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## **Industrial Accidents in Bricks Industry: A Case Study in Karimganj District of Assam**

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### Abstract

*The article focuses on nature of accidents in brick industry. Safety and security lapses are resulting in accidents and injuries in industries and hence they need to be prevented. Govt. of India has been taking various measures in order to prevent accidents. Factories Act, 1948 provides some guidelines for the prevention of industrial accidents. The various provisions relating to safety are mentioned from Sec.21 (fencing of machinery) to Sec.41 –H (Right of workers to warn about imminent danger). For this write up, the author of this paper discusses few of the sections of provisions regarding the safety of workers which are relevant for bricks industry; such as section 34,35,36 38 40A, &40B. Workmen's Compensation Act 1923(was known as Employee's Compensation Act 1923) makes it obligatory for the employers, brought within the ambit of the Act, to furnish to the State Governments/Union Territory Administration annual returns containing statistics relating to the average number of workers covered under the Act, number of compensated accidents and the amount of compensation paid. In this paper, the author has tried to highlight a picture of the accidents in bricks industry of Karimganj District. The author mentions various statutory provisions of safety measures prescribed in the Factories Act 1948. Some of which are relevant and applicable in bricks industry that are explained in section-IV of this paper. Training and awareness are the proactive development of knowledge, attitude, behaviour and skill of the workers. Safe attitude, behaviour and skill evolved by the safety education contribute to the overall accident reduction programme in the brick industry. The present paper aims to study the availability of provisions and the implementation of these provisions in brick industry of Karimganj District.*

*Keywords: Industrial accident, Brick Unit, Compensation, Training Programme, Skilled Workers, Fireman, Fired Bricks, Sun- fired Bricks, Kiln, Emission, Chimney, First- Aid, and Clay.*

**Introduction:** A brick is a block of clay or other similar material, usually in the shape of a rectangle that is baked so that it

becomes hard enough to be used for building houses and other structures. Bricks are one of the oldest types of building

blocks. They are an ideal building material because they are relatively cheap to make, very durable, and require little maintenance. Bricks are usually made of kiln-baked mixtures of clay. People who work with brick are called brick masons or bricklayers. In ancient times, bricks were made of mud and dried in the sun. Modern bricks are made from concrete, sand and lime, and glass. The physical and chemical characteristics of the raw materials used to make bricks, along with the temperature at which they are baked, determine the colour and hardness of the finished product. Burnt bricks are the most popular building material in India.



The Columbia Electronic Encyclopaedia (2004): A brick is a block of ceramic material used in masonry construction, laid using mortar. Brick is made by pressing clay into blocks and firing them to the requisite hardness in a kiln. Bricks in their most primitive form were not fired but were hardened by being dried in the sun.

Brick making is a traditional but important industry in India and other developing countries. Based on the limited information available on the brick industry in India, it is estimated that more than 100,000 kilns produce about 80 to 100 billion bricks per year. The present demand is estimated as 120 billion bricks per year. This is due to increasing demand for construction of houses, roads and bridges and for which establishment of more and more brick firms are coming up in future

and large number of brick-workers will be employed. **There are two categories of issues in brick making industry: environmental and social.** The choice of technology for firing of bricks depends generally on factors such as scale of production, soil and fuel availability, availability of skilled manpower and business considerations such as profitability and availability of finance. The popular brick making technologies are clamps, movable chimney and more recently fixed chimney kilns. The small scale brick entrepreneurs are confronted with environmental regulation and face numerous challenges for survival, considering the situation that there are very limited options for them to adopt for their brick business. The workers in the brick industry are subject to bad working conditions and poor remuneration. The brick moulder families are contracted through middlemen and earlier most of them came from the different districts of Uttar Pradesh, Bihar, Chattisgarh and Orissa. Both male and female member of the families are engaged in brick making. Children are not employed as such, but usually they accompany their parents to the work place. There is an arrangement for toilets and drinking water facilities. The work force is paid on basis of quantum of work and against completion of certain tasks. Operations are mostly manual and under present conditions the working schedule for the workers is mainly for dry season in between the months from November to April.

The life of industrial workers is full of risks and hazards. Every year lakhs of employees are injured in factories, mines, railways, ports and docks, leading to acute ailments or permanent handicaps. World Health Organization (1997) estimated that 10 to 30 percent of workers in developed countries and up to 30 percent of the workers in developing countries are exposed

to physical hazards and found that accidents in industries can be reduced by 50 percent with the adoption of safety system and changes in behavioral and management practices .It has been estimated that 250 million occupational injuries and 330000 fatalities occur each year.

