

326. Assessment of Occupational Health, Safety and Environment in Brick Kiln Industries at Tando Hyder, Pakistan

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Abstract

This study was conducted with an objective, to find out Occupational Health & Safety (OH&S) situation of the employees in Brick Kilns at Tando Hyder, Sindh, Pakistan, in association to the existing health and safety regulations. It is a Moral, legal and Financial reason that owners of the Kilns should provide Safety policy, Safe plant and equipment, Safe access and egress, Safe environment, Welfare facilities, Consultation with employees, Emergency arrangements, PPEs to employees at no charge, Health surveillance of employees and Adequate information, training, instruction and supervision for the workforce but Pakistan has a poor health & safety status; due to in-adequate medical facilities, illiterate workforce and lack of reliable data on the occupational diseases, injuries and accidents. Labors are exposed to great number of hazards and their risks in all areas. Brick manufacturing is one of the important part in construction industry; where employees are usually less privileged areas of community; with less pay and where all the family members work together. OH&S Situations in the Brick Kilns of the research place at Tando Hyder was in poor condition. They lived and worked in extremely poor situations, which is against legal and moral obligations of the employer. They used to work 10-12 hrs without providing any rest time and extra time wages. Their earnings was not sufficient to fulfill their fundamental necessities. They were working without using (PPEs) and also not availability of any welfare facilities in the Brick Kilns at the site. The main reasons for poor health and safety conditions were due to no implementation of health and safety rules and regulations. There was no any policy frame work, lack of resources, lack of priority given to the health & safety, lack of information, instruction, training and supervision. Further enforcement agencies were not enforcing with concerned of health and safety rules and regulations. In this research, we recommended relevant suggestions as per laws and findings, in order to improve the condition of occupational health and safety in Brick kilns.

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Key Words: Brick Kilns; Personnel Protective Equipment; Occupational Health & Safety

1. Introduction

As labors or workers, are the appreciable resources of an organization so the employer has moral, legal and financial obligation to make sure their health and safety at workstation. A safe and healthy workstation has less risks for incidents or damage to property and less incidents of disability for workforce. The fast changes in technologies and life require increased flexibility in Occupational Health, Hygiene, and Safety requirements at all work places (Lemon, 2001).

According to the International Labor Organization (ILO) current assessments that each year 159-269 million workers encountered Work-related illnesses or accidents. The shocking condition of OH&S in the emerging nations like Pakistan is due to many aspects, such as insufficient health conveniences, uneducated workers and lack of concern data about disease and accidents. Healthy and well trained employees is asset to both production and financial success (Pasha, 2003).

Pakistan like many emerging nations in the globe has no inclusive Work-related Health & Safety Regulations. The occurrences of damages / sickness is too high in Pakistan as millions of workforces are faced to dangerous substances and gasses in industry; such as biochemical, structure, cultivation, brick

kilns and in various other industries. The great number of Brick Kilns and Manufacture Sector employee uneducated employees, who are in risk of work-related health and safety hazards. The operational circumstance in Brick Kilns organizes badly and insensitive Behavior of employees such as higher ratio of bonded workers etc. (Akram, 2004).

There are more than 12000 brick kilns spread through the state's 04 provinces where more than 600,000 employees are working. Many of those employees living at site in mud made homes, where they have lack of approach to fresh water, latrines and sewerage services. Employee's approach to health and schooling is insufficient (Khatak, 2010). Ministry of Pakistan had approved many Labor Laws in several years (GP 1976, 1972, 1965, 1961, 1992 and 1997).

The study was conducted in five brick kilns in the Union Council (UC) Tando Hyder of District Hyderabad. The names of the brick kilns are not given to protect the identity of the owners (an ethical research requirement). The district can be regarded as an epicenter of the brick kiln industry in Sindh whereby the brick kilns of Hyderabad supply bricks for construction work in Karachi and rural Sindh.

