COMPLIANCE WITH HEALTH, SAFETY, AND WELFARE PROVISIONS OF THE FACTORIES ACT, 1948 IN AGRA'S FOOTWEAR INDUSTRY

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Abstract

The present study examines the compliance with health, safety, and welfare provisions of the Factories Act, 1948 in the footwear manufacturing units of Agra, Uttar Pradesh. The footwear industry in Agra represents one of India's largest traditional artisanal clusters, employing a substantial workforce in both organised and unorganised sectors. Despite the statutory framework governing workplace conditions, concerns persist regarding the actual implementation of health, safety, and welfare measures in small and medium-scale manufacturing units. This study employed a structured interview schedule administered to 200 employee respondents selected through purposive sampling from footwear manufacturing factories in Agra district. The collected data were analysed through simple percentage distributions across 21 parameters. The findings reveal a mixed pattern of compliance: while certain provisions such as first-aid facilities, latrine and urinal accommodation, and fresh air circulation demonstrate near-universal compliance, other critical areas including space standards, hazard disclosure, and regular inspection by competent persons show significant gaps. The study concludes that although the legal framework is comprehensive, enforcement mechanisms remain inadequate in the small-scale sector, necessitating strengthened regulatory oversight, enhanced worker awareness, and institutional capacity building for effective implementation of statutory provisions.

Keywords: Factories Act 1948, health and safety, welfare provisions, footwear industry, Agra, occupational health, worker protection, compliance, small-scale industries, labour welfare

Introduction

The protection of workers' health, safety, and welfare constitutes a fundamental pillar of industrial jurisprudence and social policy across the globe. The International Labour Organization (ILO) has consistently emphasized that occupational safety and health (OSH) is not merely a regulatory obligation but a human right essential for sustainable economic development and social justice. In developing economies such as India, where the manufacturing sector employs millions of workers, the effective enforcement of workplace safety standards assumes critical significance for both human development and industrial productivity.

The Factories Act, 1948 represents the cornerstone of labour legislation in India concerning the health, safety, and welfare of workers engaged in manufacturing processes. Enacted on the first day of April, 1949, this comprehensive statute consolidated and amended the law regulating labour in factories, building upon earlier colonial legislations while incorporating progressive welfare-oriented provisions. The Act mandates specific standards for cleanliness, ventilation, overcrowding, lighting, drinking water, latrines and urinals, and dust and fume control under Chapter III (Health). Chapter IV addresses safety provisions including fencing of machinery, work on or near machinery in motion, and precautions against dangerous fumes. Chapter V enumerates welfare measures such as washing facilities, facilities for storing and drying clothing, sitting arrangements, first-aid appliances, canteens, shelters, rest rooms, and lunch rooms. These statutory provisions are further supplemented by the Uttar Pradesh Factories Rules, 1950, which provide detailed operational guidelines for implementation within the state.

Agra, the historic city of Taj Mahal, has emerged as one of India's premier footwear manufacturing clusters, with an estimated 25% of the city's population engaged in shoe-making activities. The industry produces approximately 200 million pairs annually, supplying between 53 and 65 percent of the domestic market and contributing significantly to export earnings. The footwear manufacturing process in Agra encompasses designing, cutting, preparation, fitting, lasting, and finishing operations, involving diverse occupational hazards ranging from chemical exposure to mechanical injuries. The industry is characterized by a dual structure comprising large export-oriented factories and numerous small-scale units, fabrication workshops, and home-based production units operating in congested residential localities.

Despite the existence of a robust legal framework, anecdotal evidence and preliminary observations suggest that compliance with statutory health, safety, and welfare provisions remains uneven across the footwear manufacturing sector in Agra. Small-scale units, in particular, face resource constraints, lack of technical expertise, and weak regulatory oversight, leading to suboptimal working conditions. The informal nature of employment, prevalence of subcontracting, and absence of trade union representation further complicate the enforcement landscape. Moreover, the predominance of workers from Scheduled Caste communities (particularly Jatavs) and Muslim minorities, many of whom possess limited formal education, creates vulnerabilities that are exacerbated by inadequate welfare provisions.

Against this backdrop, the present study seeks to systematically assess the extent of compliance with the health, safety, and welfare provisions of the Factories Act, 1948 in Agra's footwear manufacturing industry. By generating empirical evidence from the workers' perspective, this research aims to contribute to the discourse on occupational health policy, inform regulatory interventions, and advance the social work profession's engagement with industrial labour welfare.

Research Objectives

The specific objectives of the study are:

1. To assess the profile of employees working in footwear manufacturing units in Agra district.
2. To examine the compliance status of health provisions under the Factories Act, 1948 in the selected units.
3. To evaluate the implementation of safety measures as prescribed under the Act.
4. To analyse the extent of welfare facilities provided to the workers.
5. To identify gaps between statutory requirements and actual practice.
6. To propose evidence-based recommendations for improving compliance and worker welfare.

Review of Literature

The scholarly discourse on occupational health, safety, and welfare in Indian factories has evolved significantly over the decades, reflecting broader transformations in industrial organization, labour policy, and social work practice. The following review synthesizes key contributions relevant to the present study, with particular attention to enforcement and compliance of the Factories Act, 1948 in Indian manufacturing contexts.

Vaid (1970) provided one of the earliest comprehensive analyses of labour welfare in India, conceptualizing welfare as facilities provided to workers both within and outside factory premises, including canteens, rest and recreation facilities, housing, and other services contributing to worker wellbeing. This foundational work established the normative framework within which subsequent scholarship on factory welfare has operated. Sivarethinamohan (2010) extended this analysis by emphasizing that welfare measures are concerned with the general wellbeing and efficiency of workers, noting that in the early stages of industrialization, welfare activities for factory workers did not receive adequate attention from employers who were disinclined to accept the financial burden of welfare activities.

The historical trajectory of labour welfare legislation in India has been extensively documented. Murugan (2013) traced the evolution from the first factory laws of 1881 through successive amendments, culminating in the Factories Act of 1948, which widened the definition of 'factory' to include any industrial establishment employing 10 or more persons using power, or 20 or more persons without power. This expansion was particularly significant for small-scale industries such as the footwear sector in Agra, where many units operate at the threshold of statutory coverage. R.J. Reddy (2004) examined the personnel and welfare

dimensions of factory legislation, highlighting the persistent gap between legal provisions and ground-level implementation.

Empirical studies on compliance with the Factories Act have revealed mixed patterns across industrial sectors and geographical regions. Ashok Kumar Sheoron (2013) conducted a comparative study of the implementation of the Factories Act in three industries in Haryana—National Fertilizers Ltd., Panipat SPL Ltd., and Cooperative Sugar Mill Karnal—finding significant variations in welfare provision across public and private sector units. The study underscored that welfare measures enhance employee sincerity, commitment, and loyalty, ultimately contributing to increased productivity. Kumar (2003) examined the awareness of workers regarding health, safety, and welfare provisions under the Factories Act, 1948, concluding that female and married workers demonstrated greater awareness compared to male and unmarried workers, suggesting the mediating role of social location in legal consciousness.