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**Review of Literature:** A good number of studies has been conducted on industrial accidents and the implementation of different social security measures as prescribed by Social Security Acts.;

**Stout et al (1990)** analysed the accidents and found that despite differences in data acquisition methods, the traumatic work related fatalities are the same in United States of America and Australia.

**Ball (1975)** studied the vapour cloud explosion of cyclo hexane in Nypro (UK) Limited works at Flixborough, England and found that this accident had killed twenty eight people and injured eighty one due to lack of safety.

**Kwon (2006)** revealed that the ultimate goal of process safety management is to prevent process related catastrophic accidents from occurrence. The reduction of accident and fatality rates and asset damage caused by accident were used as an effectiveness measure of process safety management regulation in Korea.

**Knegtering et al (2009)** highlighted that accidents are low probability high consequence incidents. The fact that process safety management has evolved to a mature level over the last decade, serious accidents still happen.

**Fullarton et al. (2007)** indicated that work place injury remains a significant job related concern. While worker injury has been increasingly addressed through safety training and survey, worker injury continues to present major expenses both emotionally and financially.

**Choi (2006)** mentioned that direct cost of workplace injuries include the medical and legal expenses. The largest associated costs are the indirect costs of worker injury.

**Brown (1995)** why accidents has occurred? One has to be aware of the theories of accident causation and theories of human error. Accident investigation stops at a premature level but should be required to be firmly based on theories of accident causation and human error.

**Grimaldi et al. (1989)** mentioned that the economic effects of occupational safety from a business perspective occupational accidents interrupt the production process, generating on the one hand both financial and opportunity costs.

**Kurzman (1987)** investigated the Bhopal gas leak accident due to the release of methyl isocyanine gas and found that the lack of safety was the reason for this accident which killed around twenty five hundred people and injured to two hundred thousand people.

**Cardillo et al. (1984)** studied the saves case which liberated dioxin into air and found that safety problems had caused this accident and subsequently contaminated the air due to dioxin which killed birds, animals and injured many people on its path.

**Ashford (1976)** found that work accidents kill more than 12,000 persons annually and permanently impaired more than 80,000 workers and also estimated that work place death occurs every 42 minutes and injury occurs every 4 seconds.

**Sebastian Gilbert (2009)** while discussing various legislations on labour welfare also mentioned the need for reviewing the existing labour laws in the organised sector, and suggesting comprehensive legislative measures to ensure a basic level of protection to workers in the unorganised sector.

**Environment Systems Branch, New Delhi (2005)** studied on Environmental & Social Report for Vertical Shaft Brick Kiln (VSBK) and found that use of internal fuel increases efficiency and reduces emission and also suggested that to ensure improvement in the living conditions of worker community, several measures will be undertaken in this project.

**Mazumder (2009)** researched on a study of Brick Industry in Barkhola Development Block of Cachar District of Assam and found that people are becoming conscious of the evil effects of pollution. Different environmental conscious NGOs, committees constituted by Government and other agencies have given much stress on pollution free technology. In this situation there is an urgent need for technological up gradation of brick industry to make it pollution free and more safety oriented for the brick workers.

From the above review of literature, it is clear that though there are a good number available of studies on industrial accidents, labour legislation and its implementation and also the studies on brick industry. Therefore, the author of this paper feels that a study needs to be undertaken with reference to the use and implementation of provisions regarding the safety of workers in brick units of Karimganj District. The present study is a primary attempt to examine the under mentioned objectives of brick industry of Karimganj District. However, so far this author after his review found that such study has not been conducted in karimganj District for which author aims to conduct a study on brick industry of karimganj District on workers safety provisions and their implementation.

#### **Objectives of the study:**

**The main objectives of the present paper are:**

1. To discuss the nature of accidents in Brick Industry of Karimganj District.
2. To identify the different categories of workers of Brick Industry.
3. To find out the number of accidents and payment of compensation to workers of Brick Industry of Karimganj District.

#### **Methodology of the study:**

The study proposes to be carried on with the help of both primary and secondary data. The secondary data, proposed to be used, may be in the form of different books, journals, periodicals, Government and Non-Government reports, statistical information, data available in different handbooks published by Government of Assam and India etc. as well as by searching relevant websites.

