

## The Importance of Occupational Hygiene in Occupational Safety and Health Practices

### İşyerlerindeki İş Sağlığı ve Güvenliği Uygulamalarında İş Hijyeninin Yeri ve Önemi

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#### Abstract

The company refers to an organization that consists of certain physical conditions and tools in which the employer and employees are organized under the same management in order to produce goods or services. According to the occupational safety and health Law No. 6331, employers have obligations in terms of occupational safety and health. The employer is obliged to ensure the occupational safety and health of the employees and to take all necessary measures, including the prevention of occupational risks, training and information, organization of the organization, provision of necessary tools and equipment, and adaptation of safety and health measures to changing conditions and improving the current situation to makes applications. Within these applications, occupational hygiene is also provided in workplaces. The aim of occupational hygiene involves taking necessary measures to remove and eliminate health-threatening hazards from the work environment. In this context occupational hygiene studies have an important place from the past to the present. In this study, the place and importance of occupational hygiene in occupational safety and health practices in workplaces will be evaluated with the relevant legislation and literature review. In addition, the effect of personal hygiene of industrial workers on industrial hygiene will be investigated.

**Key words:** Occupational Safety and Health, Occupational Hygiene, Workplace, Hygiene.

#### Öz

İşyeri, mal ya da hizmet üretmek amacıyla işveren ve çalışanların aynı yönetim altında örgütlendiği belirli fiziki şartlardan ve araçlardan oluşan bir organizasyondur. 6331 sayılı İş Sağlığı ve Güvenliği Kanunu gereği işyerlerinde işverenin iş sağlığı ve güvenliği açısından yükümlülükleri vardır. İşveren, çalışanların işle ilgili sağlık ve güvenliğini sağlamakla yükümlü olup, mesleki risklerin önlenmesi, eğitim ve bilgi verilmesi dâhil her türlü tedbirin alınması, organizasyonun yapılması, gerekli araç ve gereçlerin sağlanması, sağlık ve güvenlik tedbirlerinin değişen şartlara uygun hale getirilmesi ve mevcut durumun iyileştirilmesi için gerekli uygulamaları yapar. Bu uygulamalar içerisinde işyerlerinde iş hijyeninin sağlanması da gelmektedir. Mesleki hijyenin amacı, çalışma ortamından sağlığa zararlı tehlikeleri ortadan kaldırmak ve ortadan kaldırmak için gerekli önlemleri almaktır. İş hijyeni ile ilgili yapılan çalışmaların geçmişten günümüze önemli bir yeri vardır. Bu çalışmamızda işyerlerindeki iş sağlığı ve güvenliği uygulamalarında iş hijyeninin yeri ve önemi ilgili mevzuat ve literatür taraması ile değerlendirilecektir. Ayrıca, endüstriyel işçilerin kişisel hijyeninin endüstriyel hijyen üzerindeki etkisi incelenecektir.

**Anahtar kelimeler:** İş sağlığı ve Güvenliği, İş Hijyeni, İşyeri, Hijyen.

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## 1. Introduction

With the occupational safety and health Act 6331, employers have entered into certain obligations in terms of occupational safety and health. These responsibilities include taking all measures, including prevention of occupational risks, education and information, organizing, providing the necessary tools and equipment, making safety and health measures suitable to changing condi-

tions, and performing studies to improve the current situation (Aki 2013; Artvinli 2016).

Occupational hygiene is the determination and control of the factors that may cause health deterioration in the workplace (Cralley and Cralley 1979). In this context, Act 6331 on occupational safety and health also imposes obligations on employers with occupational hygiene.

Occupational safety and health practices in workplaces are specified in the occupational safety and health Act 6331. These include risk assessment, emergency action plans, work environment supervision, periodic maintenance and fire prevention (Karaman 2015).

According to the regulation on labor hygiene measurement, testing and analysis laboratories that was issued in 2013, pursuant to the occupational safety and health Act 6331, the employer is obliged to protect the employees from the dangers and harmful effects of the substances used in the workplace or used in any way. In order to provide a safe working environment, it is obliged to conduct measurements, tests, analyses and assessments for personal exposure or physical, chemical and biological factors to the working environment in laboratories with a pre-qualification or qualification certificate (Anonymous 2016).

