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OCCUPATIONAL HEALTH AND SAFETY ISSUES IN SIHALA FLOUR & GENERAL MILLS (PVT.) LIMITED IN I-9 INDUSTRIAL ZONE, ISLAMABAD: A CASE STUDY

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Abstract

The present study was undertaken to observe the occupational health and safety issues and remedial measures taken in Sihala Flour Mill, I-9, Industrial Area, Islamabad. In an agricultural industry, the workers are highly exposed to harmful factors in their work environment, such as dust, unfavorable microclimatic condition, excessive noise, insufficient light, suffocation, falls, fires, explosions, electrocutions, and injuries from improperly guarded machinery. Dust is treated as the most influential agent, and perceived as a frequent cause of the respiratory system illnesses in a flour mill which can produce allergic reaction and chronic respiratory disorders, including sensitization and asthma. Sihala Flour & General Mills (Pvt.) Limited was visited to observe the occupational health and safety problems and their remedial measures taken by the industry. The mill was visited twice in the month of May, 2010. The study employed a cross-sectional analytical design. Data was collected using structured interviews, work-site observations, and physical examination. Personal Protective Equipments (PPE) was available and was in use. The workers in the work area were wearing masks and caps. But no ear muffs were provided to the employees although noise level was high. For the prevention of fire explosions, fire and smoke alarms were provided along with close circuit (CC) cameras which also replace the buddy system. The emergency contact numbers were displayed at all the important points including public gathering areas so every body is communicated the emergency situations. A good house keeping with good ventilation was observed throughout the mill area. No broken plugs, sockets and switches were seen during the visits. The stairs were in good condition with wide windows for sufficient lighting with proper use of day light. Transferring raw material (grains) from silos to the process area was mechanically operated and automatic. For transportation of the finished material, proper hand rails were provided. There was a system of drill for emergency situation after every six months. Proper record keeping of induction, job and refresher trainings, accidents and injuries was observed and was computerized. The mill was safe with

respect to Occupational Health and Safety (OH & S) issue, but ear muffs and proper lifting hazard minimization is highly recommended.

Key words; Sihala; occupational health and safety; work environment; emergency situations; hazard minimization;

1. INTRODUCTION

Flour milling can trace it origins back to prehistory, but the modern systems known as gradual reduction flour mills have only been developed over the last 200–300 years. Grain handling facilities, as defined by the Occupational Health and Safety Administration (OHSA) Grain Handling Standard, include: grain elevators, feed mills, flour mills, rice mills, dust pelletizing plants, dry corn mills, soybean flaking operations, and the dry grinding operations of soy cake.

The modern flour-milling process can be separated into six very distinct areas:

1. The break system – the first grinding stages for the wheat;
2. Scalping, grading, dusting – the separation of the ground materials after each of the break rolls;
3. The scratch system – the final removal of bran from the system, although sizing systems are more commonly used in modern plants;
4. Purifiers – the cleaning up of semolina stocks (endosperm fragments) by grading and aspiration to remove bran fragments;
5. The reduction system – the reduction of semolina to flour;
6. Flour dressing – the separation of flour from the other materials (mainly bran).

A comprehensive process design and a typical flour mill design is given in Figure 1, and 2, in Annexure 1 and 2, respectively.

1.1 Sihala Flour & General Mills (Pvt.) Limited: An Overview

Sihala Flour & General Mills (Pvt.) Limited (SFM) was established in 1969. The main function of the mill is processing of wheat and then the production of five products viz; Atta Maida (Rocket) Fine (Rocket) Bran Suji etc from it. The capacity of SFM was 220 tons per day and it has been increased to 360 tons per day since 1995.

The tradition of offering the highest quality of products to customers while exceeding government set specifications has been the tradition and is part of company policy. SFM has always been a pioneer in the field of flour milling. They are also the pioneers in constructing concrete silos to meet requirements for storage.

Sihala Flour Mill was the first mill to produce fortified flour in Pakistan. The Ministry of Health in its pilot project selected SFM as the first mill to start providing Fortified Flour in 2006.

Sihala Flour Mills has successfully achieved ISO/IEC 22000:2005 (Food Safety Management System) on 16 February 2010. It has successfully completed and exceeded all requirements set forth in ISO/IEC 9001:2008 on 03 November 2009. Bureau Veritas; a leading certification authority conducted the audits and has issued the certificates. The mill is also HCCP, 22000 certified. HACCP is a food safety risk management system that addresses biological, chemical and physical hazards through anticipation and prevention rather than by a finished product inspection. The Good Manufacturing Practice (GMP), or Good Hygiene Practice (GHP), or Good Agriculture Practice (GAP) certifications are required prerequisites for an effective HACCP system.

The company pledges to satisfy consumers and adhere to government specifications in letter and spirit. The objective is to achieve excellence in quality by producing healthy and nutritious wheat products. The goal is to maintain leadership in the milling field, by keeping abreast with technological development through research and dedication to work hard.

