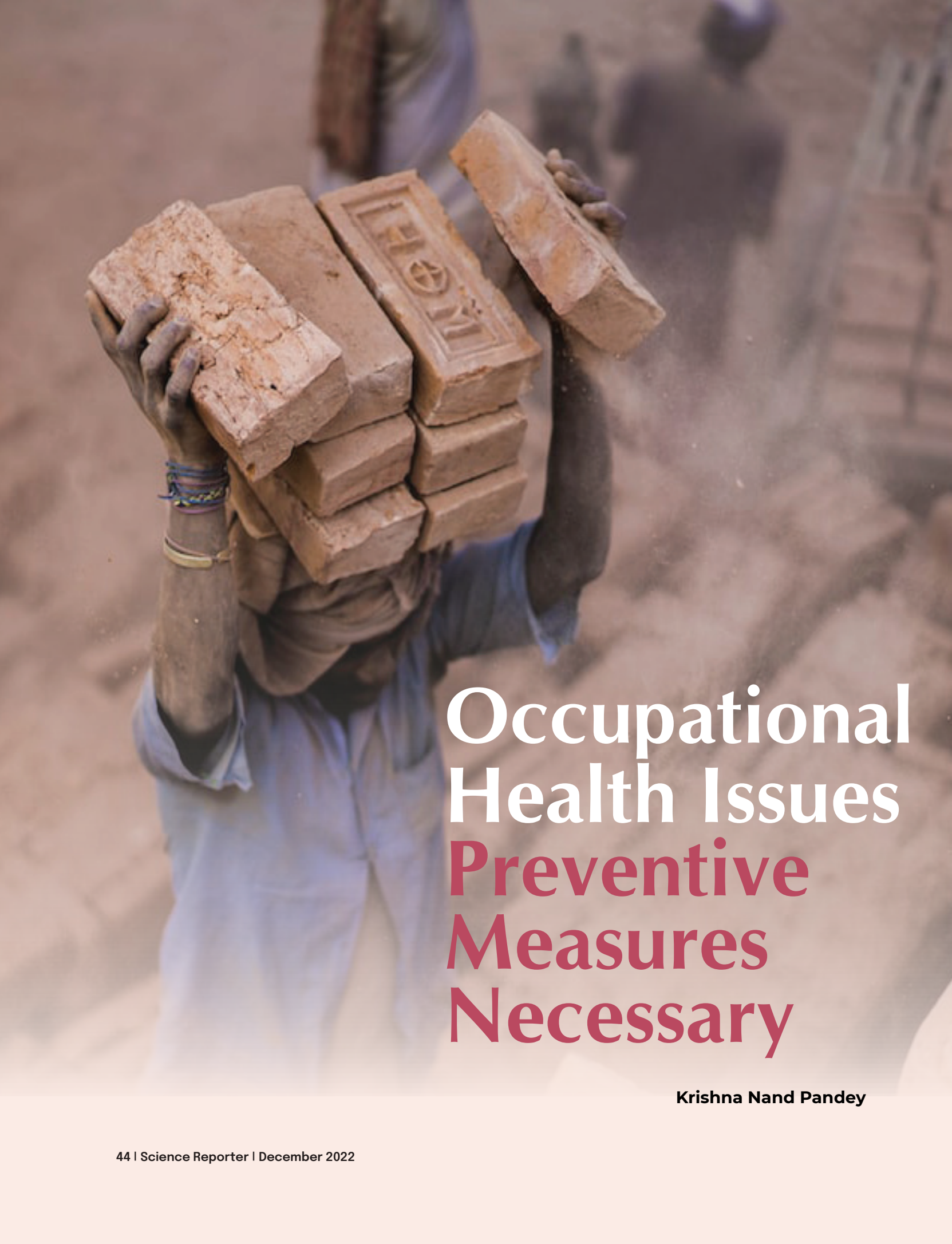


A photograph of a person, likely a brick worker, carrying a large stack of bricks on their head and shoulders. The person is wearing a light blue shirt and a brown cloth wrapped around their head. They are also wearing several colorful bangles on their right wrist. The background is a dusty, outdoor construction site with other people and structures visible in the distance. The overall tone is gritty and emphasizes the physical nature of the work.

Occupational Health Issues **Preventive Measures Necessary**

Krishna Nand Pandey

ACCORDING to a jointly released report by the International Labor Organization and the World Health Organization on disabilities and deaths due to occupational accidents and diseases, a total of 19 people lakh lost their lives due to work-related accidents and diseases in 2016. Diseases related to the respiratory, heart and blood vessels were behind most of the deaths.