The primary data, on the other hand, were collected in the form of the opinions of the sample workers, and employers/managers through schedule, specially developed for these two categories of the selected brick units of Karimganj District.

According to District Industry and Commerce Centre (DICC) of Karimganj District, there are 12 registered brick units in Karimganj District. Out of these 08 were selected by using simple random sampling, for the study purpose. It covered 67% of the total registered brick units of Karimganj District.

(Source: DICC, Karimganj, Feb, 2012)

The perception and awareness of the workers and employers/managers were studied by collecting relevant information by canvassing schedule among the sample workers of the total workers and employers and/or managers of the selected bricks units of Karimganj District. Thus, it covered approximately 100 respondents from both the employers/managers and

workers/employees of the selected brick units of Karimganj District for this study.

Moreover, interview was conducted with the Officers of District Industry and Commerce Centre and Labour Officers of karimganj District to gather the information regarding the industrial accidents and payment of compensation of brick industry. Data and information were also collected by arranging interviews with the knowledgeable persons like employers, dealers, technical experts and other related persons of the selected brick units of karimganj District.

(Source: Field Survey, Feb, 2013)

For the sake of simplicity of the analysis, the paper is divided into four sections: Section -I deals with the first objective of the present study. The identification of the different categories of workers of brick industry is included in section-II. The number of accidents and payment of compensation to workers of brick industry are discussed in section-III. The section-IV concentrates observation and conclusion.

### Section -I

The concept of different terms related to industrial accidents may be available from Factories Act, 1948 and Workmen's Compensation Act, 1923 and other documents.

#### Industrial Accidents:

According to the Factories Act of 1948, an industrial accident is defined as "an occurrence in an industrial establishment causing bodily injury to a person which makes him unfit to resume his duties in the next 48 hours." In other words, it is an unexpected event which is neither anticipated nor designed to occur. It is always sudden for a gradual process does not constitute an accident.

Moreover, the event or occurrence should be something to which a definite time, date and place can be assigned. It must arise in the course of employment in a factory or an industrial establishment. However, self inflicted injuries or injuries inflicted with the consent of a person cannot be regarded as accidents.

Thus, an accident is an unplanned and uncontrolled event in which an action or reaction of an object, a substance, a person, or a radiation results in personal injury.

#### Industrial Injury:

An industrial injury has been defined in Workmen's Compensation Act, 1923 as, "a personal injury to an employee which has been caused by an accident or an occupational disease, and which arises out of, or in the course of, employment, and which would entitle such employee to compensation under the Workmen's Compensation Act, 1923."

The injuries of the accidents may be fatal or non -fatal. Fatal injury means injury resulting from industrial accident which caused death of the worker. Non- fatal injury means injury resulting from an industrial accident, which prevented injured worker from attending to the work for a period of 48 hours or more immediately following Factories Act.

#### Nature and Types of Accidents

(Mamoria: 1996): The nature of an accident may vary from industry to industry. An employee may fall from a height while engaged on a particular assignment or he may be caught in a machine while working on it, or he may fall against a machine, or parts of a machine having a horizontal protruding motion may strike against him or explosives used carelessly may explode, and injure an employee. Such accidents may result in disablement or death.

Accidents may be of different types depending upon the severity, durability and degree of the injury. An accident causing death or permanent or prolonged disability to the injured employee is called 'major' accident. A cut that does not render the employee disabled is termed as 'minor' accident. When an employee gets injury with external signs of it, it is external injury.

Injury without showing external signs such as a fractured bone is called an internal one. When an injury renders an injured employee disabled for a short period, say, a day or a week, it is a temporary accident. On the contrary, making injured employee disabled forever is called permanent accident. Disability caused by accident may be partial or total, fatal or non-fatal. No accident occurs automatically. Instead, certain factors cause accidents. It has been noticed that an accident does not have a single cause but a multiplicity of causes, which are often closely related.