2. OCCUPATIONAL HEALTH AND SAFETY ISSUES IN A FLOUR MILL

The workers of agricultural industry are highly exposed to harmful factors in their work environment, such as dust, unfavorable microclimatic condition, excessive noise and insufficient light. In addition, there are numerous safety and health hazards associated with grain handling operations, among them suffocation and falls are the two leading causes of deaths. Other hazards include fires, explosions, electrocutions, and injuries from improperly guarded machinery (Figure 3, Annexure 3). Exposures to grain dust and associated airborne contaminants can also occur; such contaminants include molds, chemical fumigants, and gases associated with decaying and fermenting silage (Ijadunola, *et al.,* 2004).

Dust is treated as the most influential agent, and perceived as a frequent cause of the respiratory system illnesses (Meo and Al-Drees, 2005). Flour mills, generate dust, which is released into the air and later inhaled during industrial processes, such as cleaning, crumbling of the product, packaging and shipping (Bachanek, *et al.,* 1999). The occupationally related lung diseases are most likely due to the deposition of dust in the lungs and are influenced by the sort of dusts, the period of exposure, the concentration and size of airborne dust in the breathing zone (Mengesha and Bekele, 1998).

Flour is also considered to be a substance hazardous to health by the Health and Safety Executive (HSE). In their Control of Substances Hazardous to Health (COSHH) Regulations 1994, flour is defined as the finely ground particles of cereals or pulses (including such contaminants as mites, weevils, or fungal antigens) that result from any grinding process and from any subsequent handling and use of that "flour."

The American Conference of Governmental Industrial Hygienists (ACGIH) defines flour as a complex organic dust consisting of wheat, rye, millet, barley, oats or corn cereal, or a combination of these, which have been processed or ground by milling. In 1999 the American conference of governmental industrial hygienists

(ACGIH) proposed a threshold limit value (TLV) of 0.5 mg/m^3 for flour dust with a sensitization notation (Kakooei and Marioryad, .2005).

2.1 Health hazards of dust

Flour dust is a hazardous substance; it is a respiratory sensitizer and is known to cause allergic rhinitis and occupational asthma. It is also an irritant and may give rise to short term respiratory, nasal and eye symptoms. It may provoke an asthmatic attack in individuals with pre-existing disease and lead to chronic bronchitis (Ajeel and Al-Yasin, 2007)

Inhalation of flour dust can produce allergic reaction and chronic respiratory disorders, including sensitization and asthma. Epidemiological studies focusing on exposure-response relationships, as well as personal exposure to inhalable flour dust, wheat, and α-amylase allergens in flour mills and bakeries have been analyzed by several authors. In some Canadian provinces, flour dust with the exposure limit of 10 mg/m^3 total dust, and 5mg/m^3 for respirable dust, respectively has been established. The health and safety commission of the United Kingdom has established an 8-h TWA maximum exposure limit of 10 mg/m^3 for flour dust, with a 15-min exposure limit of 30 mg/m^3. Flour dust is a hazardous substance with respiratory sensitizing with pre-existing disease and also causes chronic bronchitis (Smith and Lumley, 1996).

2.2 Noise hazards

Another problem in a flour mill is noise hazard which causes temporary and permanent deafness in the workers. The sound level is measured in decibels (dBAs). As the dBAs go up, permissible duration goes down.

Permissible Noise Exposure

Duration (hours per day)	Sound Level (decibels)
8	90
4	95
2	100
1	105
½	110
¼	115

3. REVIEW OF LITERATURE

The workplace environment affects the health of workers. Unhygienic conditions are observed in the workplace environment of flour mills as fine organic flour dust gets airborne in the indoor environment of the flour mills (Wagh *et al.,* 2006).

While investigations into occupational health problems of various groups of workers have been conducted in Nigeria. The study employed a cross-sectional analytical design. Data was collected using structured interviews, work-site observations, and physical examination. Respondents consisted of 91 flour-millers, 30 matched internal controls from the maintenance unit of the same flour mill factory, and 121 matched external controls. Fifty-four percent of the flour-millers reported at least one respiratory symptom compared with 30% of the internal controls ($P < 0.05$) and 19% of the external controls ($P < 0.001$). Most symptoms were significantly more prevalent among the flour-millers compared with control subjects, and this trend was more evident amongst non-smokers than ex-smokers (Ijadunola, *et al.,* 2004).

A study was conducted in a flour mill located in Yasuj, the center of south-west province of Iran. In this mill, the grain is delivered in bulk and held in elevators prior to use. Before grinding, the wheat is inspected, classified, cleaned of impurities, and tempered with water to soften or mellow endosperm. Different types of wheat are then blended to make specific flour. The final steps involve bleaching and enriching the flour. The final product in powder form is bagged and supplied for home and bakery uses or is delivered in bulk by truck to bakeries (Kakooei and Marioryad, 2005).