Keeping in mind the importance of work-related health and safety for the brick kilns, this study was carried out to examine the below given objectives:

1. To assess the current situation of health and safety in the brick kilns at Tando Hyder
2. To study the current situation of health and safety in the selected brick kilns against the Occupational Health and Safety Law.
3. To make suggestions for improvements in workplace safety

1.1 Assessment of Occupational Health and Safety Situations.

Bales (1998) stated, there are around 12000 brick kilns in Pakistan and workers related to this occupation are about 600,000. Iqbal (2006) stated that during brick making process solid fuel like coal, bagasse and wood is used which emits high concerns of air pollutants into ambient air which may cause negative economic and environmental impacts. There are many inhuman activities practiced in the brick kiln; for example bonded workers, child Labor, poor education and adverse occupational health and polluted water and hygiene conditions. Production area is greatly independent on the brick kiln industry and all these issues needs to be serious concern.

Awan (1998) reported that the most of the brick kilns are constructed at remote areas i.e. far from the populated cities or towns and are mostly dispersed. The labors of the brick kilns are unaware from basic facilities which is provided in cities and towns. The employers and their families have no basic facilities and opportunities of education and medical. He added that there are high ratio of musculoskeletal disorders by poor posture of working in brick molding. mostly children of brick kiln workers does not go to the school because of work sharing with their families and have less income and source of financial

According to HRW (1995) report, the bond increase in brick kiln production to work up to 10-12 hrs per day is due to work on even rate basis. When bricks are broken during making and loading un-loading processes then extra wages are deducted to their salary. Kilns are shut off during monsoon so the workers take loan from the owner for their survival.

A professional group assessed that in Sindh province the children in brick kilns mostly face epidemic, acute and chronic diseases such as chest infections, asthma, T.B etc.

According to UNICEF report that about 250,000 child work in brick kilns and 60 % children are bonded with their parents. The children of brick workers have low literacy ratio because of low income and lack of schools facilities. Children of brick kilns do not continue their education because of migrants of their parents. 8 to 10 bricks are being carried on head which results in health problems. They also works in extreme hot and cold weather and in dusty environment. (Iqbal, 2006).

In Pakistan all laws and regulations are described through federal government and implementations of these rules are done by the provincial and concerned authorities. The provincial governments are also legal obligation to make rules and regulations for the health and safety improvements. Iqbal (2006).

Various legislation acts in Pakistan that concerns occupational health and safety issues are describe bellow.

1.1.1. Mines Act, 1923

Occupational Health & Safety is concerned about mines and provision of drinking water, latrine and urinals, canteens, shelters, medical first-aid, working hours, extra wages for overtime, leaves and holidays (casual, sick, festival), notice of accidents and occupational diseases and safety measures to be observed at workplaces (Pasha, 2003).

1.1.2. Workmen Compensation Act, 1923

Employer is bound to give compensation to his workers due to injury in accidents and in the Occupational Diseases (ILO, 1923).

1.1.3. Factories Act, 1934 (GP, 1997)

It is the main law governing the safety and health of workers in industrial establishment for factories employing ten or more workers. This Act provides regulating the OH&S facilities and ventilation, temperature control, dust and fumes, overcrowding, lighting, supply of drinking water, precautions against contagious diseases, provision of canteen for workers, precautions in case of fire, fencing and guarding of machinery and not employment of young person's on dangerous machines, cranes and other lifting machinery, revolving machinery, pressure plant, construction of building, machinery and manufacturing process, explosive or inflammable things and all other items mentioned in Mines Act. Each province enforced its own laws within the mandate of Factories Act (GP, 1997).

1.1.4. Provincial Employees Social Security Ordinance 1965

Provincial employees' social security (occupation diseases) regulation, 1967, which shows the Occupational Diseases, such as Asthma, Cancer, Pneumoconiosis, Dramatis (GP, 1965).

2. Research Methodology

This research was carried out at selected five brick kilns of Tando Hyder, Hyderabad for the assessment of occupational health, safety and environment hazards and its risks in relation to local Labour laws.

Primary results were obtained through structured questionnaire method; Randomly 05 Kilns were selected at Tando Hyder road. Those kilns were Kiln 1 (Pak Bricks), Kiln 2 (Sindh Bricks), Kiln 3 (Anwer Bricks), Kiln 4 (Habibullah Bricks) and Kiln 5 (Juma Khan Bricks).