The manufacturing of brick industry uses coal, fire, clay, kiln and chimney to convert kucha soil (raw soil) into hard dry fired bricks. As the bricks industry using fire and coal through chimney kiln and work is done by workers manually, so there may be a possibility of causing accident/injury to workers. Therefore, the author intends to study the happening of accidents, safety measures available and implemented by the employers/managers for safety and security at work place for the workers in brick industry. An idea is also mooted to know the compliance of the employers' attitude towards the payment of compensation as per Workmen's Compensation Act of 1923. It has been observed from the field study that accidents/injuries occurred in the brick industry for which employer/manager maintains provisions of first-aid treatment within the campus of the brick firm. It is also noted that the workers expressed their

views that there is an arrangement from the part of the employer to provide medical treatment to the workers, if necessary during the working season. If the accidents /injuries are more fatal they send the workers to govt. hospital and the cost of the medical treatment is provided by the employer.

(Source: Field survey of bricks units of Karimganj District, Feb, 2013)

In general, health and safety in the workplace has improved in most industrialized countries over the past 20 to 30 years, however, the situation in developing countries is relatively unclear largely because of inadequate accidents and disease recognition, record-keeping and reporting mechanisms.

## Section-II

There are different sections of brick industry. All the sections of brick industry are equally important for production of bricks. It has been studied that the following sections are very vital for bricks unit for its manufacturing:

1. kiln-baked mixtures of clay;
2. Bricks making section;
3. Unfired bricks carrying section;
4. Unfired bricks loading & setting in the kiln;
5. Fire section;
6. Coal section;
7. Fired bricks unloading section;
8. Stock-at storage piles and bins;
9. despatch -loading & unloading of fired bricks;
10. Rubbish section;
11. Management section;

(Source: Field survey of bricks units of Karimganj District, Feb, 2013)

According to the survey, it is clear that the maximum numbers of workers/labourers are required in the

making of bricks of the brick industry. In other sections, less number of workers is required. Workers are engaged on the basis of their skill and the requirement of the owner of the bricks unit. Of course, it is true that the workers of fire section, loading of unfired bricks in the kiln and unloading of fired bricks from the kiln are always skilled and efficient. They are aware about their assignment and also supervised properly.



In this contest, workers are identified as well as classified as per their assignment and task. Workers are employed in the bricks firm according to the scale of production of the firm. The following table-1 highlights the present position of the various categories of workers of the selected brick industry of karimganj District.

**Table-1**

**Workers strength of various categories of selected brick- units of karimganj district:**

Name of bricks unit	Permanent workers	Temporary workers	Casual workers	Total workers
National bricks industry	50	10	nil	60
Singh company	02	65	20	87
Roy &co.	04	60	07	71
New Barak bricks industry	30	10	10	50
Mammon bricks industry	01	30	05	36
Happy bricks industry	03	30	04	37
Cachar bricks industry	50	15	02	67
Valley bricks industry	45	10	05	60
Total -8 industry	185	230	53	468

(Source: Field survey of the above selected bricks units of karimganj District, Feb, 2013)

### Section -III

It is estimated that at least 250 million occupational accidents occur every year worldwide. 335,000 of these accidents are fatal (result in death). (Since many countries do not have accurate record-keeping and reporting mechanisms, it can be

assumed that the real figures are much higher than this) .The number of fatal accidents is much higher in developing countries than in industrialized ones.

In India due to late reporting or non-reporting of the accidents, the exact number of persons affected by accidents are

not available. However, on the basis of the report submitted by different State Governments, Ministry of Labour, Government of India publishes some statistical information regarding the number of fatal and non-fatal accidents, incidence and frequency rates of accidents in India.

The following table-II focuses that the respondents are employer/ managers and workers/employees of the selected brick units of Karimganj District regarding the accidents/injuries and the payment of compensation to workers.

**Table -II**  
**Respondents of both employers and workers of selected brick units of karimganj District regarding accidents and payment of compensation to workers:**

S l . n o .	Name of brick units	No. of respondents employer/managers	No. of respondents workers/employees	No. of Accidents Occurred	Compen Sation payments	total no. of respondeents
1	National bricks industry	02	11	nil	nil	13
2	Signh company	01	12	nil	nil	13
3	Roy &co.	02	11	nil	nil	13
4	New Barak Bricks Industry	01	10	nil	nil	11
5	Mamon Bricks Industry	02	09	Twice workers' house fired	Restructured house of workers twice.	11
6	Happy Bricks Industry	02	10	nil	nil	12
7	Cachar Bricks Industry	03	11	nil	nil	14
8	Valley Bricks Industry	02	10	nil	nil	12
	Total -08 industry	15	84			99

(Source: Field survey of the above mentioned bricks units of karimganj District)

But the figures may not be strictly comparable due to differences in area covered, varying response or non-response from employer/management and employees/workers of brick industry. Table-II provides some information relating to industrial accidents and the amount of payment of compensation to workers/ employees of brick firms of karimganj District on the basis of the report collected through the schedule from the employers and/or managers as well as employees/workers of

selected brick units of karimganj District. This table reveals that there is a significant response from both the employers and workers regarding the accidents occurred as well as the amount of compensation paid to workers in brick industry of karimganj District.