The frequency of bronchial symptoms and the alteration of respiratory function parameters were studied in a group of 63 workers of an industrial flour-mill, and in a control group matched according to age, social class, and tobacco intake. In the exposed group the answers to a questionnaire indicated a greater incidence of cough ($p<0.01$) and chronic expectoration ($p<0.01$) as well as clinical airway hyperactivity ($p<0.01$). These results suggest that workers exposed to the vegetable dust found in flour mills are subject to develop chronic bronchial irritation (Taytard et al., 2004).

The influence of work place environment on long function of a flour mill in India was studied by Wagh *et al*., (2006). In the study it was found that 42 % of the workers were having shortness of breathing, 34 % of the workers were having continuous coughing and 19 % of the workers were having respiratory illness. A regular monitoring of indoor dust was recommended for the health of mill workers.

Meo and Al-Drees, (2005) studied lung function in forty-six male flour mill workers and a similar number of male control subjects in Pakistan. All participants were non-smokers with the age range from 18 to 65 years. The subjects were matched for age, height, weight and socioeconomic status. The results showed that the flour mill workers in Pakistan, like grain workers elsewhere, are at an increased risk of developing occupationally related pulmonary function impairments. The results suggest that there is an urgent need to improve dust control measures and the health status of flour mill workers.

The result of the study of worker exposure to inhalable flour dust in the flour mills in Canada indicate that 97.1 percent of the employees were found to be exposed to dust levels above the TLV-TWA of 0.5 mg/m^3.The results of the study

including those taken in the highly automated mill suggest that with the most up-to-date technology and proper cleaning procedures in place, the flour milling industry may not be able to reduce worker exposure to flour dust to the levels below the TLV of 0.5 mg/m^3 without the use of respiratory protection equipment (Karpinski, 2003).

A study was carried out by Smith *et al.,* (2000), to determine the prevalence of respiratory symptoms and their relationship to sensitization to wheat flour allergens and fungal amylase, in a group of workers from the UK flour milling industry. A cross-sectional study was used to evaluate symptoms, using a structured interview technique, and sensitization, using skin prick test findings, from 679 employees in flour milling and packing operations at 18 flour mills. A total of 147 workers (147/679, 22%) described upper respiratory tract symptoms of some kind. In the majority (139/147, 95%) these symptoms were of an occasional or transitory nature and were related to short-term exposures to high levels of dust. Three individuals (3/679, 0.4%) were identified whose symptoms were thought to be the result of allergy to wheat flour. The prevalence of positive skin prick tests to wheat flour allergens and to fungal amylase was 1.2% (8/678) and 0.9% (6/678), respectively. The principal causation of symptoms experienced by the workforce was considered to be a non-specific irritant effect related to short-term exposures to high levels of total inhalable dust.

All the above studies show that the main health hazard in a flour mill is dust and the resulted asthma and bronchitis along other hazards.

4. OBJECTIVES OF THE STUDY

The study was undertaken with the following objectives:

1. To observe the occupational health and safety measures, taken, in a Sihala Flour & General Mills (Pvt.) Limited.
2. To draw the attention of the authority to the aspects of the working environment which deserve special attention in order to achieve better production.

5. METHODOLOGY

The study employed a cross-sectional analytical design. Data was collected using structured interviews, work-site observations, and physical examination. The mill was visited twice in the month of May, 2010.

6. RESULTS AND DISCUSSIONS

The industry was visited twice for observing OH & S issues. The site was observed and cross checked with the Check list as given in Annexure 5.

6.1 Main process in the Sihala flour mill

The main process of flour making includes the following steps:

1. Preparing the wheat where the wheat is weighed, inspected and graded.

2. Cleaning; the removal of impurities likes stones, dirt, metals and other seeds.
3. Tempering; during this stage the wheat is soaked in water to make it easier to remove the outer bran layer.
4. Gristing; this involves mixing different wheat to create a specific kind of flour.
5. Milling involves a number of repeated steps:
    5.1. The wheat is ground by a machine equipped with rollers that break it into pieces.
    5.2. Then it is put through sifters. The resulting meal starts out coarse and with repeated grinding and sifting becomes fine white flour, wheat bran and wheat germ (The germ of a cereal is the reproductive part that germinates to grow into a plant. Wheat germ is a concentrated source of several essential nutrients including Vitamin E, folate (folic acid), phosphorus, thiamin, zinc and magnesium, as well as essential fatty acids and fatty alcohols) found in the wheat grains . The milling process can either produce distinct products wheat bran, refined white flour, wheat germ that can be packaged and sold separately, milled together to produce a whole grain flour, or blended to form different flours.
6. Blending; different components are blended back together to form different flours. For example, whole wheat flour is a blend of white flour and wheat bran.
7. Enriching & fortifying the addition of vitamins and minerals identified in government regulations.

6.2 OH & S issues in Sihala Flour mill

The flour mill was observed closely and a cross check list was maintained. The check list was divided in different sections and each section in the flour mill was observed.

