Discussion

There are about 1,00,000 brick kilns all over India employing on an average 100 workers per kiln. The brick industry is also a significant employer of women work force and children in India. Age old type of firing process (Bull's trench) in the brick industry throws gaseous and particulate pollutant in the surrounding air areas ultimately in the soil. Very little work has been carried out on the impact of pollution on its surroundings, vegetations and labour force working in the kilns. Therefore, the present work has been devised of its own. Lack of references, also paused a daunting task.

Distribution of plant in a plant community is not homogeneous. The distribution of plant is controled by several factors, such as dispersal of seeds, soil condition, light, other edaphic and biotic factors. Pollution also plays a significant role in plant distribution in the plant community. However, to have a complete insight, measurement in relations to density is necessary. Variation in distribution is caused by several factors like soil condition, vegetative stage, quantity and dispersal of seeds, grazing or other biotic activities, predation by insects and diseases (Oosting, 1958; Hazen, 1965; Daubenmire, 1968; Hanson and Churchil, 1968; Odum,1971; Mishra,1980). Density in ecology indicates numerical strength of plant in community and number of plants per unit area. The unit area may be square meter or acre or hectare (Mishra, 1980).

In Bikash Ch Kundu (BCK) brick field at Balurghat, South Dinajpur *Croton* sp., *Blumea* sp., *Polygonum* sp., *Leucas* sp. and *Gnaphalium* sp. were found at all distances towards south direction (Table 5) from the chimney. Lowest numbers of species (ten) were found at a distance of 50 m. *Croton* sp., Leucas sp. and Gnaphalium sp. showed their respective lowest density at 50 m distance (Table 5). Highest number of species (seventeen) were recorded in the control area (beyond 500 m). The lowest (nine) and highest (fifteen) number of species were recorded at 50 m and 100 m respectively towards south-west direction (Table 6). *Croton* sp., *Blumea* sp., *Polygonum* sp., *Leucas* sp. and *Gnaphalium* sp. were recorded at all distances. Only two species, such as *Croton* sp. and *Leucas* sp. showed their respective lowest density at 50 m (Table 6).

Four species, namely *Croton* sp., *Blumea* sp., *Leucas* sp. and *Gnaphalium* sp. were found at all distances towards south and south-west direction in the brick field at Balurghat Brick, South Dinajpur (Tables 7 and 8) The lowest number of species (ten) was found at 50 m towards south direction and highest number of species (fifteen) was recorded in the control area (Table 7). *Glycosmis* sp. was recorded at a distance of 500 m and in control area of the south direction. Lowest (nine) and highest (fifteen) number of species were found at 50 m and 100 m respectively towards south-west direction (Table 8). *Clerodendron* sp. and *Oldenlandia* sp. totally absent at all distances. Only one species, e.g. *Croton* sp. showed its lowest density at 50 m on both south and south-west direction.

Lowest number of plant species (eleven) was found at a distance of 50 m towards south and south-west direction in Saraswati Brick Industries (SBI) at Raiganj (Table 9 and 10). Six species, such as *Croton* sp., *Blumea* sp., *Polygonum* sp., *Leucas* sp., *Gnaphalium* sp. and *Ageratum* sp. were found at all distances on the south and south-west sides but only three e.g. *Croton* sp., *Polygonum* sp. and *Leucas* sp. showed their respective lowest density at 50 m on both direction.

At Raja Brick Industry, Kaliyaganj, North Dinajpur five species e.g. *Croton* sp., *Polygonum* sp. *Leucas* sp., *Argemone* sp. and *Gnaphalium* sp. were present at all distances towards south and south-west direction (Tables 11 and 12). The lowest number of species (nine) were found at 50 m, and highest number of species (fifteen) were found at 200 m distance and in control area towards south from the chimney (Table 11). Lowest number of species (nine) were found at 50 m distance (Table 12) and highest number of species (sixteen) at a distance of 200 m. south-west. *Scoparia* sp. and *Ricinus* sp. were present at 100 m distances and *Oldenlandia* sp. was present only at 200 m distance. But interestingly *Dryopteris* sp. and *Sida* sp. were present at control region. In these brickfields three species, such as

Croton sp., *Leucas* sp. and *Argemone* sp. showed their respective lowest density at 50 m on both south and south-west direction from chimney and were present at all distances (Table 11 and 12).