It is also possible to see that occupational hygiene studies have a place in the law (Anonymous 2016). In this study, the occupational hygiene is evaluated in the conceptual framework and the place and importance of occupational hygiene in occupational safety and health applications are stated by doing a literature review on occupational hygiene.

### 1.1 Concept of Occupational Hygiene

Although the concept of hygiene is generally known as personal care and cleanliness, according to the Turkish Language Association it is all the measures to be taken in order to protect from health-damaging environments and all the cleaning measures taken. Based on the definition of hygiene, we can also get the concept of occupational hygiene; If the hygiene measures to be taken from the environment that will harm the health and all of the cleaning measures taken, in order to avoid the risk factors that would harm the health of the employees in the workplace environment, all the studies are carried out to evaluate the risk factors and take the necessary control measures.

Occupational hygiene is a set of systems used to determine the acceptable hazard limit in the working environment and to maintain a healthy life in the worker. Acceptable level is expressed as the amount that is believed to be safe in the defined time envelope (Swaminathan 2011). Recently, the World Health Organization has chosen to use the term "recommended health-based occupational exposure limit" at the permitted level. It refers to the level in which the air that is inhaled in the workplace does not cause harmful effects on the employee. Health-based standards do not take into account the level of technological and socioeconomic conditions in different countries. As a result of this deficiency, the nations have to determine their own international exposure limits. The development of health-based recommended exposure limits as a result of scientific research and the conversion of scientific exposure limits to operational limits should be taken into account. These limits applied in developed countries without changes are highly reliable. In particular, the development of health-based recommended exposure limits, which are determined solely on the basis of

scientific evidence, and the conversion of these scientifically determined exposure limits to operational limits should be taken into account (Swaminathan 2011).

According to the Occupational Safety and Health Administration (OSHA) in the USA, occupational hygiene is the science of foreseeing, recognizing, evaluating and controlling workplace conditions that may cause workers' injuries or diseases (Groenewold et al. 2018; Moyce and Schenker 2018).

According to the American Industrial Hygiene Association, occupational hygiene is a science and art dedicated to the recognition, evaluation, prevention and control of environmental factors or stresses that occur in the workplace or at work, or which may cause disruption of the disease, health and welfare, or significant discomfort in the community (Smyth 1966).

The most important issue of occupational hygiene is aerosol exposure in dusty industries. The history of aerosol Science in the context of occupational hygiene is discussed in an article written by Walton and Vincent. Three items are indicated:

- i. the nature of human exposure, inhalation and accumulation in the respiratory tract;
- ii. aerosol exposure and measurement;
- iii. technical control of exposure as required by standards (Walton and Vincent 1998; Vincent 1999).

Although occupational hygiene has different definitions, the content is basically the same. Accordingly, the definition, evaluation and control of the factors that will disrupt the health of the employees in the workplace are the work of providing. The historical development of occupational hygiene in the world and in our country has been studied.

### 1.2 Historical Development of Occupational Hygiene in The World and in Turkey

The historical development of occupational hygiene is the same as the historical development of Occupational safety and health. The first data on occupational safety and health is based on the ancient Greek philosopher Herodotus. It is claimed that the first studies aimed at investigating the relations between the health of the employees and the work done were initiated by him. The famous historian and philosopher Herodotus, for the first time, stressed the need for employees to feed on high energy foods to increase employee productivity. Similarly, evaluations of the employees could be damaged from their work have been expressed by the Hippocrates. Hippocrates have mentioned the poisons of lead for the first time (Çiçek and Öçal 2011).

The investigations begin with Paracelsus (1493-1541, one of the first physicians to address the health issues of workers), Gregorius Agricola-George Bauer (In 1526, the Saxony physician wrote "De Re Metallica", which contains classical information about the problems of workers working in European mines) and Bernardino Ramazzini (Sincar and İlhan 2014).