6.2.1 Health and Safety Systems

Maintenance of health and safety requires its communication and proper display at different site areas so as to make sure the safety of worker. Proper record keeping of accidents and injuries was maintained and was computerized. Personal Protective Equipment (PPE) was available and was in use. The workers in the work area were wearing masks and caps (Annexure 4).

There is a complete medical check up after every six months. The sick workers are taken care by the specialist doctors on the panel of the flour mill. The medical rest period is paid by the company. The medical security is ensured for any severe accident which resulted in amputation or death of an employee.

6.2.1.2 Dust problems in the mill

Dust was not seen in the mill area. But there was no arrangement for the measurement of the dust in the factory work area. The results of the past study suggest that even with the most up-to-date technology and proper cleaning operations in place, the flour milling industry may not be able to reduce the flour dust levels to below the TLV of 0.5 mg/m^3. As shown in a study that chronic obstructive lung disease is one of the major occupational diseases/morbidity of concern in India (Saiyed and Tiwari, 2004).

Therefore, in practice all workers who are exposed to flour dust as part of their day to day work, whether working in a bakery or any other establishment using wheat flour must be under adequate health surveillance (Ajeel and Al-Yaseen, 2007). The same results are also mentioned by Mengesha and Bekele (1998).

6.2.2 Noise and Fire hazard at site

The noise level was not measured but as most of the plant was mechanically operated, so a high noise rate was observed. No ear muffs were provided to the employees as they consider them a hindrance during work. The ear muffs are highly recommended for the employees.

For the prevention of fire explosions, the fire and smoke alarms are provided alongwith Close circuit (CC) cameras. The CC cameras also replace the buddy system. These cameras can be monitored at any place at any time. At every floor, security alarms are displayed, for the employees, in case of emergency. The emergency numbers are displayed at all the important points including public gathering so every body is communicated the emergency situations.

6.2.3 House keeping

A good house keeping was observed throughout the mill area. The flour were clean and free of dust and any other contaminants. All the machines were in good condition. Proper cleaning was maintained while wearing personal protection equipments (PPEs). In the final storage room, although, the sacks were properly placed in order but the flour dust could be seen on the flour, Figure 4 and 6 in Annexure 4.The flour was free from slip/trip hazards with adequate lighting. Solar light was mainly used for proper lighting. The work area and rooms were well ventilated and free from any dust and smell.

In case of big machines, the area was not wide enough to pass through. Same results were also reported by Wagh *et al.,* (2006). The machines were not properly guarded; it was told during the survey that the mill was under move to the next site, so the guards have been removed.

6.2.4 Electrical hazards

The electrical wires were managed in a nice and safe manner. No broken plugs, sockets and switches were seen during the visits. No machine was exposed to

any live wire. Appropriate fire fighting equipments were maintained at proper places (Figure 7 and 8 in Annexure 4).

6.2.5 Stairs, steps and landings

The flour mill building's one portion is kept vertical and taller than the other for step wise cleaning and washing purpose as shown in Figure 2, Annexure 2. The stairs for this area were in good condition with proper and sufficient lighting. Large windows were provided in the stairs to take advantage of the solar light, a necessary step in cleaner production. No worn-out or broken stairs or steps were seen and hand rails were in good condition. The stairs area was free of dust and rubbish.

6.2.6 Material Handling and Storing

The grains are stored in silos which are concrete in nature. Two silos are to store the grains. One is 80 feet and other is 96 feet in height, with 60 feet breath. The silos are provided with humidity meters and temperature meters to check humidity and temperature periodically (Figure 11, Annexure 4), as both these factors are important as they play an important role in fire explosions. In emergency cases, emergency exits are provided to take out the wheat grains out of silos. There is automatic feeding system of grains from silos to the mill. Fresh air is provided to the silos from the floor to avoid any smell and excessive humidity and danger of explosion.

The final product is packed in sacks and bags. These were stored in a proper place. The storage area was provided with proper ventilation and sufficient lighting. Good house keeping practice was achieved in storing the flour bags and sacks. Same practice is done in Bharat Bio Urja, India in the warehouse unit: controlled temperature, hygienic conditions, fire safety arrangements to maintain good quality product.

6.2.7 Lifting Hazards

In case of transferring raw material (grains) from silos to the process area, the transportation is mechanically operated and automatic. So the hazard of suffocation in the grain area while emptying or shifting the grains was eliminated.

In the main process area, proper hand rails were provided (figure 9, Annexure 4). All the bags and sacks were transported and transferred on the hand rails to the final storage. But at the time of loading to the trucks, the workers were carrying three bags of 20 kg each at a time, on their backs which had a collective weight of 60 kg/worker/unit time of transport to the truck. (Figure 10, Annexure 4.). It was told by the authority that the hazard was communicated to them but there is an inherited ignorance among these local workers and they work in their own style.