Croton sp., *Leucas* sp. *Argemone* sp. and *Clerodendron* sp. were found at all distance towards south direction of Shaikh Kasim Ali Choudhury (SKC) brick field, Chopra, North Dinajpur (Table 13). Lowest number of species (eight) were found at 500 m towards south and highest number (eighteen) were recorded at 100 m. In control area thirteen species were found. *Oldenlandia* sp. and *Colocasia* sp. were found only at 100 m and 200 m distances respectively. *Scoparia* sp. was absent in every distances except control region. *Ricinus* sp. was found at a distance of 200 m and control area. Out of twenty species three species e.g. *Croton* sp., *Leucas sp. and Argemone* sp. were found at all distance towards south-west direction (Table 14). At 500 m lowest number of species (seven) were found. *Colocasia* sp. was absent in all distances including control area. *Scoparia* sp., was only present at control region but absent in all distances. In this brickfield only *Croton* sp. showed its lowest density at a distance of 500 m. from the chimney on both south and south-west direction and were present at all distances.

From the above discussion on the distribution of herbaceous plants it was revealed that two species, e.g. *Croton* sp., and *Leucas* sp. were found in every distances including control area and in every brickfield studied (Table 15). *Gnaphalium* sp. was found in four brick kiln areas at all distances but it was not detected at a distance of 500 m from the chimney in the brickfield of SKC, Islampur, North Dinajpur. The species, like *Ocimum* sp. was found at all distances in the brick fields of SBI, lowest density at 50 m towards south-west direction (Table 10) *Ageratum* sp. were found at SBI in both direction (Table 9 and 10) (North Dinajpur). *Polygonum* sp. were found at all distances at BCK (Table 5 and 6), SBI (Table 9 and 10), RBI (Table 11 and 12) in both directions. *Blumea* sp. were present in the brick fields of BCK, BB and SBI at al distances (Table 5,6,7,8,9, and 10) but absent in RBI at control region (Table 11 and 12) and SKC 50 m and beyond 500 m distances (Table 13 and 14). It was observed that *Argemone* sp. was present at RBI (Table 11 and 12) and SKC (Table 13 and 14) at every distances from the chimney. So it can be concluded that distribution of different plants species varied in different brickfields.

This study also revealed that minimum number of species was not only found at 50 m distances but also one species, *Croton* sp. showed its lowest density in that area in four brickfields such as BCK, BB, SBI, and RBI. In one brickfield (SKC) minimum number of species was detected at a distance of 500 m. and *Croton* sp. showed its lowest density in that area. It was found that four brick kilns e.g. BCK, BB, SBI and RBI used movable chimney with a height of 20 m (Fig. 4) and fixed chimney with a height of 40 m (Fig. 5) was used only in SKC. So it can be concluded that effect of brick kiln emission on the distribution and density of plant species varied depending on the height of chimney.

Pangtey *et al.* (2004) reported that various gaseous particulate pollutant emanating from brick kiln decreased herb density. They also mentioned that species like *Croton* sp., *Blumea* sp., *Polygonum* sp. and *Gnaphaliam* sp. were remain unaffected in the vicinity of brick kilns. In our observations we also found that *Croton* sp. and *Leucas* sp. were distributed at every distances in all five brick kiln areas (Table 15). *Blumea* sp., *Polygonum* sp. and *Gnaphalium* sp. were also detected in all brickfields except few distances (Tables 5,6,7,8,9,10,11,12,13 and 14).

Rao (1972) mentioned that aerial parts of trees growing near the brick kilns exhibit necrosis of leaves and defoliation of young leaves. Sirohi and Singh (1991) studied that effect of environmental pollutants emitted through brick kiln on the morphological and epidermal features of the leaves of *Rumex dentatus* L. and found that plants population at such site was smaller with shortened internodes and smaller leaves in comparison to those growing at normal sites. They reported that the floral parts were also smaller in size. Chenglin *et al.* (1995) mentioned that the emission of fluorine fumes from the adjacent brick kiln of Guangdon province China was the direct causative factor of the mango (*Mangifera indica* L.) black tip disorder.