Secondary results were obtained through literature and relevant websites.

3. Results and Discussions

To assess Health & Safety of the Brick Kiln for the socio-economic conditions; such as education and income of the workers were considered. Education plays a key role both in the improvement of socio economic conditions and safe working environments.

3.1 Literacy Status

Children of the brick kiln workers do not attend the schools because of less income, lack of availability of schools and sharing their jobs with his parents. (Table 1).

Table 1. Literacy Status among Brick Kilns Workers

<u>Educated</u>	<u>Un-Educated</u>	<u>Total Workers</u>
26	49	75

During literacy survey 75 questionnaires were distributed among the workers of 5 brick kilns. By this survey it was observed that 26 workers were educated and 49 workers were uneducated out of 75. This findings made clear that increased illiteracy rate was due to many factors such as lack of schools, less income, lack of transportation and lack of awareness. The ratio of poverty was high in such areas so the children of Brik kiln workers work with their parents.

The great number of child labor did their work at minimum salary as shown in Figure no. 1. The children were at great threat by doing jobs in brick kilns. They cannot continue their education and also faced to different diseases by doing their job in polluted environments.

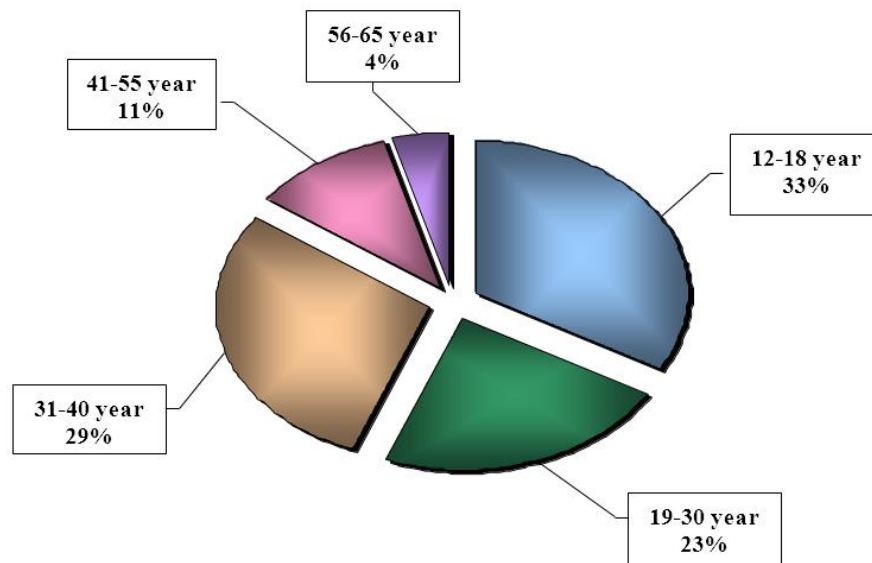


Fig.1. Age of Workers

3.2. Monthly Income

According to Table 2, out of 75 workers, 18 workers (mostly child workers) earn less than 8000, 32 workers earn 8000-12000, 17 workers earn 12000-15000 and 8 workers earn more than 15000.

3.2.1. According to Minimum Wage Ordinance 1961 (GP, 1961)

The government of Sindh fix the minimum wages of workers. According this the unskilled workers and juvenile workers employed wages are Rs. 400 for 8 working hours (per-day) and for 26 days is Rs. 12000.

Monthly Income (Rs.)	Number of Workers
< 8000	18
8000-12000	32
12000-15000	17
> 15000	8

1.3. Welfare Facilities in Study Area

Table 3 shows a summary of facility in our study area.

3.3.1. Legislation

3.3.1.1. Factories act 1934 in Article 36 in Health & Safety Section (GP, 1997)

According to this act:

“No adult worker shall be allowed to work in a factory for more than nine hours a day” Whereas the workers work up to 10 hours, but the Brick Kiln Owner does not give any wages for extra work.