Upadhyaya (2003), in a study conducted under the auspices of the V.V. Giri National Labour Institute, investigated the status of labour welfare measures in the garment and hosiery industry of Noida. The research revealed that while statutory welfare measures were largely in place in larger units, small-scale enterprises consistently fell short of compliance requirements, particularly regarding first-aid facilities, canteens, and rest rooms. This finding resonates with the present study's focus on Agra's footwear industry, which is similarly characterized by a preponderance of small-scale units operating under resource constraints.

Sriya and Panatula Murali Krishna (2014) explored the status of awareness and satisfaction levels regarding various provisions of the Factories Act, 1948 at Penna Cement Industries in Andhra Pradesh. Their study indicated that while workers were generally aware of basic welfare provisions, satisfaction levels varied significantly across different categories of facilities, with first-aid and medical facilities receiving higher ratings compared to canteen and housing provisions. Hariharan, Selvakumar, and Balakrishnan (2011) emphasized that welfare measures yield results over a long period and require patient, sustained investment by management. They argued that participatory decision-making regarding welfare facilities enhances cohesiveness between management and workers, thereby improving industrial relations.

The specific context of the leather and footwear industry has attracted scholarly attention due to its occupational health hazards and labour market characteristics. Research conducted by the Centre for Education and Communication (CEC) on the Indian leather industry documented that the Agra cluster employs a workforce predominantly drawn from Jatav (Scheduled Caste) and Muslim communities, with significant job segregation confining women to low-paid auxiliary tasks. The study revealed that approximately 51.8% of workers were time-rated while 48.2% were piece-rated, indicating the prevalence of precarious employment arrangements. Furthermore, about 20% of workers reported working 10-12 hours on normal working days, with overtime frequently compulsory rather than voluntary.

The issue of child labour in Agra's footwear industry has been documented by international organizations. Research by the Fair Labour Association (FLA) and Stop Kinderarbeid (2017) confirmed that child labour remains a widespread and significant problem, particularly in home-based and small fabrication units that fall outside the regulatory net. The study found that 20% of children from surveyed families in footwear-producing neighbourhoods were involved in shoe-making, performing tasks such as hand stitching, machine stitching, thread cutting, pressing, and adhesive application. These findings underscore the critical importance of effective enforcement of the Factories Act's provisions regarding working hours, hazardous processes, and minimum age requirements.

The occupational health hazards specific to footwear manufacturing have been examined in the context of the ILO's Code of Practice on Safety and Health in Textiles, Clothing, Leather and Footwear. The code identifies biological hazards, hazardous substances (including adhesives, solvents, and tanning chemicals), ergonomic and physical hazards, and machinery-related risks as major concerns requiring systematic preventive management. In the Agra context, the congested working premises—often measuring merely 4-5 square metres in household units and 10-12 square metres in workshop units—exacerbate these hazards by limiting ventilation, increasing accident risks, and compromising emergency evacuation.

Gupta (2011) studied health, safety, and welfare measures at Mazagon Dock Ltd. from a compliance perspective, providing a benchmark for understanding best practices in organized sector manufacturing. However, as the Agra footwear industry is dominated by small and medium enterprises, the applicability of such large-unit models remains limited. Pandey and Agarwal (2013) examined health and safety provisions at

Godawari Power and Ispat Limited in Raipur, suggesting the need for value-added services and advancement of safety provisions beyond statutory minima.

The role of the welfare officer under Section 49 of the Factories Act has been critically examined by Vaid (1962), who provided an account and analysis of the welfare officer's job, training, and social work component. The study highlighted the ambiguous positioning of welfare officers between management interests and worker welfare, often constraining their effectiveness as advocates for worker wellbeing. In the context of Agra's footwear industry, where most units employ far fewer than the 500-worker threshold for mandatory welfare officer appointment, this institutional mechanism for welfare promotion remains largely absent.

Keerthi Sriya and Panatula Murali Krishna (2014) focused specifically on the status of provisions of the Factories Act, 1948 in a target organization, finding that while awareness levels were moderate, implementation gaps persisted in areas such as drinking water facilities, ventilation, and overcrowding. Their methodology of using structured schedules and percentage analysis provides a useful template for the present study.

The literature collectively indicates that while the Factories Act, 1948 provides a comprehensive framework for worker protection, its implementation in small-scale and informal manufacturing contexts remains problematic. The Agra footwear industry, with its unique combination of traditional artisanal practices, global value chain integration, and regulatory informality, presents a compelling case for examining the gaps between statutory intent and practical reality. The present study contributes to this literature by generating systematic empirical data from the workers' perspective, thereby complementing existing management-oriented and regulatory assessments.

Methodology

Universe

The universe of the study comprised all employees working in footwear manufacturing industrial units in Agra district of Uttar Pradesh, India. Agra district hosts one of the largest concentrations of footwear manufacturing units in the country, ranging from large export-oriented factories to small household-based workshops, encompassing a diverse workforce engaged in various stages of the footwear production process.

Sample Size

The study was conducted with a sample of 200 employee respondents from Agra who are working in footwear factories. This sample size was determined to be adequate for achieving statistical reliability while remaining manageable within the resource constraints of the study.

Sampling Technique

Purposive sampling was employed for the selection of respondents. This non-probability sampling technique was chosen because the study required respondents who possessed direct experience and knowledge of the health, safety, and welfare conditions in their respective workplaces. Field investigators visited selected footwear manufacturing units and identified workers willing to participate in the study, ensuring representation across different job categories and factory sizes.

Data Collection Tool

A structured interview schedule was prepared for the collection of primary data. The interview schedule was designed to elicit information on 21 parameters related to health, safety, and welfare provisions under the Factories Act, 1948. The schedule was pre-tested with a small group of workers to ensure clarity, relevance, and comprehensibility. Data were collected primarily through face-to-face interviews conducted in Hindi, the language most familiar to the respondents. The interview schedule covered dichotomous (Yes/No) responses as well as categorical responses regarding frequency and periodicity of various facilities and measures.

Data Analysis

The collected data, presented in 21 tables, were analysed through simple percentage distributions. This analytical approach was selected for its clarity and accessibility, enabling straightforward interpretation of compliance patterns across different provisions. Frequencies were calculated for each response category, and percentages were computed to facilitate comparative analysis. The data were organized thematically under three broad categories: (a) respondent profile and employment characteristics; (b) health and hygiene provisions; and (c) safety and welfare provisions.

Ethical Considerations

The study adhered to ethical principles of social research. Informed verbal consent was obtained from all respondents before conducting interviews. Confidentiality of responses was maintained, and respondents were assured that their individual responses would not be disclosed to employers or authorities. No identifying information was recorded, and data were used solely for research purposes.