Table-II shows the incidence rate of injuries (injuries number of persons) and compensation payment to workers of selected brick firms. The table also highlights that the rate of accidents is very

few. But one incident has been occurred that the workers' house in the campus of the brick firm was fired twice. The employer of that brick firm had restructured the workers' house and provided to the workers cloth & other accessories for their survival. Obviously, it seems that the employers/management of brick industry are very much cautious and aware regarding the accidents/injuries of workers during the working hours of the firm. Of course, it is true that the opinions expressed from both employers/management and employees/workers regarding the accidents/injuries in the brick industry of Karimganj District are significantly similar. So, it is focused from the respondents of the selected brick units of Karimganj District that close supervision, awareness and proper instructions are safety and security of the workers and also reducing/eliminating the injuries or accidents of the workers. This leads to the workers to enrich their knowledge, attitude, behavior, skill and efficiency for their safety at work.

#### Section- IV

**Government of India has taken various measures for the prevention of industrial accidents. Factories Act, 1948 provides some guidelines for the prevention of industrial accidents. The various provisions relating to safety are mentioned in Sec.21 (fencing of machinery) to Sec.41 –H (Right of workers to warn about imminent danger). Workmen's Compensation Act 1923 (known as Employee's Compensation Act 1923) makes it obligatory for the employers, brought within the ambit of the Act, to furnish to the State Governments/Union Territory Administration annual returns containing statistics relating to the average number of workers covered under the Act, number of compensated accidents and the amount of compensation paid.**

As per Factories Act 1948, Sec.34 deals with excessive weights which are applicable in brick industry and Sec. 35 deals with protection of eyes that is related to workers of bricks unit. Sec. 36 of the Act has relevance for precautions against dangerous fumes as brick industry using coal & chimney kiln and it is dangerous to workers. Sec.38 of the Act is very relevant for bricks industry as it is related to precaution in case of fire. Hence, bricks industry uses sufficient coal and fire wood for its production. So workers should be protected from any fire that may act as a danger to the life of workers. Sec.40A deals with maintenance of building which is necessary for health and welfare of the workers of the brick industry and Sec.40B deals with safety officers. It is mandatory from the part of the Government that safety officers must visit and inspect the safety measures of brick industry. In this regard, State Government has the rules to ensure the safety and security of the workers of the brick industry.

The brick industry is also within the purview of Environment Protection Act 1986, and it is mandatory for this industry to follow the rules enacted by the State Pollution Control Board.

**Prevention of Accidents in the industry is the joint responsibility of all concerned viz management, employees, trade unions and government human error of accidents can be minimized by imparting safety education, training, etc. Many companies have circulated Accident Prevention Programme (APP) among all concerned. They inform to workers regarding how and when to report of injuries, where first-aid facilities are available, how to report unsafe conditions and practices, how to do in an emergency; say fire emergency, earth quake emergency, to include how to**

**work in an emergent situation, use and care of required personal protective equipment. They have constituted safety committee and employees safety meeting are held regularly.**

From the above discussion, it is clearly observed that there is no comparable and reliable industrial accidents statistics in brick industry of karimganj District. Brick industry is an unorganized sector which is directly involved for production and manufacturing of bricks in our country. Workers are engaged in large scale in the brick firms because of the manufacturing process of this industry is basically based on manual and seasonal. Hence, workers/labourers are aware and sincere for

their work. At the same time, they are also supervised properly. Thus, it is found that the employers/ management of brick industry are very much cautious and aware regarding the accidents/injuries of workers during the working hours of the industry. The employer/manager provides medical facility to their workers. In case of payment of compensation to workers regarding injury/accident of bricks unit is mandatory. Therefore, accidents may not rise in the firm. From the legal point of view, if any accidents occurred, accident affected families must be provided all types of help if necessary in order to save themselves from the exploitation of the employers.

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