The International Labor Organization says, about 2.3 million men and women die every year in the world due to occupational accidents or diseases. Every year 340 million people in the world suffer from occupational accidents whereas 160 million people suffer from occupational diseases. Of these, about 6.5 lakh deaths every year are due to exposure to harmful/lethal/ hazardous substances during work.

According to the World Health Organization, apart from accidents, occupational health of workers also relates to workplace hazards that cause workers to develop diseases like cancer, musculoskeletal diseases, respiratory diseases, hearing loss, stress-related disorders and communicable diseases, and other health problems.

There are mainly seven types of occupational hazards:

1. Security hazards
2. Biological hazards
3. Physical hazards
4. Ergonomic hazards
5. Chemical hazards
6. Organization related hazards, and
7. Environmental hazards

Security Hazards

The possibility of these hazards is very high in the workers working on machines installed in the workplace or a factory or workers associated with construction activities. Working in an unsafe environment increases the risk of injury, disease, and even death. Situations such as falling from a great height while working in such places, accidental touching of moving machines and electrical wires, or fire due to lack of proper wiring, and working in dingy, unventilated and highly congested spaces can cause not only physical injury to the person, but also prove to be fatal.

Biological Hazards

There is a possibility of being affected by biological hazards due to exposure to biological materials during work. Conditions responsible include exposure to harmful bacteria, viruses, infected persons or animals, or to infected plants and their parts. The exposure to biological hazards can cause skin irritation and allergic reactions. Serious conditions can lead to health problems like tuberculosis, cancer, etc. This safety hazard puts children and individuals in schools, day care institutions, colleges and universities, hospitals, laboratories, emergency facilities, nursing homes, and many other types of outdoor occupations at high risk of biological infections. The other sources of biological hazards can be exposure to human

blood and body fluids, fungi, insect bites, and exposure to animal and bird feces.

Biological hazards need to be removed from the work place as early as possible. Engineering measures may include regular cleaning of the work site, keeping it free from harmful pests, and proper disposal of objects and materials responsible for biological hazards. The workplace can also be made safe by steps like sending sick person on leave, vaccinating workers to protect them from diseases, etc. They should also be trained to work safely at the workplace.

Persons involved in the medical, care and cleaning work of patients in the hospital, including doctors, nurses, technicians, administration people, assistants and sanitation workers, etc. are at risk of developing TB, Hepatitis B and C, respiratory infections (like coronavirus, influenza), HIV, AIDS, and many more. During the COVID-19 pandemic, around 200 doctors in India lost their lives treating patients suffering from COVID-19.

Often, the hospital staff get injured or exposed to toxic reagents, harmful chemicals, pesticides, and chemicals used to sterilize instruments and equipment used in surgery. Technicians and health workers involved in X-ray investigations are sometimes inadvertently exposed to harmful X-rays, radionuclides, ultraviolet rays, laser rays, etc.

Due to the increasing burden of patients, healthcare workers are also compelled to work for long hours, leading to stress, fatigue and sometimes depression. Hospital staff often become victims of abuse and even physical violence from the patient's family members. In many cases, health workers are compelled to work under adverse conditions such as lack of proper lighting, clean drinking water, fresh air, proper sanitation, excessive noise, etc.

A paper published in the July 2022 issue of the *International Journal of Occupational Safety and Health* analyzes the adverse health problems caused by long-term use of N95 masks by Indian physicians during COVID-19. According to this paper, a study conducted from November 2020 to January 2021 about 82.5% of the respondents reported wearing one N95 mask per day, while 72.2% of physicians sterilized and reused their masks. It also revealed that mostly the used masks were disposed off in the hospital only. In addition, problems in their ears due to constant wearing of masks, difficulty in breathing in case of fatigue were seen in almost all the physicians.

Physical Hazards

Workers are greatly affected in difficult work environments or extreme adverse weather conditions. Sometimes long-term problems arise on their health. Exposure to ultraviolet rays after working in the sun for long periods, working near high pressure gases, working in extreme heat or cold environment poses serious impact on the health of workers. Loud noise at the working place for a long period of time can result in hearing loss and also damage parts of the internal ear. Occasional

explosions or leakage of harmful gases in chemical factories pose a risk of physical disability and respiratory diseases to workers.