The great Italian clinician Bernardino Ramazzini (1633-1714) is considered the father of industrial health. In 1713, Ramazzini described occupational diseases in his book a "De Morbis Artificum Diatriba". Industrial health issues have attracted a great deal of attention especially in industrialization movements (Sincar and Ilhan 2014).

With the start of the Industrial Revolution in Europe, the number of people working has increased, and in addition to this, the working conditions have become heavier. Although the working conditions were aggravated, the public reaction arose on the lack of necessary measures by the managers. The Department of Health was established in England to determine the reasons for occupational diseases and the protection measures that could be taken.

Health and morals of Apprentices Act of 1802 issued in England, included training for workers, ventilation of workplaces and washing with lime water and similar substances. With a law enacted in 1833, food is forbidden in the harmful atmosphere in factories, mechanical ventilation is made for the protection of machines and control of harmful dust (Shaw 2018).

The phenomenon of occupational safety and health has started to be addressed in the European Union since the 1980s. In particular, the Occupational Safety and Health Directive 89/391 / EEC, issued in 1989, was adopted as a framework directive in the field of occupational safety and health, and subsequently a large number of individual directives were issued on the basis of this framework directive. At this point, occupational safety and health is considered as a branch of science. Continuous research and development work is carried out and new legal arrangements are made regarding the emerging risks in industry and working life (Sincar and Ilhan 2014).

In our country, the history of occupational safety and health starts in 1865 with the Dilaver Pasha Regulation, which was issued in order to regulate the work life of the employees in the Ereğli Coal Basin (Yüksel 2017). 10 September 1921, Act of the 'Ereğli Havza-i Fahmiyesi' mine operation was enacted by the law of contracting (law 151 on the law of the Ereğli Coal Basin mine worker). It is seen that the occupational safety and health has been ensured in the Labor Laws enacted pursuant to the work life. With the order and date of the labor laws promulgated with industrialization and technological developments in our Country; Labor Law No. 3008 promulgated in 1936, Labor Law No. 931 promulgated in 1967, Labor Law No. 1475 promulgated in 1971, Labor Law No. 4857 in 2003 (Anonymous 2013a; Akpınar 2018).

In addition to national legislation, the importance given to occupational safety and health in our country has gained even more momentum and the total 59 contracts published by the International Labour Organization (ILO) have been ratified by our country (Sayın 2013). At the end of the long-term legislative work, the Law No. 6331 on Occupational safety and health came into force on 30 June 2012, which was prepared with the view of all social parties both in line with our needs and EU candidate country position as well as with our international commitments. Along with the law, a preventive, protective and curative approach is adopted rather than a prescriptive approach.

### 1.3 The Importance of Occupational Hygiene in Occupational Safety and Health Applications

The International Labour Organization estimates that nearly 160 million occupational diseases occur in the world each year and that 2 million workers are killed for these reasons. It has been reported that diseases occur due to workplace carcinogens, airborne particles, ergonomic stress and noise around the world. In developing economies, due to rapid industrialization, the number of business-related diseases has increased dramatically (Anonymous 2004, 2005a, 2005b, 2013b; Fingerhut et al. 2005; Alesbury and Bailey 2013).

The main approach in Occupational safety and health practices, together with the Occupational Safety and Health Act 6331, was proactive approach. The proactive approach is to detect and control the risk factors that may harm the employees in the workplace in advance. When we look at the definition of occupational hygiene, it is seen that Occupational Hygiene follows this approach completely. Measures, tests, analyzes and evaluations for physical, chemical and biological factors in the working environment should be carried out to ensure a safe working environment (Anonymous 2016).

