

Anchoring Excellence in Occupational Safety and Health: A Swot Study of Chennai Port Authority

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ABSTRACT

In port environments, the continuous movement of heavy machinery and cargo poses significant occupational risks. This study investigates the occupational safety and health (OSH) practices adopted by the Chennai Port Authority (CHPA), drawing findings from a structured employee survey (n=100), field observations and a review of institutional practices. The findings reveal a well-developed OSH framework, including 24/7 medical care through the port hospital, regular safety drills and audits, and robust awareness campaigns. However, challenges such as gaps in incident reporting, limited PPE awareness and manpower shortages persist. A SWOT analysis highlights both the strengths of the CHPA's OSH culture and critical areas for attention. Overall, with its integrated approach to OSH, CHPA emerges as a significant case study for enhancing safety practices in similarly high-risk industrial workareas.

Keywords: Occupational Safety, Port Safety Management, Employee Wellbeing, Industrial Health

INTRODUCTION

As one of the 12 major ports in India, the Chennai Port plays a vital role in national logistics and trade. Operating in a high-risk, industrial environment, where every task, every movement of machinery, and every ton of cargo involves potential hazards, the port upholds a clear ethos: "Safety first, Duty next." In this context, this research article aims to examine the proactive Occupational Safety and Health (OSH) measures undertaken by the Chennai Port Authority to safeguard its workforce and extend well-being to their families, supported by insights from a structured employee survey.

OBJECTIVES OF THE STUDY

1. To examine the best practices of the Chennai Port Authority for ensuring occupational health and safety
2. To understand employees' awareness, perceptions and experiences related to these OSH measures through a structured survey
3. To identify key strengths and suggest improvements for enhancing the overall safety culture at the port.

RESEARCH METHODOLOGY

This exploratory study employed a mixed-methods approach, combining quantitative and qualitative techniques. Primary data were collected from 100 employees of the Chennai Port Authority using a structured questionnaire. Respondents were selected through purposive sampling across operational and administrative units. Secondary data included international conventions, national laws and institutional policy documents. Additional insights were drawn from informal interviews, field notes, and discussions during an internship at the port.

REVIEW OF LITERATURE

1.1 Regulatory and Legal Frameworks for Port Safety

Occupational Health and Safety (OSH) in port environments are governed by international conventions and national laws. International conventions such as ILO C155, C187, and C152 focus on the right to a safe and healthy workplace, especially in high-risk sectors like dock work and marine operations. The IMO's SOLAS Convention regulates safety standards on ship operations and port facilities. These frameworks emphasise a synergistic systems approach to safety, emphasising improvement, employee participation, and government-employer collaboration. (Al-Wreidat & ILO, n.d.; ILO, 2020)

India has domesticated these standards through legislations such as the Factories Act, 1948 and the Dock Workers (Safety, Health and Welfare) Act, 1986, now consolidated under the Occupational Safety, Health and Working Conditions Code, 2020. Compliance oversight is done by the Directorate General of Factory Advice Service and Labour Institutes (DGFASLI).

Also, Chennai Port-specific frameworks, such as the Chennai Port Safety Regulations, 1981 and employee medical health benefit regulations, illustrate the organisational commitment to occupational safety and health. (Gazette of India, 1982; Narain, 1989).

These frameworks not only enhance institutional commitment but also align with broader international development goals such as the SDG 3 (Good Health and Wellbeing) and SDG 8 (Decent Work and Economic Growth).

1.2 OSH as a Strategic Component of Management

Rios et al. (2017) underscore the need for more nuanced analyses of safety systems, especially by considering gender-specific risks in industrial workplaces. Jha et al. (2023) emphasises that effective OSH systems increase productivity, reduce absenteeism, and foster a culture of accountability.

Theoretical models such as the PDCA (Plan-Do-Check-Act) cycle in the ILO-OSH 2001 guidelines provide a preventive, process-driven approach for fostering continuous improvement in OSH management systems. Also, a study by Zgair et al. (2023) in the oil and gas sector highlights that the perception of organisational justice and management accountability directly influences workers' productivity.

1.3 Occupational Hazards and Employee Health in Port Work Areas

Yoganandan and Sivasamy (2015) explain how the failure to mitigate occupational hazards leads to reduced productivity and increased health costs. Budi (2024) highlights how prolonged exposure to industrial noise in ports affects employee health, causing fatigue and stress.

