standards
- OSHA Standard 1970
- Third Schedule (See section 89 and 90), List of Notifiable Diseases, The factories Act,1948

Breaches of these laws and regulations generate hazards which can cause the harm by generating;

- Unsafe activities
- Unsafe conditions
- Behavioural mishaps.



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Following are suggestive causes of Plant Location Hazard and preventive measures

Sr. No.	Plant Hazard Location	Hazard Description	Preventive Measures
1	Coal Handling Plant	Fire in coal Storage	Regular inspection, water spray, isolation from ignition sources
		Coal dust explosion in coal conveyer bunker	Proper ventilation, spark proof electrical equipment
		Injury during coal handling like slip and trip	Proper PPE's
		Respiratory problem due to coal dust	Dust mask should be provided
		Catches on conveyer belt	Catches on conveyer belt
		Rail line and other transport line accidents	Speed limit on plant area
		Injury during maintenance on ball mill	Training, proper supervision, PPE's
		Fall from the height during work on conveyer belt, conveyer control room etc.	Safety belt, safety net should be provided, training
		Struck by falling object	Safety helmet, safety net
2	Demineralization (DM) Water Treatment Plants	Fire hazard	Fire extinguisher, eliminate the possible ignition source
		Chemical burn by Spillage of sulphuric acid and caustic soda lye during unloading, overflow, Damage on storage tank or pipe line	Wash rinse exposed area, training, maintenance, proper supervision
		High noise level	Ear plug, ear muff should provided
3	Boiler System	Explosion in boiler due to over pressure and temperature	Continuous monitoring, maintenance
		Explosion in boiler due to improper combustion of Fuel	Regular inspection, maintenance
		Burn injury due to hot water and hot steam pipeline leakage	Inspection, maintenance
		Exposure to the hot surface of pipeline or machineries	Regular inspection, maintenance
		Water tube burst due to Failure in boiler water level control	Continuous monitoring, maintenance
		Fire in diesel supply line	Regular inspection, maintenance
		Burn injury by hot fly ash	Maintenance, proper exhaust
		Catches on the moving part of the machinery like F.D. fans or motors	Proper fencing on the moving part of turbine
		Burst of the equipment body due to over pressure and over temperature	Regular inspection, maintenance
		Sleep, trip and from the height during routine work, maintenance or inspection	Training, proper supervision, PPE's
4	Generator and Turbine	Explosion in turbine due to cooling system failure	Regular inspection, Maintenance
		Damage on generator due to lack of lubrication in coupling shaft	Regular inspection, Maintenance
		Fire on cooling oil	Proper storage, isolation from the ignition sources

References

- <http://www.indiaenvironmentportal.org.in> <http://nioh.org/>
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