6.2.8 Training and drill

Inductive training of three days is conducted for every new employee for personal safety, food safety and process safety before going to job. Then there is job training after 1 month and 3-6 months respectively. The workers are closely

observed and if they seem ill-trained, they are given one more month training. There is refresher training after every 6 months.

There was a system of drill after every six months in which employees are communicated the fire and other related hazards. The supervisor is trained for the first aid along with employees and best trainee and person performing the drill is encouraged by announcing special prizes.

Employees are well trained on the startup operation and shutdown procedures of all equipment.

6.2.9 Employee's motivational programme

There is employees' motivational programme like best employee of the year, best performance during drill etc.

In addition, employees are given special packages on Eid and other holidays. Every employee is given 2 bags on royalty bases every month. A get-together meal and annual dinner is arranged and free communication is facilitated to improve the quality and continuous progress.

7. CONCLUSIONS

Sihala flour mill was visited in order to observe the occupational health and safety measures taken and to draw the attention of the authority to the aspects of the working environment which deserve special attention in order to achieve better production. The following conclusions were drawn:

1. Proper record keeping of accidents and injuries was observed and was computerized.
2. Personal Protective Equipment (PPE) was available and was in use. The workers in the work area were wearing masks and caps on head.
3. No ear muffs were provided to the employees although noise level was quite high.
4. For the prevention of fire explosions, the fire and smoke alarms were provided alongwith Close circuit (CC) cameras which also replace the buddy system.
5. The emergency contact numbers were displayed at all the important points including public gathering areas so every body is communicated the emergency situations.
6. A good house keeping was observed throughout the mill area.
7. No broken plugs, sockets and switches were seen during the visits.
8. The stairs were in good condition with wide windows for sufficient lighting with proper use of day light.
9. Transferring raw material (grains) from silos to the process area was mechanically operated and was automatic.

10. For transportation of the finished material, proper hand rails were provided.
11. There was a system of drill for emergency situation after every six months.

8. RECOMMENDATIONS

The mill was safe with respect to OH & S issue, but based upon the above conclusions, the following recommendations are made:

1. Ear muffs are recommended in the process area in all the situations.
2. Proper lifting hazard minimization is highly recommended.
3. The results of the past study suggest that even with the most up-to-date technology and proper cleaning operations in place, the flour milling industry may not be able to reduce the flour dust levels to below the TLV of 0.5 mg/m^3.So the face masks in the work area are highly recommended.