Occupational Hygiene also has an important place in the legislation adopted by our country and issued by our country. On January 13, 2004, ILO Convention No. 161 on Occupational Health Services approved ILO Convention No. 155 on occupational safety and health and work environment. The term "health" in the ILO Convention No. 155 covers not only the absence of disease or disability in terms of its relation to work, but also the physical and mental elements affecting health directly in relation to hygiene and safety during work. Article 11 in accordance with national conditions and possibilities, the system of examination of the chemical, physical and biological factors related to the risks to the health of workers is referred to as the need to create or expand and the importance of Occupational Hygiene has emerged (Kılıç and Demir 2012; Anonymous 2015a, 2015b). Article 5 of the ILO Convention No. 161 provides recommendations on occupational health, safety, hygiene and ergonomics, personal and joint protective equipment (Taşyürek 2014). According to the Law No. 6331 on Occupational Safety and Health, there are also statements stating the importance and necessity of Occupational Hygiene in occupational safety and health applications. Among the duties of occupational physicians in the Regulation on the Duties, Authorities, Responsibilities and Training of Occupational Physicians and Other Health Personnel published in 2013:

- To constantly advise and supervise the general hygiene requirements of workplaces and nurseries, including canteen, cafeteria, dormitory, nursery and nursing rooms, locker rooms, showers and toilets, to advise employees on the nutritional requirements required for the work being carried out and to provide appropriate drinking water,

- To provide necessary hygiene training as well as prevention and immunization studies for the control of communicable diseases and to provide necessary examinations and inspections,

- It is important to provide training to managers, members of the Occupational Safety and Health Board and employees on general health, occupational safety and health, damage to the use of hygiene, addictive substances, personal protective equipment and collective protection methods, to ensure continuity of education and this is the important importance of workplace physicians in occupational safety and health practices (Kılış and Demir 2012; Anonymous 2014).

A different regulation is published in 2013 on the safety and health measures in work with carcinogenic or mutagenic substances regulation 7. In order to prevent and reduce exposure, especially to the workplace floor, walls and other surfaces regularly cleaned and hygienic conditions are mentioned in the article. it is said 16 of the same regulation: "The employer shall make the necessary arrangements in such a way that it is possible to take the personal and professional hygiene measures in the workplace immediately." (Taşyürek 2014).

In the Regulation on the Procedures and Principles of Occupational Safety and Health Training of Employees, published in 2013, the employees are given training in the areas of workplace cleanliness and order, physical, chemical, biological, ergonomic and psychosocial risk factors. This situation is mentioned in the definition of occupational hygiene in the determination of risk factors, therefore occupational hygiene is also manifested in the training given to the employees. Training on the basic principles of Occupational Hygiene for the members of the Occupational Safety and Health Board, who are the decision makers and executives in the workplaces, such as the trainings given to the employees, is manifested in the Regulation on Occupational Safety and Health Boards published in 2013 (Anonymous 2017; Turan 2018).

According to the Regulation on Labor Hygiene Measurement, Testing and Analyzing Laboratories, which is another regulation published in 2017: the Employer is obliged to protect the employees from the hazards and harmful effects of the substances in the workplace, used or in any way and in the working environment. In order to provide a safe working environment, it is obliged to carry out the measurements, tests, analyzes and evaluations for physical, chemical and biological factors in the working environment, to the laboratories having prequalification or qualification certificate. In addition, employer shall make the measurements, tests and analyzes of occupational hygiene related to the risk assessment. When there is a difference in personal exposures as a requirement of the workplace environment or work, occupational hygiene measurements, tests and analyzes are repeated if the occupational physician or occupational safety specialist deems it necessary.

## 2. Result

Occupational Hygiene, as defined by the workplace cleaning is considered to have a wider recognition. Occupational hygiene is science and art, in the workplace environment to protect employees from the risk factors that will harm the health of the evaluation of the risk factors and the necessary control measures related to the science and art. It is not possible to keep occupational

hygiene apart from the practice of Occupational Safety and Health. Since our state adopted a proactive approach to occupational safety and health practices, it gave importance to occupational hygiene studies, and accordingly first of all showed and demanded the implementation of the Occupational safety and health regulations in the scope of this law after the law no.6331 and the work of the employer related to occupational safety and health.

In addition to this situation, when we look at Occupational safety and health definitions, it is obvious that both concepts are related to each other. Occupational safety and health practices at workplaces have an important place in preventing health deterioration due to the risk factors.

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