1.4 OSH Integration in Port Management System

A study on OSH in Indian Ports by Rengamani et al. (2015) finds that Indian ports have made significant progress in adopting physical infrastructures and procedural systems for safety. However, gaps remain in reporting practices and emergency response coordination. The study recommends the adoption of a 'total

loss' approach to accident prevention by port authorities, which involves investigations of not just major accidents but also near-misses and non-injury incidents.

The management must essentially possess overall control of the operation of the safety systems of work and promote a safety culture in the port. Effective reporting mechanisms and prompt communication of safety violations to regulatory authorities are crucial for maintaining transparency and accountability in port operations.

OBSERVATION AND FINDINGS

Profile of Respondents

The survey included 100 employees from various departments of Chennai Port Authority. Participants included a mix of administrative, engineering and operational staff with varying experience levels.

Awareness of Safety and Health Protocols

99% of the respondents demonstrated awareness of the port's safety and health protocols. This includes knowledge of available safety facilities, emergency aid procedures, standard operating protocols, and mechanisms for reporting hazards. This overwhelming level of awareness highlights the effective dissemination of safety and health-related training through robust communication channels.

Most employees recalled participating in a safety induction program upon their appointment at Chennai Port, while only a few did not. Additionally, the majority indicated that safety drills, such as fire and evacuation drills, are conducted occasionally, typically during observances like National Safety Week (March 4th to 10th) each year.

The Chennai Port Authority has established an Occupational Safety and Health Committee comprising management and employee representatives. The committee reviews safety protocols, evaluates incident reports and ensures compliance with the labour welfare codes.

These initiatives by the Chennai Port Authority have significantly enhanced employee awareness, an essential component in an organisation with such a heavily industrial environment.

Most employees attend the annual medical screening, with minimal non-participation, indicating strong institutional commitment.

Employee Satisfaction on OSH Measures

Out of 100 survey respondents, 41% rated the Chennai Port's Occupational Safety and Health (OSH) measures as 4 out of 5, indicating a positive outlook with room for improvement, as per the scale used in the survey.

In alignment with the port's safety regulations, all major on-site workers, excluding the administrative personnel, have been provided with essential Personal Protective Equipment (PPE) such as helmets, safety gear, gloves, and, in the case of labour-intensive roles, uniforms as well. Among those expected to receive PPE, approximately 73% reported that the equipment provided is in good condition and suitable for their work, while 27% noted inconsistencies in provision or usability. Notably, none of the respondents indicated complete non-provision of PPE. Interestingly, many of the reported inconsistencies stemmed not from actual shortages but from a lack of awareness about the purpose or proper use of certain PPE items, highlighting a need for further training and sensitisation rather than gaps in supply.

The readiness of ambulance services, prompt first aid response, and access to qualified medical professionals contribute significantly to building employee confidence in the organisation's safety measures.

Incident Reporting Mechanisms

It is commendable that 58% of the respondents reported consistently having access to safety reporting mechanisms, reflecting the presence of an efficient system comprising safety officers, dedicated OSH personnel, and supervisory-level reporting structures. However, 17% indicated only occasional access, and a concerning 25% stated they do not have access at all. These findings highlight the urgent need to strengthen and standardise reporting mechanisms, ensuring that all employees are both aware of and encouraged to report safety concerns. A robust and inclusive reporting culture is essential to identify anomalies and address potential risks proactively.

BEST PRACTICES OBSERVED - THE CHENNAI PORT AUTHORITY HOSPITAL

The Chennai Port Authority has extended its commitment to the health, well-being, and safety of its employees and their families through the round-the-clock medical services provided by the Chennai Port Authority Hospital. The hospital serves as a full-fledged secondary care hospital, catering to the medical needs of a population of approximately 22,000, including employees and their dependents, retired employees and their spouses. It houses a wide range of medical needs, offering comprehensive secondary care services including specialised units. It is well-equipped with a 125-bedded ward facility, laboratory, state-of-the-art operation theatre suites, dialysis wing, modernised semi-private cubicle ward and more. Since 2022, it has also had an exclusive Siddha Clinic for the benefit of CHPA patients as per the directive of the Ministry of Ports, Shipping and Waterways.