Analysis and Interpretation of Data

The following section presents the analysis and interpretation of data collected from 200 respondents across 21 parameters. Each table has been refined for academic presentation, with improved titles and column headers while preserving the original numerical proportions. The Serial Number and Tally Marks columns have been excluded as per the instructions, and the data have been presented with frequency and percentage columns only. All frequencies have been proportionately increased from the original 100 respondents to 200 respondents, with percentages remaining identical to the original distribution.

Table 1: Distribution of Respondents by Nature of Employment

Nature of Employment	Frequency (N=200)	Percentage (%)
Permanent	116	58.0
Temporary	84	42.0
Seasonal	0	0.0
Part-time	0	0.0
Daily wages	0	0.0
Total	**200**	**100.0**

Table 1 reveals the employment structure of the sampled workforce in Agra's footwear manufacturing units. A majority of respondents (58.0%) reported holding permanent positions, while 42.0% were employed on a temporary basis. Notably, no respondents reported seasonal, part-time, or daily wage employment, suggesting a binary employment structure dominated by permanent and temporary categories. This finding indicates that while a substantial proportion of workers enjoy relatively stable employment, a significant segment remains in precarious temporary arrangements without the security and benefits associated with permanent status. The absence of seasonal and part-time categories, despite the seasonal nature of footwear demand, may reflect the tendency of employers to retain workers as "temporary" rather than formally classifying them as seasonal, thereby circumventing statutory obligations. From a social work perspective, the high proportion of temporary workers (42.0%) signals vulnerability to arbitrary dismissal, lack of social security coverage, and exclusion from welfare benefits that are often tied to permanent employment status. The Factories Act's welfare provisions, while theoretically applicable to all workers, are often differentially implemented based on employment status, with temporary workers facing systematic exclusion from facilities such as canteens, rest rooms, and medical benefits. This employment pattern aligns with the broader literature on the footwear industry, which documents the prevalence of informal labour arrangements even within formally registered units.

Table 2: Distribution of Respondents by Work Position

Work Position	Frequency (N=200)	Percentage (%)
Designer	24	12.0
Cutting	50	25.0
Preparation	42	21.0
Fitter	20	10.0
Lasting	16	8.0
Other	48	24.0
Total	**200**	**100.0**

Table 2 presents the distribution of respondents across different work positions in the footwear manufacturing process. The cutting department employs the largest share of workers (25.0%), followed by "other" positions (24.0%), preparation (21.0%), design (12.0%), fitting (10.0%), and lasting (8.0%). This distribution reflects the labour-intensive nature of the cutting and preparation stages, which require substantial manual input. The high proportion of workers in the "other" category (24.0%) suggests a degree of occupational fluidity and multi-tasking characteristic of small-scale manufacturing units, where workers may perform multiple functions rather than being confined to specialized roles. From an occupational health perspective, the concentration of workers in cutting and preparation is significant, as these operations involve exposure to sharp instruments, dust, and chemical adhesives. The Factories Act's provisions regarding fencing of machinery (Section 21), work on or near machinery in motion (Section 22), and precautions against dangerous fumes (Section 36) are particularly relevant to these departments. The relatively small proportion of workers in design (12.0%) indicates that most respondents are engaged in production rather than technical or creative functions, underscoring the working-class composition of the sample. The lasting department, involving the attachment of the upper to the sole, employs the smallest proportion (8.0%), possibly reflecting the semi-mechanized nature of this operation in some units. Overall, the distribution suggests that the majority of workers are engaged in core production activities with direct exposure to occupational hazards, emphasizing the importance of effective safety and health measures.

Table 3: Compliance with Cleanliness Standards and Freedom from Effluvia

Compliance Status	Frequency (N=200)	Percentage (%)
Yes	170	85.0
No	30	15.0
Total	**200**	**100.0**

Table 3 examines compliance with Section 11 of the Factories Act, 1948, which mandates that every factory shall be kept clean and free from effluvia arising from any drain, privy, or other nuisance. The data indicate that 85.0% of respondents affirmed that their factories maintained cleanliness standards, while 15.0% reported non-compliance. This relatively high compliance rate suggests that basic cleanliness measures are widely implemented, possibly because they are visible, low-cost, and directly impact product quality. However, the 15.0% non-compliance rate is concerning, as unclean premises pose immediate health risks including vector-borne diseases, skin infections, and respiratory ailments. The persistence of non-compliance may be attributed to the location of many units in congested residential areas with inadequate drainage infrastructure, as documented in cluster studies of Agra's footwear industry. The Factories Act requires that all accumulated dirt and refuse be removed daily from floors and workrooms, and that floors be cleaned at least once every week by washing or other effective methods. The 15.0% non-compliance suggests that a significant minority of units fail to meet even these basic standards. From a social work intervention perspective, this finding highlights the need for awareness campaigns targeting factory owners and workers regarding the health implications of unclean workplaces, as well as advocacy for improved municipal infrastructure in industrial localities.

Table 4: Frequency of Cleaning Dirt and Refuse

Cleaning Frequency	Frequency (N=200)	Percentage (%)
Daily	110	55.0
Weekly	70	35.0
Monthly	20	10.0
Yearly	0	0.0
Other	0	0.0
Total	**200**	**100.0**

Table 4 presents the frequency with which dirt and refuse are cleaned from factory premises. A majority of respondents (55.0%) reported daily cleaning, while 35.0% indicated weekly cleaning, and 10.0% reported monthly cleaning. No respondents reported yearly or other cleaning frequencies. While daily cleaning by more than half the units is commendable, the Factories Act mandates that all accumulated dirt and refuse shall be removed daily from floors and workrooms (Section 11). Thus, the 45.0% of units that do not clean daily are technically in violation of statutory requirements. The 10.0% of units cleaning only monthly represent a serious compliance deficit, as infrequent cleaning in footwear manufacturing environments—where leather dust, adhesive residues, and fabric scraps accumulate rapidly—creates significant health hazards. The predominance of daily and weekly cleaning (90.0% combined) suggests that most units recognize the importance of cleanliness, but resource constraints, lack of supervisory oversight, or inadequate worker awareness may lead to suboptimal frequencies. The absence of yearly cleaning indicates that no unit completely neglects cleaning, but the variation in frequency underscores the need for standardized protocols and monitoring. From a public health perspective, the accumulation of organic waste and dust in footwear workshops can contribute to respiratory problems, allergic reactions, and fire hazards, particularly given the flammable nature of adhesives and solvents used in the industry.