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Annexure 1

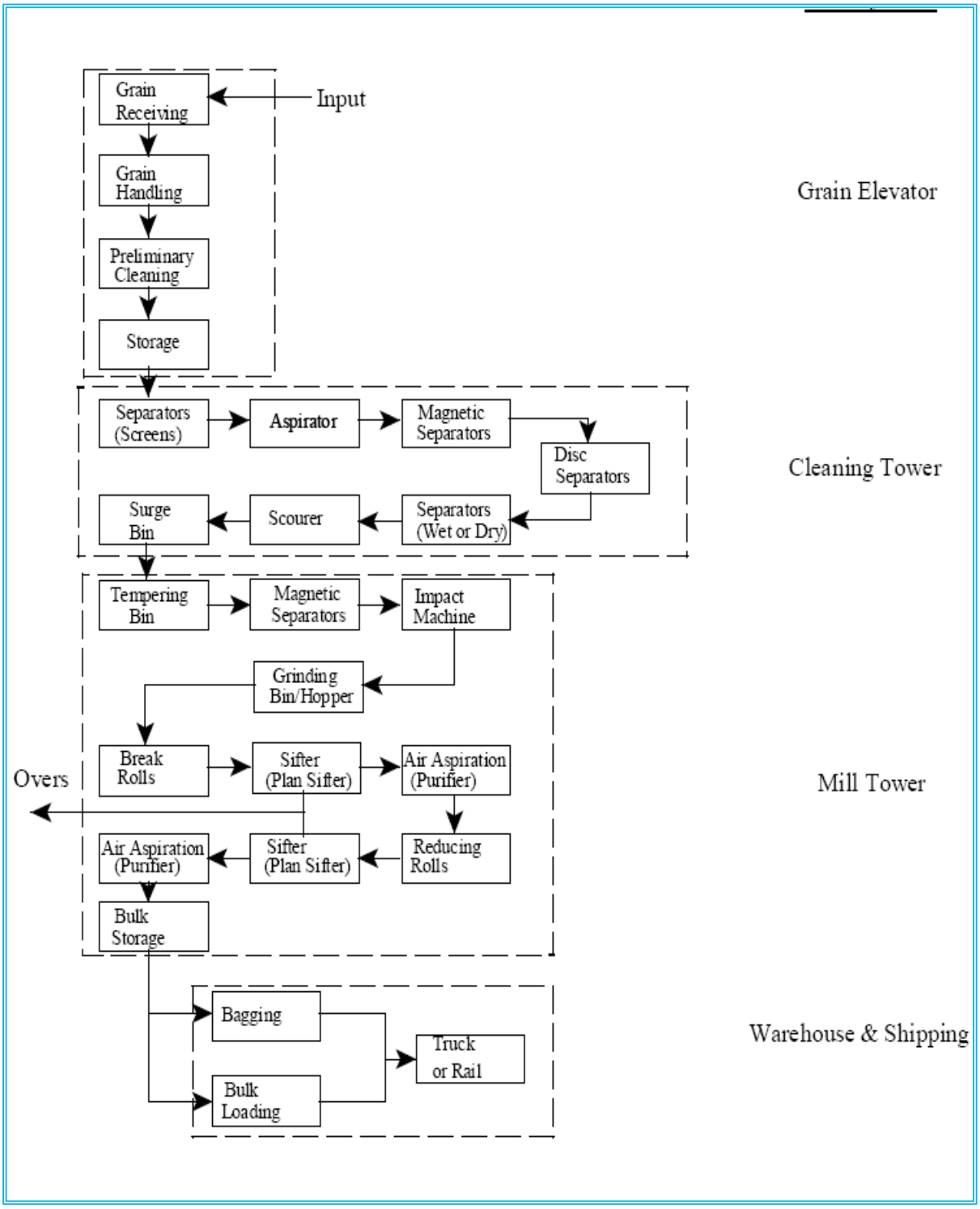


Figure 1: A process lay out of a typical flour mill (Source: ASABE, 2007)

Annexure 2

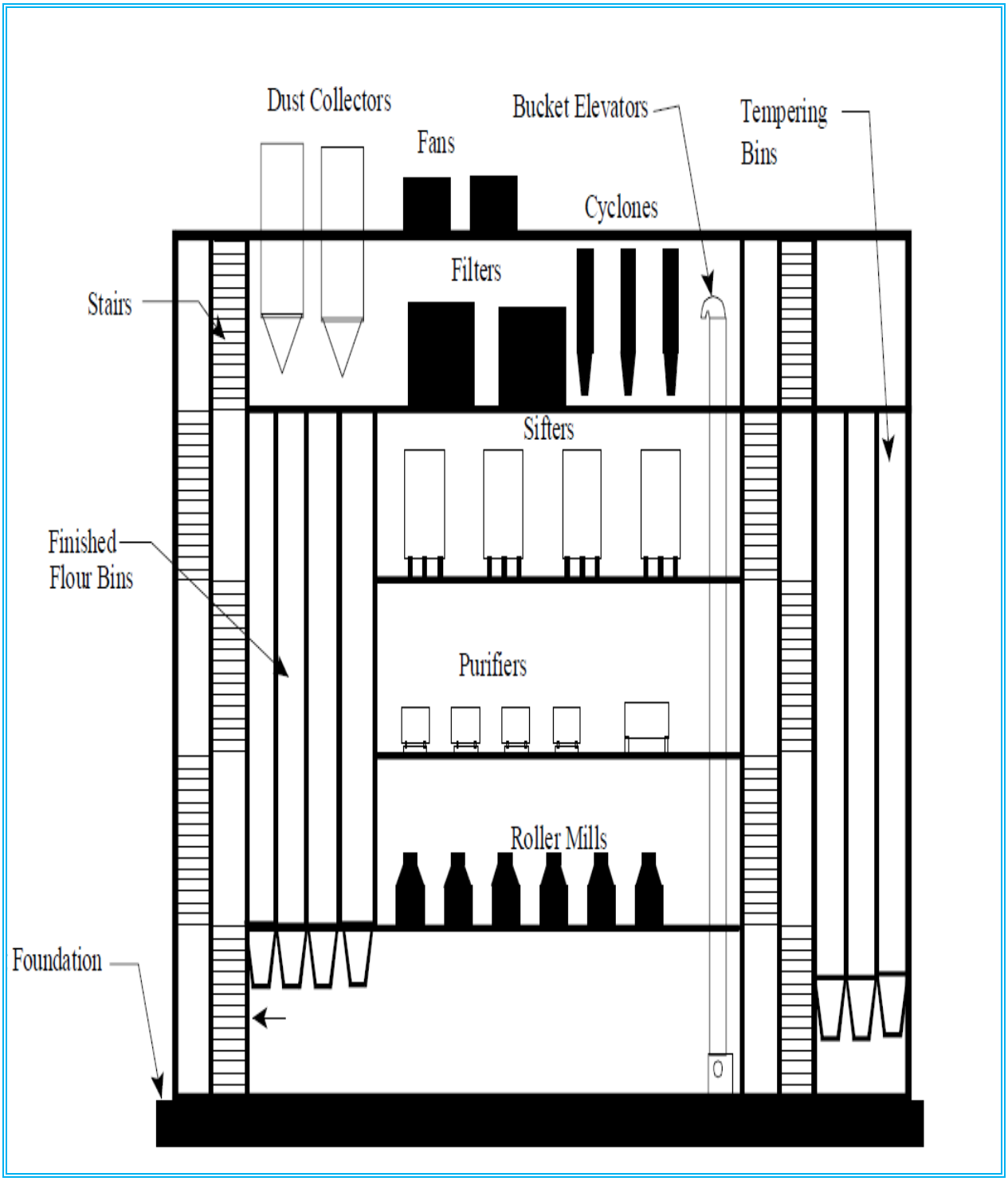


Figure 2: Cross section of a typical mill structure (Source: ASABE, 2007)