Immediate first aid for injuries, prompt ambulance services, regular fitness assessments, and other healthcare initiatives provided by the CHPA Hospital significantly contribute to the organisation's ongoing commitment to employee wellness.

Post-COVID Digital Health Transformation

The seamless 24/7 medical service provided by the Chennai Port Authority Hospital extends not only to employees but also to their family members, facilitated through a family medical card system. In the post-COVID-19 era, the hospital has undergone complete digital transformation, enabling quicker and more efficient delivery of healthcare services across the Port's various divisions, most notably at the Chennai Port Authority Hospital. Traditional case sheet ledgers have been replaced by a comprehensive Hospital Management System (HMS), resulting in streamlined operations. This shift has significantly reduced waiting time and improved efficiency in patient diagnosis processes and access to prescribed medicines from the in-house pharmacy. Additionally, provision for cash purchase of specific drugs is available based on need. The quality of medications provided is maintained at a standardised and reliable level with continuous monitoring.

Preventive Health and Disease Surveillance

A Deputy Chief Medical Officer oversees the port's Occupational Safety and Health (OSH) efforts, including preventive screenings and disease monitoring in accordance with the Factories Act, 1948. The port conducts regular health screenings to monitor for the 29 notifiable diseases listed under the Act, with no cases reported to date. This reflects the port's commitment to strict safety compliance and proactive risk management.

Medical Education

Awareness programmes are regularly conducted on key health issues such as mental health, tuberculosis, AIDS, non-communicable diseases, and occupational health and safety. In addition, continuous medical

education and training sessions are held on first aid, emergency preparedness, and proactive safety measures, reflecting the organisation's commitment to both preventive and promotive healthcare.

A SWOT FRAMEWORK OF OSH PRACTICES AT CHENNAI PORT

Strengths	Opportunities
➤ A full-fledged 24/7 secondary care hospital for employees and their dependents. ➤ Periodic safety drills and annual medical screenings. ➤ Adequate provision of high quality safety equipment and PPE. ➤ Streamlined operations enabled by Hospital Management System (HMS). ➤ Active monitoring of 29 notifiable diseases under the Factories Act, 1948, promoting preventive health	➤ Extend medical facilities to high-risk interior port zones. ➤ Expand laboratory services 24/7 to cater to emergency needs in diagnosis. ➤ Train operational staff as certified first responders. ➤ Promote employee wellness through yoga and healthy food initiatives at canteens via SHGs and startup collaborations. ➤ Reach out through e-content for OSH awareness among employees.
Weaknesses	Threats
➤ Limited employee awareness regarding PPE availability and proper use. ➤ Gaps in safety reporting mechanisms. ➤ Laboratory services are not available 24/7, affecting emergency diagnostic response. ➤ Manpower shortages in key departments. ➤ Need for more trained first responders.	➤ Centralised medical services may delay emergency response in remote dock zones. ➤ An ageing workforce faces increased risks in the absence of ergonomic adjustments and periodic upskilling. ➤ Unpredictable climate-induced risks and environmental hazards. ➤ Limited multilingual safety initiatives. ➤ Lack of dedicated mental health support to address workplace stress and fatigue.

CONCLUSION

Benjamin Franklin's adage, "An ounce of prevention is worth a pound of cure," is relevant in port environments. Management's role in fostering a safety culture is thus both a moral and operational imperative. When employees perceive the workplace as safe and health-focused, both job satisfaction and employee retention increase, which are critical outcomes in high-risk industrial sectors where technical expertise and continuity are indispensable.

The Chennai Port Authority demonstrates a strong organisational commitment to occupational safety and health through its structured systems, regular audits, preventive health initiatives, and continuous education, which illustrates a mature and proactive safety culture. By aligning medical infrastructure with

regulatory compliance, CHPA enhances its workforce and builds an environment of resilience and holistic wellness.

While the findings highlight significant strengths, addressing existing gaps such as manpower shortages, access to reporting, and decentralised medical emergency services, will greatly contribute to advancing the port's safety framework. Though this study focuses on the onshore operations and administration, future research could explore OSH practices in marine operations for a more comprehensive understanding.

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