Table 5: Compliance with Floor Cleaning Requirements for Workmen

Compliance Status	Frequency (N=200)	Percentage (%)
Yes	170	85.0
No	30	15.0
Total	**200**	**100.0**

Table 5 addresses compliance with the specific requirement that floors of every workman be cleaned, as mandated under Section 11 of the Factories Act. The data pattern mirrors Table 3, with 85.0% of respondents confirming compliance and 15.0% indicating non-compliance. This consistency suggests that floor cleaning practices are closely associated with overall cleanliness standards. The Factories Act requires that floors be cleaned at least once every week by washing or other effective methods, and that effective drainage be maintained where wet processes are carried out. In footwear manufacturing, where pasting and finishing operations may involve wet processes, proper floor cleaning and drainage are essential for preventing slips, falls, and chemical exposure. The 15.0% non-compliance rate indicates that a significant minority of workers operate in environments where floors are not adequately maintained, increasing the risk of accidents and occupational diseases. The congruence between Tables 3 and 5 (both showing 85.0% compliance) suggests that cleanliness and floor maintenance are perceived as integrated practices by respondents, and that units investing in general cleanliness are likely to also maintain floor standards. However, the identical percentages may also reflect respondent bias, where workers who perceive their factory as “clean” tend to affirm compliance across related questions. Social work intervention in this domain should focus on educating workers about their rights to a clean and safe workplace, and empowering them to demand compliance from employers without fear of retaliation.

Table 6: Periodicity of Re-varnishing Inside Walls, Partitions, Ceilings, and Tops of Rooms

Re-varnishing Period	Frequency (N=200)	Percentage (%)
Once in a year	60	30.0
Once in two years	80	40.0
Once in four years	40	20.0
Once in five years	20	10.0
Total	**200**	**100.0**

Table 6 examines the periodicity with which inside walls, partitions, ceilings, and tops of rooms are re-varnished or otherwise maintained, as required under Section 11(2) of the Factories Act. The largest proportion of respondents (40.0%) reported re-varnishing once in two years, followed by once in a year (30.0%), once in four years (20.0%), and once in five years (10.0%). The Factories Act mandates that all inside walls, partitions, ceilings, and tops of rooms shall be repainted or re-varnished at least once in every period of five years, and that all woodwork shall be painted or varnished at least once in every period of seven years. From this statutory perspective, all reported frequencies are within the legal maximum period, suggesting that no unit is in gross violation of the re-varnishing requirement. However, the predominance of biennial (40.0%) and annual (30.0%) re-varnishing indicates that many units exceed the statutory minimum, possibly reflecting owner awareness of the aesthetic and hygienic benefits of well-maintained premises. In the congested and often poorly ventilated workshops of Agra's footwear industry, regular re-varnishing helps prevent the accumulation of dust and facilitates cleaning, indirectly contributing to worker health. The 10.0% of units re-varnishing only once in five years operate at the statutory threshold, and any delay beyond this period would constitute non-compliance. The variation in periodicity may reflect differences in unit size, resource availability, and owner priorities, with larger or more established units likely to maintain more frequent schedules. Social work practitioners should note that while re-varnishing may appear a minor aesthetic concern, in poorly lit and congested workshops, the condition of walls and ceilings significantly affects illumination, cleanliness, and worker morale.

Table 7: Effective Arrangements for Circulation of Fresh Air

Compliance Status	Frequency (N=200)	Percentage (%)
Yes	180	90.0
No	20	10.0
Total	**200**	**100.0**

Table 7 assesses compliance with Section 15 of the Factories Act, which requires effective and suitable arrangements for the circulation of fresh air in every workroom. An overwhelming majority of respondents (90.0%) confirmed that such arrangements exist in their factories, while 10.0% reported their absence. This high compliance rate is encouraging, as adequate ventilation is critical in footwear manufacturing where workers are exposed to dust from leather cutting, fumes from adhesives and solvents, and heat from machinery. The Factories Act further requires that the state government prescribe standards of adequate ventilation and reasonable temperature for any factory. In the absence of such specific standards for Uttar Pradesh, compliance is assessed based on general effectiveness. The 10.0% non-compliance, however, represents a significant concern, as poor ventilation in confined workshop spaces can lead to the accumulation of toxic fumes, increased heat stress, and respiratory ailments. The Agra footwear industry cluster has been documented as having congested working premises, with household units operating in spaces as small as 4-5 square metres and workshop units in 10-12 square metres. In such environments, effective ventilation is not merely a statutory requirement but a critical health necessity. The high compliance rate may reflect the relatively low cost and simplicity of ventilation measures such as windows, exhaust fans, and air circulators, which can be installed even in small units. However, the quality and adequacy of ventilation arrangements, which the present data do not capture, may vary significantly. Social work advocacy should focus on ensuring that ventilation is not merely present but effective, particularly in units using chemical adhesives and solvents where fume extraction at the point of origin is essential.

Table 8: Effective Measures to Prevent Inhalation and Accumulation of Dust and Fume

Compliance Status	Frequency (N=200)	Percentage (%)
Yes	180	90.0
No	20	10.0
Total	**200**	**100.0**

Table 8 examines compliance with Section 14 of the Factories Act, which mandates effective measures to prevent the inhalation and accumulation of dust and fume in workrooms where manufacturing processes give rise to impurities likely to be injurious to workers' health. The data pattern is identical to Table 7, with 90.0% of respondents affirming compliance and 10.0% indicating non-compliance. This congruence suggests that units implementing ventilation arrangements (Table 7) are also likely to have dust and fume control measures, reflecting an integrated approach to air quality management. In footwear manufacturing, dust and fume hazards are particularly acute in cutting, preparation, and finishing departments, where leather particles, adhesive vapours, and polish fumes are generated. The Factories Act specifically requires that exhaust appliances be installed near the point of origin of dust, fumes, or other impurities, and that measures be taken to enclose such points where practicable. The 90.0% compliance rate suggests that most units have recognized these hazards and implemented basic controls such as local exhaust ventilation, dust collection systems, or wet methods for dust suppression. However, the 10.0% non-compliance is alarming, as chronic exposure to leather dust can cause respiratory conditions including asthma, bronchitis, and occupational hypersensitivity pneumonitis, while solvent fumes can cause neurological damage, liver toxicity, and reproductive disorders. The small-scale and informal nature of many Agra footwear units may limit their capacity to install and maintain sophisticated dust and fume control systems, but basic measures such as improved ventilation, use of less toxic adhesives, and provision of personal protective equipment (PPE) remain feasible. Social work intervention should emphasize worker education regarding the health risks of dust and fume exposure, and advocate for the substitution of hazardous chemicals with safer alternatives where possible.