1.3.1.2. Factories Act Article 37 (GP, 1997)

According to this act:

The periods of work of adult workers in a factory during each day shall be fixed either -so that no period shall exceed six hours and so that no worker shall work for more than six hours before he has had an interval for rest of at least one hour

In Brick Kiln Industries all categories of workers, work up to 10-12 hours in a day, they become tired and also no rest place is provided for them, they take rest under the trees.

3.3.1.3. Factory Act Article 47 (GP, 1997)

According to this act

- i. In a non-seasonal factory, working time is for more than nine hours in any day or for more than forty- eight hours in any week.
- ii. In a seasonal factory, working time is for more than nine hours in any day or more than fifty hours in any week.
- iii. In Brick Kiln Industries all categories of workers, work up to 10-12 hours in a day, they become tired and also no rest place is provided for them, they take rest under the trees.

3.3.1.4. Old-Age Benefits Act (GP, 1976)

According to this act:

This law allows the workers the facility old-age pension, lump sum old-age grant for those not entitled to pension.

As the workers spend their whole life in kilns, but there is no pension for him. In kiln, an old man of 60 years spend his whole life in kiln and now his sons start work in this kiln, he is unable to do work but there is no pension for him.

3.3.1.5. Factories Act 1934, Article 49 (GP, 1997)

According to this act:

- Every worker shall be allowed holidays with pay on all days declared by the Provincial Government to be festival holidays.
- There is no facility of holiday wages even on festivals or sick leave holidays for workers in BKs.
- There is no medical facility given to kiln workers as well as their families, also no social security card is issued to any worker

3.3.1.6. Factories Act 1934, Article 2 (GP, 1997)

According to this article:

- Sufficient latrines and urinals of prescribed types shall be provided conveniently situated and accessible to workers at all times while they are in the factory.
- There is no availability of latrines in kiln for workers. As a worker has to do job at least 12 hours, therefore Toilet/baths must be available near work place.

Facilities	Kiln 1	Kiln 2	Kiln 3	Kiln 4	Kiln 5
Duty hours	10 hours	11 hours	11 hours	11 hours	12 hours
Rest place	Nil	Nil	Nil	Nil	Nil
Rest time	Nil	Nil	Nil	Nil	Nil
Drinking water	Yes	Yes	No	Yes	Yes
Source of water	Tube well	Boring	No	Tube well	Open well
Food allowances	Nil	Nil	Nil	Nil	Nil
Holiday wages	Nil	Nil	Nil	Nil	Nil
Transport/emergency	Nil	Nil	Nil	Nil	Nil
Medical facility	Nil	Nil	Nil	Nil	Nil
Vaccination	Nil	Nil	Nil	Nil	Nil

3.3.1.7. Factories Act 1934, Article 20 (GP, 1997)

According to this article

In every factory effective arrangements shall be made to provide and maintain at suitable points conveniently situated for all workers employed there is a sufficient supply of whole-some drinking water”.

There is no availability of fresh water and drinking water facilities at the site.

3.3.1.8. Factories Act 1934, Article 23.A (GP, 1997)

According to this article:

Each worker in a factory shall be vaccinated and inoculated against such diseases and at such intervals as may be prescribed.

The expenses, if any, of such vaccination and inoculation shall be borne by the occupier or manager of the factory.

There is no facility of vaccination of workers and no drinking water supplied to any house and also at the work place, so all the workers take water in buckets from tube well or hand pump for their needs & requirements.

3.3.2. Hazards Faced by Workers

Table 4 gives an account of the health and safety situation in selected brick kilns. Majority of workers suffer from skin allergy and eyes irritation and other diseases like asthma, T.B., skin allergy, malaria, typhoid, Joints diseases.

Table 4. Comparison of Health and Safety Situation in the Selected Brick Kilns

Requirement	Kiln 1	Kiln 2	Kiln 3	Kiln 4	Kiln 5
Diseases	Skin, Asthma, MSD	MSD, Fever	Flue	Skin, eyes, MSD	Skin, T.B, eye
PPE	Nil	Nil	Nil	Nil	Nil
Training	Nil	Nil	Nil	Nil	Nil
First aid box	Nil	Ni	Nil	Nil	Nil
Death compensation	Nil	Nil	Nil	Nil	Nil

Various hazards and their risks find out during site visit and suggested control measures as shown in table no.5.