Santi and Tiwari (1989) investigated the influence of cement dust on botanical composition of Chunar grasslands, Rajasthan, India. They also showed that there was decrease in floristic composition nearer to the cement factory. Sharma (2002) studied the effect of cement dust on the floristic composition and biological spectrum of Morak grassland of Kota district of Rajasthan, India. His studies revealed that the herbs, sedges and grasses growing in the vicinity of the cement factory were completely covered with cement dust while a village 6 km away from the cement factory was not covered with cement dust. He recorded maximum of 44 plant species and observed that the number of plant species reduced to almost half in polluted grasslands in comparison to that of non-polluted grasslands. He suggested that this is due to cement dust deposition on plant leaf surfaces causing partial stomatal closure, poor perception of sunlight followed by reduction of chlorophyll content and ultimately reduction of photosynthesis. He also indicated that there was preponderance of therophytes followed by chamaephytes. Sharma (2002) also mentioned that some plant species, e.g. *Dactyloctenium sindicum, Cynodon dactylon, Eragrostis tenela, Dichanthium annulatum, Tridex procumbens, Parthenium hysterophorus, Cyperus rotundus, Elytraria acaulis, Euphorbia hirta, and Cassia tora* were resistant to cement dust pollution.

In the present study analysis of soil with respect to organic carbon percentage, soil pH, available phosphorous, available potassium were investigated in two brickfields (BB brickfield and BCK brickfield, Balurghat, South Dinajpur). Soil organic carbon is an important aspect of soil productivity. The ANOVA of soil organic carbon analysis showed that there was no significant differences of organic carbon between experimental sites of BB brick field (Table 19 a,b,c,d) and BCK brick field (Table 24 a,b,c,d) and control sites (Table 17). Therefore, it may be concluded that fly ash coming out of brick kiln chimneys did not significantly add any organic carbon in the surrounding soil.

ANOVA of pH of soil showed that there were significant differences between groups at 50 m distance and at 200 m distance with other sites. (Table 20a and 20c) at BB brick field. Similarly, at BCK brick field the pH change was significant at 100 m distance (Table 25b). Minimum number of plant species (Table 7 and 8) were recorded at a distance of 50 m from chimney towards south and south-west in the brick field at Balurghat (BB) in comparison to that of control area (Table 7 and 8) where pH change was significant (Table 20a). It may be concluded that change in soil pH along with emission of pollutants from chimney had same impact on the distribution of plant species. More in depth study in needed for such correlation. The changes of soil pH did not show any impact on the distribution of plant species at BB and BCK brickfield (Table 5,6,7 and 8).

ANOVA of available phosphorous of soil at 50 m and 500 m distances of BB brickfield (Table 21a and 21d) differed significantly with other sites where as in BCK brickfield (Table 26d) available phosphorous of soil at 500 m distance differed significantly with other sites.

The ANOVA with respect to available potassium at 50 m showed significant difference in BCK brickfield (Table 27a) but at BB brickfield the ANOVA on available potassium showed no significant difference at any site studied in the present investigation (Table 22a, b, c and d).

It has been reported that micro nutrient deficient soil is enriched through addition of flyash (Plank and Martens, 1974, Mantens and Beahm, 1978). Use of coal-burnt ash has been shown to have positive effect on agricultural land. The main drawbacks are the high alkalinity, salinity, sulpher content and presence of some toxic elements in coal ash which inhibit crop growth and cause deterioration in soil properties (Hodgson and Holliday, 1966; Page *et al.,* 1979; Phung *et al.,* 1979; Elseewi *et al.,* 1980; Adriano *et al.,* 1980).

The effect of extracts of soil collected from various distances on the germination of seeds of jute, radish and ladies finger were tested. The experimental results revealed that young shoot length and young root length increased significantly over the control (Table 28 to 33). This may be due to addition of some minerals and mineral oxides from the ashes, which are essential for the plant growth. Dubey *et al.* (1982) studied the effect of flyash on two important crops wheat and gram and mentioned that both crops showed an increase in the height of plant, dry weight and chlorophyll and carotinoid content. Sarangi *et al.* (1997) have shown that fly ash amended soil increased soil conductivity, organic carbon and organic matter content. Further, they showed that rice plant responded positively to the fly ash amended soil. Addition of coal fly ash to soil neutralizes the acidity to a level suitable for agriculture, depending on the initial pH of the soil and increases the availability of sodium, potassium, calcium, magnesium, boron, sulphate and other nutrients but not nitrogen (Elseewi *et al.,* 1981;Moliner and Street, 1982; Druzina *et al.,*1983; Wong and Wong, 1989) other workers mentioned that applications of fly ash in low dose in the agricultural field were suitable for better crop management (Gutenmann *et al.,* 1976; Furr *et al.*, 1978; Sing *et al.,* 1994, Matte and Kene, 1995 and Khan and Khan, 1996). Moliner and Street (1982) has shown that addition of fly ash to soil neutralizes the acidity to a level suitable for agriculture. Many researchers have shown that application of fly ash improves the micro-nutrient status of the soil. It increases the availability of Na, K, Ca, Mg, B, sulphate and other nutrients which can help in sustaining the plant growth in the absence of nitrogen source (Elseewi *et al.*, 1981; Druzina *et al.*,1983; Wong and Wong, 1989). Sarangi *et al.* (1999) have shown that growth and yield of crops and vegetables increased in soils amended with coal fired fly ash.