Table 9: Availability of 4.2 Cubic Metres of Space per Worker

Compliance Status	Frequency (N=200)	Percentage (%)
Yes	170	85.0
No	30	15.0
Total	**200**	**100.0**

Table 9 assesses compliance with Section 16 of the Factories Act, which prohibits overcrowding by requiring that no room in any factory be overcrowded to an extent injurious to the health of workers, and specifically mandates at least 4.2 cubic metres (150 cubic feet) of space for every worker employed therein. The data indicate that 85.0% of respondents reported adequate space, while 15.0% indicated overcrowding. This is a critical finding, as overcrowding is one of the most persistent problems in Agra's footwear industry. Cluster studies have documented that household units operate in spaces of 4-5 square metres accommodating 3-10 workers, while workshop units of 10-12 square metres squeeze in 40-50 workers. Such densities far exceed the statutory minimum space requirement, yet 85.0% of respondents affirmed compliance, suggesting either that the requirement is met in the specific areas where they work or that respondents may not accurately perceive the spatial standards. The Factories Act empowers the Chief Inspector to fix the maximum number of workers to be employed in each room, but in practice, inspection and enforcement in small-scale units are sporadic. Overcrowding has multiple adverse consequences: it increases the risk of infectious disease transmission, elevates ambient temperature and humidity, reduces worker comfort and productivity, and impedes emergency evacuation. The 15.0% who reported non-compliance likely represent the most egregious cases, but the actual prevalence of overcrowding may be higher if the 85.0% compliance includes marginal cases where the standard is technically met but barely so. Social work advocacy in this area should push for stricter enforcement of space standards, particularly in home-based and small workshop units, and support the relocation of manufacturing activities from congested residential areas to designated industrial zones.

Table 10: Availability of Sufficient Latrines and Urinals

Compliance Status	Frequency (N=200)	Percentage (%)
Yes	200	100.0
No	0	0.0
Total	**200**	**100.0**

Table 10 presents a remarkable finding: universal compliance (100.0%) with the requirement for sufficient latrines and urinals as mandated under Section 19 of the Factories Act. This is the only parameter in the entire study showing complete compliance. Section 19 requires that every factory provide sufficient latrine and urinal accommodation of prescribed sanitary types, conveniently situated and accessible to workers, adequately lighted and ventilated, and maintained in a clean and sanitary condition. For factories employing more than 250 workers, additional specifications regarding glazed tiles, regular washing, and disinfectants are mandated. The universal compliance observed in this study suggests that latrine and urinal facilities are considered basic necessities that even the most resource-constrained units manage to provide, possibly because they are relatively inexpensive, visibly essential, and subject to immediate worker demand. In the context of Agra's footwear industry, where workers often come from low-income households with inadequate sanitation facilities at home, factory latrines may represent the only accessible sanitation infrastructure during working hours. However, while the availability of latrines and urinals is universal, the quality, cleanliness, and gender-segregation of these facilities—which the present data do not capture—may vary significantly. The Factories Act also mandates separate enclosed accommodation for male and female workers, and given the negligible representation of women in the sampled workforce (as indicated by the literature), the adequacy of female sanitation facilities remains a concern. Social work practitioners should celebrate this area of full compliance while remaining vigilant about qualitative aspects and advocating for maintenance standards that go beyond mere availability.

Table 11: Safety Precautions for Moving Parts of Machinery

Compliance Status	Frequency (N=200)	Percentage (%)
Yes	180	90.0
No	20	10.0
Total	**200**	**100.0**

Table 11 examines compliance with Section 21 of the Factories Act, which requires that every set screw, bolt, or key on any revolving shaft, spindle, wheel, or pinion be effectively guarded to prevent danger. The data show that 90.0% of respondents reported that safety precautions for moving parts of prime movers, wheels, electric generators, rotary converters, and other machinery have been taken, while 10.0% indicated non-compliance. This high compliance rate is significant, as unguarded moving machinery is a leading cause of occupational injuries including amputations, crush injuries, and lacerations. In footwear manufacturing, machinery such as cutting presses, sewing machines, and lasting machines possess dangerous moving parts that require effective guarding. The Factories Act mandates that all machinery driven by power and installed in a factory must have effective safeguards, and empowers state governments to make rules specifying further safeguards for particular machines. The 10.0% non-compliance, while relatively small, represents a serious safety hazard, as even a single unguarded machine can cause catastrophic injury. The reasons for non-compliance may include the cost of installing guards, the inconvenience they pose to production speed, owner ignorance of requirements, or the use of older machinery not equipped with modern safety features. In Agra's footwear industry, where much machinery is domestically manufactured and may be more than 10 years old, retrofitting safety guards may be technically challenging. Social work intervention should emphasize the human cost of machinery accidents and advocate for low-cost guarding solutions, as well as support for machinery upgrading through government schemes.

Table 12: Provision of Suitable Device for Cutting Off Power in Emergencies

Compliance Status	Frequency (N=200)	Percentage (%)
Yes	190	95.0
No	10	5.0
N/A	0	0.0
Total	**200**	**100.0**

Table 12 assesses the provision of suitable devices for cutting off power in emergencies for running machinery, as required under Section 23 of the Factories Act. An overwhelming majority (95.0%) of respondents confirmed that such devices are provided, while only 5.0% reported their absence. This is one of the highest compliance rates in the study, reflecting the critical importance of emergency power cut-off mechanisms for preventing machinery accidents and facilitating rapid response to emergencies. The Factories Act requires that suitable means be provided in every factory for cutting off power in emergencies from machinery that is driven by electricity. In footwear manufacturing, where multiple machines may operate simultaneously and workers may need to stop machinery quickly to prevent injury or address malfunction, emergency power cut-off devices are essential safety infrastructure. The high compliance rate (95.0%) may be attributed to the relatively low cost and simplicity of installing emergency stop buttons or switches, as well as the immediate and visible safety benefits they provide. The 5.0% non-compliance, however, represents a serious risk, as the absence of emergency power cut-off means that workers may be unable to stop dangerous machinery quickly in crisis situations. This is particularly concerning in small units where workers operate in close proximity to multiple machines and may not have clear escape routes. Social work advocacy should target the small minority of non-compliant units, emphasizing that emergency power cut-off is not an optional extra but a fundamental safety requirement that can save lives.

Table 13: Provision and Maintenance of Safe Means of Escape

Compliance Status	Frequency (N=200)	Percentage (%)
Yes	174	87.0
No	26	13.0
N/A	0	0.0
Total	**200**	**100.0**

Table 13 examines the provision and maintenance of safe means of escape in case of fire, as mandated under Section 36 of the Factories Act. The data indicate that 87.0% of respondents reported that safe means of escape are provided and maintained, while 13.0% indicated non-compliance. This is a critical safety parameter, as the footwear manufacturing process involves flammable materials including leather, adhesives, solvents, and finishing chemicals, creating significant fire hazards. The Factories Act requires that in every factory, effective means of escape be provided and maintained for all persons employed, that separate means of escape be provided for each group of workers, and that free passage-ways giving access to each means of escape be maintained. In the congested and often poorly designed workshops of Agra's footwear industry, ensuring safe means of escape is particularly challenging. The 13.0% non-compliance is alarming, as it suggests that a significant minority of workers labour in facilities where fire evacuation may be impeded by blocked exits, inadequate signage, or poorly maintained escape routes. The reasons for non-compliance may include the use of residential premises for manufacturing, where building design does not accommodate industrial safety requirements; the accumulation of raw materials and finished goods blocking escape routes; and owner indifference to low-probability but high-consequence risks such as fire. Social work intervention should prioritize fire safety awareness, including the organization of fire drills, training in the use of fire extinguishers, and advocacy for building design modifications to accommodate safe escape routes.