Annexure 3

Cause	*Relative importance*	*Significant factors*
Handling	22% of all reported injuries.	60% of injuries where the case was specified where from heavy items rather than awkward (11%) or sharp (15%). Bags account for most injuries, especially to drivers and packers, but maintenance lifting is also important.
Falls	17 % of all injuries, but the main 32% cause 35% of major injuries higher than usual in industry.	Involved ladders (20% of which led to major injuries). 20% involved stairs and 18% vehicles (40% of which were major).
Slips and trips	16% of all injuries, but the third main cause of major injuries (16%).	Slips and trips occurred in equal numbers. Tripping accidents were a higher proportion than usual. The causes were evenly split between those caused by obstructions and unevenness.
Struck by falling and moving objects (including hand tools)	13% of all injuries.	50% were by moving objects displaced and only 17% from hand tools.
Exposure to harmful substances	10% of all injuries. About 3 times the all industry average rate.	75% were from a release of substances, eg typically SO, C12 from flour treatment plant and 24% from splashes.
Machinery	9% of all injuries, but the second main cause of major ones (22%).	48% of specified injuries were at conveyors and 14% at transmission machinery. Other important machines were mixers, roller mills and rotary valves.
Striking against objects when moving	7%	
Transport	2%	90% involved fork lift trucks.
Fire	1%	
Electrical	1%	

Figure 3: Causes of accident and their relative significance in a flour mill (Source: HSE information sheet 13) http://www.hse.gov.uk/pubns/fis13.pdf.

Annexure 4



Figure 4: Cleaning in process section



Figure 6: Final storage



Figure 5: Washing of Grains, proper PPE



Figure 7: Fire Extinguishers



Figure 8: Sand Buckets



Figure 10: Lifting and transfer to truck



Figure 9: Hand rails



Figure 11: Humidity meter at silos

Annexure 5

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GENERAL OCCUPATIONAL HEALTH AND SAFETY CHECKLIST

HRF- Issued: August 2005

3.6 No strained leads		
3.7 No cable-trip hazards		
3.8 Switches/circuits identified		
3.9 Lock-out procedures/danger tags in place		
3.10 Earth leakage systems used		
3.11 Start/stop switches clearly identified		
3.12 Switchboards secured		
3.13 Appropriate fire fighting equipment		
Section E. Plant & Equipment	**Rating**	**Action Required**
4.1 Plant and equipment in good condition		
4.2 Daily safety inspection procedures/checklists		
4.3 Fault reporting/rectification system used		
4.4 Operators trained and licensed		
4.5 Warning and instructions displayed		
4.6 Warning lights operational		
4.7 Reversing alarm operational		
4.8 Satisfactory operating practices		
4.9 Fire extinguisher		
4.10 Tyres satisfactory		
4.11 SWL of lifting or carrying equipment displayed		
Section F. Machinery and Workbenches	**Rating**	**Action Required**
5.1 Adequate work space		
5.2 Clean and tidy		
5.3 Free from excess oil and grease		
5.5 Warnings or instructions displayed		
5.6 Emergency stops appropriately placed and clearly		
WORKBENCHES		
5.8 Clear of rubbish		
5.9 Tools in proper place		
5.10 Duckboards or floor mats provided		
Section G. Hazardous Substances	**Rating**	**Action Required**
6.1 Stored appropriately		
6.2 Containers labelled correctly		
6.3 Adequate ventilation/exhaust systems		
6.4 Protective clothing/equipment available/used		
6.5 Personal hygiene - dermatitis control		
6.6 Waste disposal procedures		
6.7 Material safety data sheets available		
6.8 Chemical handling procedures followed		
6.9 Chemical register developed		
6.10 Appropriate emergency - shower, eye bath, extinguishers		

