

# Professional Hazards of Agricultural Industry Workers

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**Annotation:** This article analyzes the main types of activities related to occupational safety and health hazards at flour mills in Bukhara. It provides a characterization of professional hazards related to adverse working conditions at flour milling enterprises. It also examines correlations between workers' health and their work. Through a survey, the level of awareness among workers about the dangers in the workplace is determined.

## Introduction

Many people spend a significant part of their day and night at work to meet their economic and social needs. During work, people often face various risks and safety threats that can expose them to a range of harmful health problems. Depending on the nature of the work, occupational hazards may be associated with various factors, including physical, chemical, and biological agents, as well as adverse working conditions among others (Ajeel & Al-Yasen, 2007). According to Kumar, Verma, and Neetika (2016), approximately 75% of the world's workforce lives in developing countries, but only 5-10% have access to occupational safety services, which results in workplace hazards such as dust, heat stress, noise, toxic substances, chemicals, and dangerous machinery, leading to a significant burden of work-related injuries, fatalities, and diseases. Understanding the internal correlation between work and workers' health is crucial for recognizing and practicing occupational safety and hygiene (3).

Occupational safety and hygiene is an interdisciplinary issue aimed at protecting the health, safety, and well-being of workers engaged in various forms of employment, ensuring a safe working environment (Muchangi, 2009). According to the International Labour Organization (ILO) and the World Health Organization (WHO), occupational safety and hygiene are

fundamental rights of workers worldwide. Significant progress has been made in ensuring occupational safety and health, particularly through the adoption of Law No. 15 on December 2007 and the publication of the new Constitution of Kenya (Mitulla & Wahira, 2011).

Despite the existence of institutional and legal frameworks to address occupational safety and hygiene issues, workers in many sectors, including manufacturing, particularly in the flour milling industry, remain highly vulnerable to professional hazards and health risks. Agricultural workers are highly exposed to dangers in their working environment, such as dust, unfavorable microclimatic conditions, excessive noise, and inadequate lighting. Additionally, there are numerous safety and health hazards related to loading and unloading grain, with asphyxiation and falls being two of the leading causes of death. Other hazards include fires, explosions, electric shock, and injuries from poorly maintained machinery. Exposure to grain dust can also lead to airborne contaminants, such as mold, chemical fumigants, and gases associated with decay and fermentation of silos (7, 16).

Dangerous work operations are often not identified, and no measures are taken on-site to prevent worker injuries. Between 2005-2008, the Health and Safety Executive (HSE, 2006) reported an average injury rate of 1215 per 100,000 workers. According to Workplace Health and Safety Queensland (2011), about half of these injuries occur during manual labor tasks (McCunney, 2007). Muchemedzi and Charamba (2006) define occupational hygiene as the science of health in relation to work or the working environment. According to Oxenburgh et al. (2005), the health and safety of all employees are closely linked to the productivity of the company in all workplaces. In most cases, occupational safety and health (OSH) are largely measured by negative outcomes, such as workplace injuries and diseases, but these measures have shortcomings, such as the fact that a low injury rate does not necessarily mean the presence of adequate safety and control systems (6).

At some flour mills, attention is primarily focused on negative outcomes. Occupational safety and hygiene policies and practices are not fully implemented until a major accident occurs. As a result, safety threats to workers are not addressed in time because hazardous areas are not identified and addressed before accidents happen (5). Therefore, it is crucial to identify and eliminate safety and health hazards in the workplace, such as flour dust, which has been an ongoing issue in flour milling production from day one. Several food industry sectors, including flour mills, face the problem of flour dust exposure (9). In developing countries, rapid industrialization and insufficient pollution control measures have made indoor air pollution a major issue. Additionally, the lack of public awareness about the health effects of indoor air pollutants has contributed to its increase. Flour mill workers are expected to be exposed to these hazards for 8-10 hours a day (Wagh et al., 2006). Several studies have shown that exposure to flour dust causes respiratory symptoms and is closely associated with impaired lung function (7). In mills, the grinding operation is the starting point of danger during grain processing, as the grain is ground into fine particles of dust size, and flammable concentrations are inevitable (Mittal, 2013). Studies also show that components of wheat flour, such as contaminants like weevils, mold, dust mites, or additives like yeast and amylase from *Aspergillus*, can be allergens (Bohadana et al., 1994). Flour dust can cause sensitization, occupational asthma, sensitization, and allergic rhinitis in millers and bakers (Dhillon et al., 2012) (11, 12, 14).