Table 5. Hazards Faced by Workers in Various Sections of the Brick Kilns

In this study area, we found that different type of accidents occur in these kilns within 2 years Table 6.

Observations Hazards and consequences	Control measures Immediate and longer term actions	Timescale
Workers who baked the bricks may fall into the kilns due to poor condition of walls and roofs. Fatal or serious consequences.	Caution signs should be placed on the surface of roofs and walls and SSOW must be elaborated. New kilns must be constructed	Immediate 1 Month
Workers may be slips and trips due to poor housekeeping of ash and pieces of bricks inside the kilns. Inadequate welfare facilities (drinking, restrooms, changing rooms and toilets.) Unhygienic Conditions could cause ill health.	Area housekeeping should be done on daily basis. Removing all the left over material after completion of job. Sufficient welfare facilities should be provided to the workforce by Brick kilns management.	2 weeks Immediate
Dust generation due to walking off workers and donkeys in the premises Inhalation of dust may cause T.B, Asthma and Flu Allergy.	Dust mask should be provided to the workers. Showering of waters can reduce the generation of dust.	Immediate 1 Month
Wrong manual handling and over loading of bricks. It could cause musculoskeletal disorders and injury.	Safe loading limits should be defined and communicated to workers. Manual handling training and techniques should be provided to workers.	weeks
Biological hazards of snake bite Person illness even fatality.	Provision of anti-snake venom at site clinic and emergency contact number Conduct training session on snake bite prevention.	Immediate
Working in hot weather Heat stroke, heat stress, dehydration	Adequate cold water with regular breaks. Provide training on safe working in hot environment.	Immediate

Accidents particularly occur due to not availability of PPE by the employer and due to the absence of safe system of work.

Table 6. Accidents Types in Brick Kilns

Accidents Type	Kiln 1	Kiln 2	Kiln 3	Kiln 4	Kiln 5
Slips and fall	Usually	Usually	Usually	Usually	Usually
Falls from height	Falling from cart		-	-	Falling from cart
Burns on fire	Normally	Normally	Normally	Normally	Normally
Falling object	Falling of house roof	bricks during loading/Unloading	Falling of brick wall/ house roof	Falling of house Roof/ Brick	Falling of house Roof/ bricks
Snake bite	-	Person died	-	-	-

It was observed in 5 kilns that burn cases were too high, whereas accidents like slips, trips, falls, falling of house roof, falling of objects, MSD and snake bites mostly occurred at the site as shown in table no 6.

According to Factories Act 1934, Article 33-G:

“The Provincial Government may, in respect of any manufacturing process carried on in any factory, by rule require that effective screens or suitable goggles shall be provided for the protection of persons employed on, or in the immediate vicinity of, a process” (GP, 1997).

There is no accessibility of any PPEs. All workers were working without wearing PPEs, which was very dangerous for their health and safety.

4. Conclusions

4.1. Suggestions and Recommendations

In order to protect the workforce from Accident Free environments in brick kiln Industry, the following recommendations are suggested to implement.

- First aid kit should be provided to the workers at the site.
- Provision of appropriate PPEs to the workers.
- Provision of mechanical aids while loading and unloading of materials and bricks.
- To make sure provision of health insurance to the workers.
- Arrangements should be provided in case of emergency at the site.
- Basic welfare facilities such as fresh water, toilets, shelter, rest places etc. should be provided at the site.

- Provision of training, information, instructions and supervision accordingly to their jobs.
- Provision of wages as fixed in minimum wages act provided by the government.
- Schools and health care centers should be constructed at nearby sites.
- Arrangements for accidents/ incidents investigation.
- Safe system of the work should be implemented before start of work.
- Working hours for the workers should be according to laws.