An occupational health hazzards can be defined as a condition that result, from exposure in a workplace to a physical, chemical or biological agent, to the extent that the normal physiological mechanism are affected and the health of the workers in impaired. (Park, 1995).

The workers of brick industry are associated with various types of works. They are exposed to dusts generated during brick preparation, firing, transport and fly ash emitted from chimneys. They are also exposed to various types pollution even during periods of rests as they stay by the side of brick kilns. Various types of diseases were detected and were categorized into eleven classes. (Table 34 to 46). Agarwal (1959) reported that working conditions were far from satisfactory with insanitary surroundings, dusty environment, excessive temperature in May and June and excessive cold in December and January, lack of lighting and the long working hours. The one-room houses provided by the employer were *Kachcha*. Aslam (2001) reported major component of thermal load on kiln workers are radiant heat from the kiln top and walls, extremely hot flue gases escaping from feeding holes during fuel charging apart from the hot sun radiations as the kilns are mostly uncovered. These excessively hot conditions may cause various heat induced illnesses such as heat exhaustion, dehydration, heat cramp and heat stroke apart from skin burn which is a routine phenomenon. The fuel chargers without any protection / precaution endangering their life. Due to the seasonal nature of brick industry, the workforce gets employment for a limited period of six months per annum (Development Alternatives, 2005).

Most common disease of the brick field labourers were respiratory disease (Table 35) and 25.123% workers were suffering from various types of respiratory disease, such as infection (Sinusitis, URTI and LRTI), chronic obstructive pulmonary diseases, silicosis, anthrocosis, silico tuberculosis and lung cancer (Table 47) The fugative and stack emission of the brick field directly affect the labourers and cause many respiratory disorder. Manual mixing and preparation of soil is a general practice. The workers are exposed to high levels of respirable dust while doing so, especially while handling fine particle such as fly ash.

Wozniak *et al.* (1983) reported pneumoconiosis among the workers dealing with transport and preparation of brick. Brick kiln workers in Cape Town, South Africa suffered from various types of respiratory diseases. The main pollutant of the brickfield is dust. The dust exposure can highly affected the upper and lower lung function and they suffered from cough and phlegm production (Myers, 1989; Myers and Cornell, 1989; Myers *et al.*, 1989a and b). Liou *et al.* (1996) reported that the prevalence of pneumoconiosis among the brick workers in Taiwan, Republic of China was increased with duration of employment in brick filed. Zuskin *et al.* (1997) mentioned that the brickyard workers, of Zagreb, Croatia suffered from respiratory diseases like chronic cough, chronic phlegm and chest tightness. Another work also found the respiratory problem of the brick manufacturing industrial workers (Zuskin *et al.*, 1998). The silica dust mainly causes serious respiratory infection to the labourer in brickfield in HaNoi, Vietnam (Hai *et al.*, 2001). Aslam (2001) reported the particulate matter on inhalation may deposit on the ciliary epithelium which covers the upper respiratory tract down to the terminal bronchioles. These particles, either in a free state or after phagocytosis, are removed by cilia and mucous blanket towards the glottis where they are swallowed or expectorated. All these lead to pulmonary irritation, inflammation, fibrosis, allergic sensitization, silicosis, pneumoconiosis or malignant changes. Raut (2002) reported that the school children of a public school in Lamatar, Nepal were highly affected and sick due to the respiratory problems caused by the nearby situated brick kiln. Chien *et al.* (2002) reported pneumoconiosis among the workers in a brickfield in HaNoi, Vietnam. In our investigation the upper and lower respiratory tract infection were detected in many workers and sinusitis was also diagnosed. In Bangladesh it was reported that children were particularly vulnerable to the pollution generated by the kilns and developed respiratory problems in suburban areas near Dhaka city (Nurunnabi, 2003). Brick making involved crude techniques causing considerable workers drudgery. Brick workers, especially moulders were exposed to the sun for long hours. They were exposed to high concentration of dust while manual breaking of coal. There was also the risk of exposure to dust (from bottom ash spread on the kiln) and open fire during manual coal feeding. The workers had to walk on hot surface (top of the furnace) while monitoring and regulating the fire.