## **Objectives**

The primary objective of the research was to assess the state of occupational safety and health in flour milling companies, evaluate the correlation between work and workers' health in flour milling production, and identify the main types of activities constituting occupational safety and health hazards at flour milling enterprises in Bukhara.

## Materials and Methods

### Study Design

A descriptive cross-sectional design was used for this study, as it was a survey aimed at establishing facts. This type of design is the most recommended as it provides a comprehensive description of the situation with minimal bias in data collection and interpretation (5, 8). The design also ensures a detailed and accurate depiction of the situation, which can be useful for literature review.

### Sampling Method

Samples were taken from eleven flour milling companies in Bukhara. Since the companies employ varying numbers of employees, a proportional sampling method was used to determine the number of respondents from each company, based on the number of employees in each organization.

### Survey

To collect data at flour milling enterprises, questionnaires were used. Two different questionnaires were prepared: one for the management team and another for ordinary workers. The researcher used the "drop and pick" method to conduct the survey, as it encouraged prompt responses from respondents.

### Review of Existing Records

The researcher reviewed documents, including occupational safety audits, health and safety risk assessment reports, noise survey reports, dust survey reports, training reports, accident reports, and professional disease reports, with the primary aim of identifying safety and health hazards at the flour milling enterprises. A survey was conducted to analyze workers' perceptions of risks and working conditions. A total of 176 workers participated in the survey, aged between 20-40 years.

<b>20-40</b>	<b>102</b>	<b>57%</b>
<b>40-60</b>	50	27%
<b>60 и боле</b>	26	16%

### Analysis of Survey Responses

It was found from the analysis of the responses that 34.13% of the respondents indicated dust inhalation as a high degree of exposure to harmful industrial factors, while 43.05% marked it as a medium degree. Loud noise was considered to have a medium degree of exposure by 34.44% of the respondents, while 33.11% rated it as a high degree. Overall and local vibration was assessed as a medium degree of exposure by 31.13% and 35.76% of workers, respectively.

	High degree of exposure.	Moderate degree of exposure.
Inhalation of dust.	34,13%	43,05%
Loud noise.	33,11%	34,44%
General and local vibration.	-	General 31.13%, local 35.76%.

## RESULTS AND DISCUSSION

The analysis revealed that the dispersion of flour dust is commonly found at all milling factories with the highest level of intensity. The lack of, unawareness of, and non-application of personal protective equipment are imperative factors contributing to the highest severity levels, reaching an average value of 3.1, 2.9, and 3, respectively. According to the data gathered from workers, the most pressing issue is the dispersed flour, which is inhaled, swallowed, and absorbed by the

workers. The results showed that the causes of flour dust dispersion were improper grain feeding systems and incorrect final product collection systems. Respondents were allowed to mark multiple options if more than one system contributed to air contamination in the premises.

Thirty-six responses pointed to the improper final product collection system as a cause of flour dust dispersion, while thirty-three responses indicated the grain feeding system, and eight marked the washing system as responsible for the dispersion of flour dust into the environment. All these systems are part of the milling process, and almost all workers, technicians, and sales managers identified the milling process as the cause of flour dust dispersion. Of the total 40 respondents, a significant number suffered from health issues. The results show that workers are at high risk during working hours. Seven out of every twenty respondents suffered from various health problems such as allergic rhinitis, sensitization, occupational asthma, and pulmonary diseases due to the inhalation, swallowing, and absorption of flour dust by various body parts. Sensitization and allergic rhinitis are very common among milling factory workers. Obstructive lung diseases, eye injuries/infections, and occupational asthma are also significantly prevalent.

The study concludes that milling factory workers are prone to respiratory diseases due to flour dust exposure at the workplace. A number of epidemiological studies have shown that daily exposure to flour particles is associated with adverse health effects. We recommend that workers at milling factories use masks during working hours. We also recommend that dust removal systems be installed at all milling factories.

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