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GENERAL OCCUPATIONAL HEALTH AND SAFETY CHECKLIST

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6.11 Hazchem signing displayed		
Section H. Welding	**Rating**	**Action Required**
7.1 Gas bottles securely fixed to trolley		
7.2 Welding fumes well ventilated		
7.3 Fire extinguisher near work area		
7.4 Only flint guns used to light torch		
7.5 Flash back spark arrestors fitted		
7.6 Vision screens used for electric welding		
7.7 LPG bottles within 10 year stamp		
7.8 PPE provided and worn		
7.9 Hot Work permit system used		
Section I. Excavations	**Rating**	**Action Required**
8.1 Shoring in place and in sound condition		
8.2 Excavation well secured		
8.3 Signage displayed		
8.4 Banks battered correctly and spoil away from edge		
8.5 Clear and safe access around excavation		
8.6 Separate access and egress points from excavation		
8.7 Safe work procedure in place		
Section J. Prevention of Falls	**Rating**	**Action Required**
9.1 Work platforms have secure handrails, guarding or fence		
9.2 Harness and lanyard or belts provided		
9.3 All floor penetrations covered or barricaded		
9.4 Unsafe areas signposted and fenced		
9.5 Safe work procedure in place		
Section K. Stairs, steps and landings	**Rating**	**Action Required**
10.1 No worn or broken steps		
10.2 Handrails in good repair		
10.3 Clear of obstructions		
10.4 Adequate lighting		
10.5 Emergency lighting		
10.6 Non-slip treatments/treads in good condition		
10.7 Kick plates where required		
10.8 Clear of debris and spills		
10.9 Used correctly		
Section L. Ladders	**Rating**	**Action Required**
11.1 Ladders in good condition		
11.2 Ladders not used to support planks for working platforms		
11.3 Correct angle to structure 1:4		
11.4 Extended 1.0 metre above top landing		
11.5 Straight or extension ladders securely fixed at top		

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11.6 Metal ladders not used near live exposed electrical		
Section M. Personal Protection	**Rating**	**Action Required**
12.1 Employees provided with PPE		
12.2 PPE being worn by employees		
12.3 Suncream and sunglasses provided		
12.4 Correct signage at access points		
Section N. Manual Handling	**Rating**	**Action Required**
13.1 Mechanical aids provided and used		
13.2 Safe work procedures in place		
13.3 Manual handling risk assessment performed		
13.4 Manual handling controls implemented		
Section O. Workplace Ergonomics	**Rating**	**Action Required**
14.1 Workstation and seating design acceptable		
14.2 Ergonomic factors considered in work layout and task		
14.3 Use of excessive force and repetitive movements		
14.4 Appropriate training provided		
Section P. Material Storage	**Rating**	**Action Required**
15.1 Stacks stable		
15.2 Heights correct		
15.3 Sufficient space for moving stock		
15.4 Material stored in racks/bins		
15.5 Shelves free of rubbish		
15.6 Floors around stacks and racks clear		
15.7 Drums checked		
15.8 Pallets in good repair		
15.9 Heavier items stored low		
15.10 No danger of falling objects		
15.11 No sharp edges		
15.12 Safe means of accessing high shelves		
15.3 Racks clear of lights/sprinklers		
Section Q. Confined Spaces	**Rating**	**Action Required**
16.1 Risk assessment undertaken		
16.2 Communication and rescue plan in place		
16.3 Safety equipment in good working condition		
16.4 Suitable training provided to employees		
16.5 Confined Space permit used		
Section R. Lasers	**Rating**	**Action Required**
17.1 Operator has laser operator licence		
17.2 Signage displayed		
17.3 Laser not used in a manner to endanger other persons		
Section S. Public Protection	**Rating**	**Action Required**

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18.1 Appropriate barricades, fencing, boarding, gantry secure		
18.2 Signage in place		
18.3 Suitable lighting for public access		
18.4 Footpaths clean and free from debris		
18.5 Dust and noise controls in place		
18.6 Site access controlled		
18.7 Traffic control procedures in place		
18.8 Public complaints actioned		
Section T. Amenities	**Rating**	**Action Required**
19.1 Washrooms clean		
19.2 Toilets clean		
19.3 Lockers clean		
19.4 Meal rooms clean and tidy		
19.5 Rubbish bins available - covered		
Section U. First Aid	**Rating**	**Action Required**
20.1 Cabinets and contents clean and orderly		
20.2 Stocks meet requirements		
20.3 First aiders names displayed		
20.4 First aiders location and phone numbers		
20.5 Qualified first aider(s)		
20.6 Record of treatment and of supplies dispensed		
Section V. Lighting	**Rating**	**Action Required**
21.1 Adequate and free from glare		
21.2 Lighting clean and efficient		
21.3 Windows clean		
21.4 No flickering or inoperable lights		
21.5 Emergency lighting system		
Section W. Fire Control	**Rating**	**Action Required**
22.1 Extinguishers in place		
22.2 Fire fighting equipment serviced/tagged		
22.3 Appropriate signing of extinguishers		
22.4 Extinguishers appropriate to hazard		
22.5 Emergency exit signage		
22.6 Exit doors easily opened from inside		
22.7 Exit path ways clear of obstruction		
22.8 Alarm/communication system - adequate		
22.9 Smoking/naked flame restrictions observed		
22.10 Minimum quantities of flammables at workstation		
22.11 Flammable storage procedures		
22.12 Emergency personnel identified and trained		
22.13 Emergency procedures documented - issued		

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22.14 Emergency telephone numbers displayed		
22.15 Alarms tested		
22.16 Trial evacuations conducted		
22.17 Personnel trained in use of fire fighting equipment		