They were also exposed to high concentration so respirable suspended particulate matter (RSPM), during monitoring and regulating the fire, as the furnace chamber was covered with ash [ash acts as insulator] (Development Alternatives,2005). The chronic obstructive pulmonary diseases were also common to the workers.

Baba *et al.* (1985) reported that pneumoconiosis affected the expiratory flow rate and vital capacity of the dust exposed workers in Japan. Korn *et al.* (1987) reported that dust exposure in cement factory in six cities in the eastern and mid western USA can highly affected the upper and lower lung function and they suffered from cough and phlegm production. Yang *et al.* (1996) reported that cement dust might play vital role for reduction of ventilatory capacity and obstruction of pulmonary function in Taiwan. The workers in open cast coalmines in UK were suffered from chronic bronchitis, asthma, pneumoconiosis (Love *et al.,* 1998). Gupta *et al.* (1999) reported that dust exposure caused tuberculosis among stone quarry workers in Delhi. In this investigation we also found two male workers were suffering from silico tuberculosis. Rappapori *et al.* (2003) reported about respiratory problems due to silica exposure among the workers in U.S. construction industry, Chappel Hill, North Carolina. Mwaiselage *et al.* (2004) reported that ventilatorty function was affected among the workers of the cement factory due to dust exposure in Bergen, Norway. Mukherjee *et al.* (2005) reported that coal workers of mine suffered from respiratory problem due to silica dust. In Israel Dubonov *et al.* (2007) reported that air pollution from a coal-fired power station had a negative effect on children's lung function development.

In this investigation we also found one patient suffering from lung cancer that was confirmed by FNAC test. Crystaline silica may causes lung cancer in humans (Sanchar *et al.,* 1991). It was also reported that the unskilled workers of bricklayer suffered from cancer (Brendstrup *et al.,*1990).

A large number of brick kiln labouers were suffering from various types of nutritional disorders such as iron deficiency, vitamin deficiency and protein energy malnutrition (Table 36). This might be due to their bad economic condition. Upadhya-Chavan (1991) provided an extensive review of studies in finding out the reasons of low living standards, poverty, indebtedness, illiteracy and unemployment of the workers in brick kilns industry. Dharmalingam (1995) analysed that the wage of the main worker was determined by the number of brick made, but the wage of the co-worker was fixed by the main worker on the basis of the capacity of the co-worker. On the other hand, the large producers employed labour on contract. They were paid against completion of special tasks, such as moulding of 1000 bricks, transportation of 1000 green bricks etc.

Various types of dermatological problems, such as eczema, scabies, dermatitis, leprosy and post kala-a-zar dermal leishmaniasis were detected among the brick kiln workers (Table 37) and the percentage was quite high, 19.409% (Table 47). Suffering of the brick kiln workers from various types of dermatological problem might be due to dust exposure and unhygienic condition in their work place as well as dwelling areas. Oleru (1984) reported skin irritation in Nigerian cement factory workers. Zuskin *et al.* (1998) reported that the workers were suffering from dry throat and throat irritation in the brick manufacturing industry in Croatia.

In our investigation various types of hematological disorders among the brick kiln workers were diagnosed. Malarial parasite (*Plasmodium vivax*) were detected in the blood of four workers (Table 38). Due to unplanned excavation of the topsoil around the brickfield in northern Delhi created pools and ponds where anophiles mosquito breeded profusely and malignant malaria broke out in the region (Ansari *et al.*, 2001).

Gastrointestinal problems was prevalent among the brick kiln workers (Table 39). This might be due to unhygienic condition of their dwelling areas and lack of pure drinking water supply. Sengupta *et al.* (2001) reported that seventy one persons out of two hundred forty six individuals of two brick fields located in the south-western side of Calcutta municipal area and situated near the bank of river hooghly suffered from acute watery diarrhea and vomiting caused by contamination of drinking water.