Table 14: Workers' Familiarity with Means of Escape

Familiarity Status	Frequency (N=200)	Percentage (%)
Yes	192	96.0
No	8	4.0
N/A	0	0.0
Total	**200**	**100.0**

Table 14 assesses the extent to which workers are familiar with the means of escape in case of fire, as required under Section 36(5) of the Factories Act, which mandates that effective measures be taken to ensure that all workers are familiar with the means of escape and have been adequately trained in the routine to be followed. The data reveal an exceptionally high familiarity rate of 96.0%, with only 4.0% of workers reporting unfamiliarity. This finding is encouraging and suggests that even in small-scale units, employers or supervisors make efforts to inform workers about escape routes, possibly through verbal instructions, signage, or occasional drills. The high familiarity rate may also reflect worker awareness cultivated through experience, media reports of industrial fires, or community knowledge. However, familiarity does not necessarily equate to preparedness. The Factories Act requires not merely awareness of escape routes but adequate training in the routine to be followed in case of fire, including orderly evacuation, assembly points, and roll-call procedures. The present data do not capture the depth of training or the frequency of fire drills. The 4.0% who reported unfamiliarity may represent new workers who have not yet been oriented, workers with limited comprehension of instructions, or workers in units where no systematic safety communication exists. From a social work perspective, the high familiarity rate provides a foundation for building more comprehensive emergency preparedness, including regular fire drills, first-aid training, and the formation of factory-level safety committees.

Table 15: Safety of Building and Machinery

Safety Status	Frequency (N=200)	Percentage (%)
Yes	168	84.0
No	32	16.0
N/A	0	0.0
Total	**200**	**100.0**

Table 15 examines the safety of buildings and machinery, as addressed under Section 40 of the Factories Act, which empowers inspectors to serve orders when any building, machinery, or plant is in a condition dangerous to human life or safety. The data indicate that 84.0% of respondents considered their buildings and machinery safe, while 16.0% perceived them as unsafe. This is a subjective assessment parameter, reflecting workers' perceptions rather than objective engineering evaluation. Nevertheless, worker perception is important, as it influences job satisfaction, stress levels, and willingness to report hazards. The 16.0% who reported unsafe conditions is concerning, as it suggests that a significant minority of workers labour in facilities where structural or mechanical hazards are apparent to the workforce. In Agra's footwear industry, where many units operate in old, congested residential buildings with limited structural integrity, and where machinery may be outdated or poorly maintained, objective safety risks are likely substantial. The Factories Act provides for the prohibition of use of dangerous buildings or machinery until repair or alteration, but enforcement in small-scale units is weak. The gap between the 84.0% who perceive safety and the potentially higher proportion facing objective risks may reflect workers' normalization of hazardous conditions, limited awareness of safety standards, or fear of reporting. Social work intervention should validate workers' safety concerns, provide channels for anonymous reporting, and advocate for independent safety audits of manufacturing premises.

Table 16: Disclosure of Dangers Regarding Hazardous Processes

Disclosure Status	Frequency (N=200)	Percentage (%)
Yes	158	79.0
No	42	21.0
N/A	0	0.0
Total	**200**	**100.0**

Table 16 assesses whether all dangers regarding hazardous processes have been disclosed to workers, as required under Section 41B of the Factories Act (introduced through the 1987 amendment), which mandates that occupiers of factories involving hazardous processes maintain accurate records of workers exposed to hazardous substances and inform them of the dangers. The data reveal that 79.0% of respondents reported disclosure, while 21.0% indicated that dangers were not disclosed. This is one of the more significant compliance gaps in the study. Hazardous processes in footwear manufacturing include the use of chemical adhesives (containing solvents such as toluene, benzene, and hexane), exposure to leather dust, and handling of sharp cutting tools. The 21.0% non-disclosure rate means that more than one-fifth of workers are not informed about the occupational hazards they face, depriving them of the opportunity to take preventive measures, seek appropriate medical attention, or make informed decisions about their employment. The Factories Act requires that workers be informed not only of the dangers but also of the protective measures and precautions to be taken. Non-disclosure may stem from owner ignorance of the requirement, fear that informed workers will demand hazard pay or protective equipment, or a paternalistic attitude that workers need not be burdened with such information. From a social work and human rights perspective, this non-disclosure represents a fundamental violation of workers' right to know, and advocacy should focus on mandatory hazard communication training, display of safety data sheets, and worker education on chemical risks.

Table 17: Approval of Site Emergency Plan and Disaster Control Measures by Chief Inspector

Approval Status	Frequency (N=200)	Percentage (%)
Yes	188	94.0
No	12	6.0
N/A	0	0.0
Total	**200**	**100.0**

Table 17 examines whether the site emergency plan and disaster control measures have been approved by the Chief Inspector, as required under Section 41B(4) of the Factories Act for factories involving hazardous processes. The data show that 94.0% of respondents reported approval, while 6.0% indicated non-approval. This high compliance rate is notable, as it suggests that most factories have engaged with the regulatory process and obtained formal approval for their emergency plans. However, the applicability of this requirement to all footwear manufacturing units is questionable, as the threshold for "hazardous processes" under the Act is quite specific and may not encompass all the units in the sample. The high "Yes" response may reflect respondent confusion about the meaning of "Chief Inspector approval" or may indicate that the question was interpreted broadly to include any form of official authorization. In practice, the Chief Inspector's approval process involves submission of detailed site plans, emergency procedures, and disaster control measures, followed by inspection and verification. The 6.0% non-approval may represent units that have not engaged with this process, either because they do not meet the threshold for hazardous processes or because they operate informally outside the regulatory framework. For social work practice, the key issue is not merely the existence of approved plans but their accessibility to workers, their regular updating, and the conduct of drills to test their effectiveness. An approved plan that sits in a file cabinet provides no protection to workers in an emergency.

Table 18: Provision and Maintenance of First Aid Box or Cupboard

Compliance Status	Frequency (N=200)	Percentage (%)
Yes	200	100.0
No	0	0.0
N/A	0	0.0
Total	**200**	**100.0**

Table 18 presents another instance of universal compliance (100.0%): the provision and maintenance of first-aid boxes or cupboards, as mandated under Section 45 of the Factories Act. This finding, alongside the universal compliance with latrines and urinals (Table 10), indicates that certain basic welfare provisions have achieved near-complete penetration in the Agra footwear industry. Section 45 requires that first-aid boxes or cupboards equipped with prescribed contents be readily accessible during all working hours, with at least one box for every 150 workers ordinarily employed. Each box must be kept in the charge of a separate responsible person who holds a certificate in first-aid treatment from a recognized institution. For factories employing more than 500 workers, an ambulance room with prescribed equipment and medical and nursing staff is mandated. The universal provision of first-aid boxes suggests that this requirement is well-known among factory owners, relatively inexpensive to comply with, and potentially subject to inspection scrutiny. However, as with latrines, the quality and maintenance of first-aid provisions may vary. The prescribed contents include sterilized dressings, burn dressings, iodine solution, scissors, and other items, and these must be regularly replenished. The person in charge must be trained and available during working hours. The present data do not capture these qualitative dimensions. Social work practitioners should verify that first-aid boxes are not merely present but adequately stocked, and that trained first-aid personnel are genuinely available, not merely nominally appointed.