References

- [1] Akram, M. (2004) Status Report on AIHA Participation for the Improvement of Occupational Health, Safety and Environment in Pakistan. Ph.D. thesis, University of New York, p. 4.
- [2] Awan, M.Z. (1998) Bonded Brick Kiln Workers-1989 Supreme Court Judgment and After a Study by All Pakistan Federation of Labor. Rawalpindi, APFOL, pp. 1-2.
- [3] Bales, K. (1998) Disposable People, New Slavery in the Global Economy. Berkeley, University of California Press.
- [4] Government of Pakistan (GP) (1961) The Minimum Wage Ordinance 1961 (Ordinance XXXIX of 1961) [Internet], Government of Pakistan. Available from: <<http://punjablaws.gov.pk/laws/800a.html>> [Accessed 25 July 2012].
- [5] Government of Pakistan (GP) (1965) The Provincial Employees' Social Security Ordinance, 1965 (W.P. Ord. X of 1965) [Internet], Government of Pakistan. Available from: <<http://punjablaws.gov.pk/laws/187.html>> [Accessed 25 July 2012].
- [6] Government of Pakistan (GP) (1972) The Workers' Children (Education) Ordinance, 1972 (Ordinance XI of 1972) [Internet], Government of Pakistan. Available from: <<http://punjablaws.gov.pk/laws/1251a.html>> [Accessed 25 July 2012].
- [7] Government of Pakistan (GP) (1976) Employees' Old- Age Benefits Act, 1976 [Internet], Ministry of Human Resource, Government of Pakistan. Available from: <<http://www.eobi.gov.pk/act/AMENDED76-2005.htm>> [Accessed 25 July 2012].
- [8] Government of Pakistan (GP) (1992) Bonded Labor System (Abolition) Act, 1992 (III of 1992) [Internet], Government of Pakistan. Available from: <<http://punjablaws.gov.pk/laws/1797a.html>> [Accessed 25 July 2012].
- [9] Government of Pakistan (GP) (1997) Pakistan the Factories Act, 1934 as Amended to 1997 (Act XXV of 1934) [Internet], Government of Pakistan. Available from: <<http://punjablaws.gov.pk/laws/168a.html>> [Accessed 25 June 2012].
- [10] Hogstedt, C., and Piers, B. (2000) Occupational Safety and Health in Developing Countries: Review of Strategies, Case Studies and Bibliography. Sweden, National Institute of Working Life.
- [11] HRW (1995) Contemporary forms of Slavery in Pakistan, Human Rights Watch [Internet], New York, Human Rights Watch. Available from: <<http://www.hrw.org/reports/1995/07/01/contemporary-forms-slavery-pakistan>> [Accessed on 12 October 2010].
- [12] International Labor Organisation (ILO) (1923) Workmen's Compensation Act, 1923 [Internet], International Labor Organisation. Available from: <<http://www.ilo.org/>> [Accessed 25 July 2012].
- [13] International Labor Organisation (ILO) (1934) North West Frontier Province Factories Rules, 1975 [Internet], International Labor Organisation. Available from: <https://www.ilo.org/dyn/natlex/natlex_browse.details?plang=en&p_isn=50093> [Accessed 25 July 2012].
- [14] Iqbal, M.J. (2006) Bonded Labor in brick kiln industry of Pakistan. The Lahore Journal of Economics, 11(1), pp. 99-107.
- [15] Khattak, S.G. (2010) Panel: State of Brick Kiln Workers. Islamabad, Sustainable Development Policy Institute.
- [16] Labor Education Foundation (2006) Pakistan Labor Movement. Lahore, LEF Publications.
- [17] Lemon, T.B. (2001) The future of occupational safety and health. International Journal of Occupational Safety and Ergonomics, 7(4), pp. 403-408.
- [18] Mitha, Y., Anwar, M., Said, N., Javed, A. (1989) Solid Foundations Solid Contributions; Women in the Brick Kiln Industry. Lahore, ASR Publishers.
- [19] Pasha, T.S. (2003) Occupational Health Safety Profile of Punjab, Pakistan and Strategies for its Improvement. Ph.D. thesis, Finland, University of Kupio, p. 141.
- [20] Wikipedia (n.d.) Hattar [Internet], Wikipedia. Available from: <en.wikipedia.org/wiki/Hattar> [Accessed 20 July 2012].