A large number of workers in the iron and lead foundries work under the influence of the extreme ambient temperatures mostly exceeding the 80°C standard temperature. In such situations working in the absence of personal protective equipment (PPE) kits, there are chances of getting skin burns and also develop health problems such as infection of the affected skin with burns, muscle spasms, fainting, fatigue and heat stroke.

A large number of workers of quarries and industries involved in stone cuttings, carving, making agate, slate-pencil in India are affected by silica dust. According to a report published in the October-December 2010 issue of the *Journal Lung India*, about 3 million workers in India are at risk of being affected by silica dust exposed for a long time. Their lungs are at risk of developing fibrosis due to silicosis. According to the report, the majority (54.5%) of the incidence of silicosis is found in workers in the slate-pencil industry, while 38% is found in workers associated with the agate industry. Agates are pieces of stone made from molten rock ejected from volcanoes that have been sculpted into onyx gemstones and used in colourful, valuable jewellery. According to the People's Training and Research Center in Vadodara, grinding and polishing of agate stone is one of the most dangerous jobs in the world. In the Khambhat area of Gujarat, more than a third of the workers of a large number of agate industries develop silicosis. Since, the work of carving agate stones is done in small houses there is a possibility of affecting all the members of the house due to dust particles. Pre-existing problems like tuberculosis and malnutrition among the workers employed in these industries further contribute to deaths due to silicosis.

According to a report published by the ICAR Central Institute of Agriculture Engineering Bhopal in 2019, an agricultural accident survey was carried out during 2004-07, 2012 and 2013 in seven states, namely, Tamil Nadu, Odisha, Madhya Pradesh, Punjab, Rajasthan, Arunachal Pradesh and West Bengal. In one year, 30.5% accidents were due to farm machines like tractors, threshers, electric motor pump sets and animal drawn equipments; 34.2% accidents were due to hand tools and the remaining 35.3% were due to other sources like snake bite, drowning in well/ponds, animal bites, lightning, etc. A total 5.5% of accidents were fatal whereas 94.5 % were non-fatal in nature. The overall incidence rate per year was 334 accidents per lakh workers whereas the fatality rate was 18.3 per lakh workers.

Ergonomic Hazards

When physical posture and working conditions are painful for the body while performing a task, they are known as ergonomic hazards. It may not have immediate effect but working in a single posture like sitting and standing for long periods has an effect on the body. Situations such as improper

sitting on a broken chair for long periods, repeated lifting, improper posture, working in an area with high vibrations are all ergonomic hazards. Pain in the back, neck, shoulders, hands, and fingers is commonly seen in people working on computers and watching television for long periods while sitting in the same posture.

Chemical Hazards

Chemical hazards are more likely to occur in persons working in a place where chemicals are present in the form of solids, liquids or gases. A large number of workers come into close contact with hazardous chemicals such as cleaning chemicals, paints, acids, solvents, etc., while at work and develop skin irritation and breathlessness. Welding workers are at risk of being affected by harmful vapors, exposed to fumes and solvents. Burns are caused by accidental exposure to many toxic and deadly chemicals like hydrochloric acid, benzene, thalidomide, isocyanate leading to workers damage to chromosomes, mutations in genes and even cancer.

Female workers can face serious health problems like still birth or possibility of death also. Serious health problems arise under the influence of harmful gases like acetylene, propane, carbon monoxide, helium, hydrogen sulfide, etc. Flammable products such as gasoline solvents and explosive chemicals also pose serious health hazards. The workers involved in the manufacture of pesticides and the farmers who use them inadvertently face serious dangers.

Environmental Hazards

Continuous changes in climate and temperature also have serious impacts on the physical and mental health of workers. Most of these situations are uncontrollable, while climate change forecasts by the meteorological department are somewhat helpful to workplace managers and personnel. Working under adverse conditions at the workplace such as extreme heat or cold, rain and snowfall; working in loud noises above the tolerable limits; air and chemical pollution; lack of proper light, air and ventilation; biological hazards all have harmful impacts on workers' health and well being.

It is the responsibility of the employer to provide the necessary safe environment and safety equipment to protect workers from physical, chemical, mental, and ergonomic hazards. Often, due to increasing poverty and unemployment workers are exploited and compelled to work amidst hazardous situations like physical, biological, chemical, environmental and safety-related hazards. However, rules and guidelines have been issued by the government for the safety of the workers at the workplace, whose proper compliance can save the workers from getting hurt during the work.

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