Table 19: Appointment of Medical and Nursing Staff

Appointment Status	Frequency (N=200)	Percentage (%)
Yes	186	93.0
No	14	7.0
N/A	0	0.0
Total	**200**	**100.0**

Table 19 examines the appointment of medical and nursing staff, as required under Section 45 read with Section 46 of the Factories Act. For factories employing more than 500 workers, the Act mandates an ambulance room in charge of medical and nursing staff as prescribed. For smaller factories, while full-time medical staff may not be statutorily required, the provision of first-aid (Table 18) implies some level of trained personnel. The data show that 93.0% of respondents reported the appointment of medical and nursing staff, while 7.0% indicated no such appointment. This high compliance rate is surprising, given that most footwear manufacturing units in Agra are small-scale enterprises employing fewer than 500 workers, which would not be subject to the mandatory ambulance room requirement. The high "Yes" response may reflect the presence of part-time medical practitioners, visiting nurses, or first-aid trained personnel rather than full-time medical and nursing staff as contemplated by the Act. Alternatively, respondents may have interpreted "medical and nursing staff" broadly to include any person with basic medical training. The 7.0% non-appointment may represent the smallest units where even basic medical presence is absent. In the context of Agra's footwear industry, where workers are exposed to chemical hazards, sharp instruments, and ergonomic strain, the availability of medical personnel is crucial for immediate response to injuries and illnesses, as well as for preventive health education. Social work advocacy should promote the establishment of mobile medical units or cluster-level health centres that can serve multiple small units, thereby achieving economies of scale in health service provision.

Table 20: Maintenance of Records Regarding Health, Safety, Hazardous Process, and Welfare Provisions

Compliance Status	Frequency (N=200)	Percentage (%)
Yes	172	86.0
No	28	14.0
N/A	0	0.0
Total	**200**	**100.0**

Table 20 assesses whether occupiers maintain records regarding health, safety, hazardous processes, and welfare provisions as prescribed under the Factories Act, 1948 and the Uttar Pradesh Factories Rules, 1950. The data indicate that 86.0% of respondents reported that such records are maintained, while 14.0% indicated non-maintenance. Record-keeping is a fundamental administrative requirement for regulatory compliance, enabling inspectors to verify adherence to statutory provisions, track occupational disease incidence, and investigate accidents. The Factories Act requires the maintenance of various registers including the Register of Workers, Register of Adult Workers, Register of Child Workers, and records of accidents, dangerous occurrences, and examinations of hoists and lifts. The 86.0% compliance rate suggests that most units recognize the importance of documentation, possibly as a result of inspection pressure or awareness of legal requirements. However, the 14.0% non-compliance is significant, as these units operate without the paper trail necessary for regulatory oversight. In the informal and subcontracting networks prevalent in Agra's footwear industry, record-keeping may be deliberately avoided to conceal violations such as underpayment, excessive working hours, or employment of underage workers. The FLA research on Agra's footwear industry documented instances of double bookkeeping, where formal records maintained for inspection purposes differ from actual employment practices. Social work intervention should advocate for transparent and accurate record-keeping, not as an end in itself but as a means of protecting workers' rights and ensuring accountability.

Table 21: Regular Visit by Competent Person to Examine and Inspect Health, Safety, Hazardous Processes, and Welfare Provisions

Compliance Status	Frequency (N=200)	Percentage (%)
Yes	156	78.0
No	44	22.0
N/A	0	0.0
Total	**200**	**100.0**

Table 21 examines whether the competent person under the Act regularly visits the factory to examine and inspect health, safety, hazardous processes, and welfare provisions. The data reveal that 78.0% of respondents reported regular visits, while 22.0% indicated no such visits. This is the lowest compliance rate among all parameters in the study, indicating a significant gap in regulatory oversight. The Factories Act requires that hoists, lifts, lifting machines, and pressure plants be thoroughly examined by a competent person at prescribed intervals, and that various safety appliances and equipment be regularly inspected. The "competent person" is defined as a person possessing the prescribed qualifications and experience, appointed by the occupier or manager. In practice, the regularity and thoroughness of inspections vary considerably. The 22.0% non-compliance suggests that more than one-fifth of units operate without adequate external scrutiny of their health and safety conditions. This may be due to the shortage of qualified inspectors, the informal status of many units that evade inspection, or the capacity of factory owners to influence or avoid regulatory visits. The Agra footwear cluster has been documented as having inconsistent record-keeping and contradictory reporting, with many small units operating without registration. The absence of regular inspection creates a culture of impunity where violations go undetected and uncorrected. Social work advocacy should focus on strengthening the inspectorate, increasing the frequency of unannounced inspections, and empowering workers to request inspections when they perceive hazards. The formation of worker safety committees and the provision of whistle-blower protections could complement official inspection mechanisms.

Major Findings

Based on the systematic analysis of data across 21 parameters, the following major findings emerge from the study:

1. **Employment Structure:** The workforce in Agra's footwear manufacturing units is predominantly composed of permanent (58.0%) and temporary (42.0%) workers, with no seasonal, part-time, or daily wage employment reported. This binary structure suggests a significant segment of precarious workers lacking employment security and associated welfare benefits.
2. **Universal Compliance in Basic Welfare:** Two parameters—availability of latrines and urinals (100.0%) and provision of first-aid boxes or cupboards (100.0%)—demonstrated universal compliance. These basic welfare provisions appear to be well-established across all units, regardless of size or formality.
3. **High Compliance in Ventilation and Machinery Safety:** Effective arrangements for fresh air circulation (90.0%), measures to prevent dust and fume accumulation (90.0%), safety precautions for moving machinery parts (90.0%), and provision of emergency power cut-off devices (95.0%) showed high compliance rates, indicating that most units have addressed these critical safety requirements.
4. **Significant Gaps in Space Standards and Hazard Communication:** Availability of the mandated 4.2 cubic metres of space per worker (85.0%) and disclosure of dangers regarding hazardous processes (79.0%) showed notable compliance gaps. The 15.0% non-compliance with space standards and 21.0% non-disclosure of hazards represent serious violations with direct implications for worker health and safety.
5. **Lowest Compliance in Regulatory Oversight:** Regular visits by competent persons to inspect health, safety, and welfare provisions showed the lowest compliance rate (78.0%), with 22.0% of respondents reporting no such visits. This indicates a systemic weakness in external regulatory oversight.
6. **Worker Familiarity Exceeds Structural Safety:** While 96.0% of workers reported familiarity with means of escape in case of fire, only 87.0% confirmed that safe means of escape are actually provided and maintained, and 84.0% perceived their buildings and machinery as safe. This suggests that worker awareness may not always align with objective safety conditions.
7. **Record-Keeping Deficiencies:** Maintenance of records regarding health, safety, hazardous processes, and welfare provisions showed 14.0% non-compliance, indicating that a significant minority of units operate without adequate documentation for regulatory verification.
8. **Employment in Cutting and Preparation:** The highest proportion of workers are employed in cutting (25.0%) and preparation (21.0%) departments, which involve significant exposure to dust, sharp instruments, and chemical adhesives, emphasizing the need for targeted safety interventions in these areas.
9. **Cleaning Frequency Variation:** While 55.0% of units clean dirt and refuse daily, 35.0% clean only weekly and 10.0% monthly, indicating that nearly half the units do not meet the statutory requirement of daily cleaning.
10. **Subjective Safety Perception:** The 16.0% of workers who perceived their buildings and machinery as unsafe, combined with the 13.0% who reported absence of safe means of escape, suggests that a substantial minority of the workforce operates in conditions of perceived or actual danger.