It was found that workers were suffering for various types of opthalmological problems such as allergic conjunctivitis, cataract, trachoma, and keratities (Table 40). Dust exposure can cause various types of ophthalmological problems. Oleru (1984) reported that the labourer exposed to cement dust were suffering from cataract and conjunctivitis in the cement factory in Nigeria. Zuskin *et al.*, 1998 reported that labourers were suffering from eye irritation in the brick manufacturing industry in Croatia.

Various types of urinogenital problem such as urinary tract infection, pelvic inflammatory disease, menstrual problems were detected among the brick kiln workers (Table 41).

The hard working labourers also suffered from various types of musculo skeletal disorder (Table 42).

Putz–Anderson (1988) reported that the moulder suffered from high level of musculo skeletal problems due to their tedious hard working. Ferreira and Tracy (1991) reported various types of musculo skeletal problems of the brick kiln workers in a brick company in UK. Basra and Crawford (1995) reported that the labourers of brick kiln in UK suffered from upper limb disorder. The brick laying workers showed symptom of musculo skeletal problems in UK (Cook *et al.*, 1996). Heuer *at al.* (1996) found that musculoskeletal complaints of brick layers was decreased with length of employment in their study samples in UK. Trevelyan and Haslam (2000) reported that the brick kiln workers suffering from high level of upper limb and back discomfort in Leicestershire, UK. Moulders worked long hours under the sun in uncomfortable working postures on a daily basis this might lead to adverse health impact. The working procedure of different workers were really uncomfortable. Pulling stiff clay, melting clay, forming green bricks, pulling green and fired bricks and cracking coal etc. caused awkward postures. Transportation of green and fired bricks was done by head load. Carrying head loads on a regular basis causes health problems especially in women (Development Alternatives, 2005).

Gupta *et al.* (1999) reported that the quarry workers in Rajasthan were suffering from body ache due to hard working. Occupational exposure to silica in pottery, mining, sand stone industry, refractory material industry and related industries caused rheumatoid arthritis among workers in UK (Turner and Cherry, 2000).

In our investigation, it was found six labourers one male and five females were suffering from rheumatoid arthritis.

It was also found that the brick kiln labourers suffered from some neurological disorder (Table 43). Buckle (1997) reported that the workers in the bricks pottery, glass and cement have well recognised risk factors for nerve and tendon, injuries in the hand and wrist.

Present investigation showed that the prolonged effect of brick kiln noise may causes various types of auditory problem (Table 44). Hai *et al.* (2001) reported that the brick kiln labourer faced noise, hazards and suffered from auditory disorder. Rahaman (1996) reported that labourers of construction industries suffered from hand, finger and back injuries, hearing loss, intestinal problem, respiratory disease and skin allergies.

In our investigation twelve labourers, seven males and five females were found suffering from venereal diseases (Table 45). So far there is no such report from other researchers.

From Table 46, Fig. 25 it was evident that the some labourers were suffering from more then one diseases.

It was clear from the Table 47 that the chances of an individual affected with diseases belonging to respiratory, nutritional and dermatological CLASSES are more in comparison to the others. The frequencies of respiratory, nutritional and dermatological CLASSES were 25.123, 20.985 and 19.409 respectively.

An attempt was made to look at the possibility of finding a relationship between diseases and sex of the brick kiln workers.

From Table 48 it was evident that male workers were more prone to respiratory diseases compared to the female workers. It was observed that 54.1% of males were affected by respiratory diseases compared to 45.9% in females. Female had more chances of being affected by infection (Sinusitis, URTI and LRTI) and their chances were twice more than the chances male.

Chronic obstructive pulmonary diseases in male was more and approximately fifteen times more than female. Chances of male workers getting anthrocosis was approximately two fold higher than female workers. The proportion of workers affected with the respiratory diseases was different across the sex (Table 48).

From the studies on nutritional deficiency (Table 49) it appeared that the proportion of people affected by different nutritional deficiencies did not change over sex. However, the chances of individuals to suffer from iron deficiency were higher compared to other nutritional anomalies.

From the observations presented in Table 50 it was evident that the probability of acquiring dermatological diseases did not depend on the sex of the workers. However, it appeared that chances of acquiring eczema and scabies were higher amongst the brick kiln workers.