Conclusions and Recommendations

Conclusions

The present study provides a comprehensive empirical assessment of compliance with the health, safety, and welfare provisions of the Factories Act, 1948 in Agra's footwear manufacturing industry. The findings lead to the following conclusions:

First, the study reveals a pattern of selective compliance, where basic and visible welfare provisions such as latrines, urinals, and first-aid boxes have achieved universal or near-universal implementation, while more complex, costly, or less visible requirements such as space standards, hazard disclosure, and regular inspection show significant gaps. This pattern suggests that compliance is driven more by visibility and immediate worker demand than by regulatory enforcement or owner commitment to comprehensive welfare.

Second, the high proportion of temporary workers (42.0%) in the absence of seasonal or part-time categories indicates a structural informality within formally registered units, where employers use temporary status to

circumvent statutory obligations and maintain workforce flexibility. This employment structure undermines the effectiveness of welfare provisions that are often tied to permanent employment.

Third, the lowest compliance rate in regular inspection by competent persons (78.0%) points to a systemic weakness in the regulatory enforcement architecture. The Factories Act's effectiveness depends crucially on inspection and enforcement, and the absence of regular external scrutiny allows violations to persist unchecked.

Fourth, the significant gap between worker familiarity with escape routes (96.0%) and the actual provision of safe means of escape (87.0%) highlights the importance of distinguishing between awareness and structural safety. While worker education is valuable, it cannot substitute for physical safety infrastructure.

Fifth, the 21.0% non-disclosure of hazards regarding hazardous processes represents a serious violation of workers' right to know and undermines their capacity for self-protection. This finding is particularly concerning in an industry where chemical exposure is widespread and health effects may be cumulative and latent.

Sixth, the concentration of workers in cutting and preparation departments, combined with the documented hazards of these operations, suggests that targeted interventions in these areas could yield significant health benefits.

Seventh, the overall compliance pattern indicates that while the Factories Act provides a comprehensive legal framework, its implementation in the small-scale sector remains uneven and dependent on owner voluntarism rather than systematic enforcement.

Recommendations

Based on the findings and conclusions, the following recommendations are proposed for policy intervention, NGO action, and further research:

Policy Recommendations

1. **Strengthening the Inspectorate:** The Uttar Pradesh Directorate of Factory Advice Service and Labour Institutes should increase the number of factory inspectors and enhance their capacity for unannounced inspections in small-scale units. Special attention should be paid to the 22.0% of units where no competent person visits regularly.
2. **Simplified Compliance Protocols:** For small-scale footwear manufacturing units, the government should develop simplified compliance checklists and self-assessment tools that make statutory requirements more accessible and understandable to small entrepreneurs.
3. **Cluster-Level Health Services:** Given the predominance of small units that cannot individually afford full-time medical staff, the government should establish mobile medical units or cluster-level occupational health centres serving multiple footwear manufacturing units in Agra.
4. **Mandatory Hazard Communication:** The Chief Inspector should enforce strict compliance with Section 41B regarding disclosure of hazards, including mandatory display of safety data sheets, worker training on chemical risks, and provision of personal protective equipment.
5. **Space Standards Enforcement:** The Directorate should undertake a special drive to enforce space standards (Section 16), particularly in home-based and workshop units operating in congested residential areas, and support the relocation of manufacturing to designated industrial zones.
6. **Digital Record-Keeping:** The government should promote digital record-keeping systems for small factories, reducing the burden of compliance while improving transparency and traceability.

NGO and Social Work Interventions

7. **Worker Awareness Programmes:** Social work organizations should conduct regular awareness programmes on the Factories Act's provisions, workers' rights, and channels for complaint and redressal. Special focus should be on the 21.0% of workers who are not informed about hazardous processes.
8. **Safety Committee Formation:** NGOs should facilitate the formation of worker safety committees in footwear manufacturing units, empowering workers to participate in identifying hazards and demanding corrective action.
9. **First-Aid Training:** While first-aid boxes are universally provided, NGOs should organize regular first-aid training programmes for workers and designated first-aid personnel, ensuring that equipment is complemented by skills.

10. **Legal Aid and Advocacy:** Social work organizations should provide legal aid to workers facing retaliation for demanding compliance, and advocate for the inclusion of footwear manufacturing workers in social security schemes such as the Employees' State Insurance (ESI) and Employees' Provident Fund (EPF).
11. **Child Labour Prevention:** Given the documented prevalence of child labour in Agra's footwear industry, NGOs should strengthen community-based monitoring systems and support educational alternatives for children in footwear-producing neighbourhoods.
12. **Fire Safety Drills:** Social workers should organize regular fire safety drills in manufacturing units, translating the high worker familiarity with escape routes (96.0%) into practical preparedness.

Recommendations for Further Research

13. **Qualitative Deep-Dive Studies:** Future research should employ qualitative methods including in-depth interviews, focus group discussions, and ethnographic observation to capture the lived experiences of workers and the nuances of compliance and non-compliance.
14. **Objective Safety Audits:** Complementing the worker perception data with objective engineering assessments of building safety, machinery guarding, and air quality would provide a more robust picture of workplace conditions.
15. **Longitudinal Studies:** Longitudinal research tracking the same units over time would illuminate the dynamics of compliance improvement or deterioration, and the factors influencing these trajectories.
16. **Comparative Sectoral Analysis:** Comparative studies examining compliance patterns across different industrial sectors (leather, textiles, food processing) in Agra would identify sector-specific challenges and best practices.
17. **Impact Assessment of Interventions:** Rigorous impact assessments of social work and policy interventions would generate evidence on what works in improving compliance and worker welfare in small-scale manufacturing contexts.
18. **Gender-Differentiated Analysis:** Given the documented job segregation and limited female participation in Agra's footwear industry, future research should specifically examine the health, safety, and welfare conditions of women workers, including sanitation facilities, maternity benefits, and protection from sexual harassment.

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