

## The Contributions of Industrial Hygiene in Occupational Ergonomics

**Prof. Fekry Gamal Ibrahim**

Industrial Design Department, Faculty of Applied art, Helwan University, Cairo, Egypt.

**Prof. AbdElnaby Abo Elmagd**

Industrial Design Department, Faculty of Applied art, Helwan University, Cairo, Egypt.

**Eng. Sherif Mohammed**

HSE department Manager, CAIRO GAS

[shsh\\_moh@yahoo.com](mailto:shsh_moh@yahoo.com)

### Research Summary:

This summary reviews the general features and results of the research, entitled " The Contributions of Industrial Hygiene in Occupational Ergonomics ", and is about clarifying the role of Industrial Hygiene as one of the occupational health and safety sciences specialized in the expectation of exposure to risks of different types of workplaces and Also study and analyze the method of entering the damage to the human body and its effect on the internal organs and sensory damage. What distinguishes this science is to anticipate exposure or damage to humans in the workplace through the application of mechanisms of the process of anticipation.

With the development of manufacturing technology and its dependence on systems in the management and manufacturing processes, there are many renewable and diversified workplace hazards that affect human health and production efficiency. As a result, the Occupational Ergonomics has emerged as a specialized science in studying ergonomics Environment, Software, Systems, Workplace Components, Identifying the sciences and disciplines required to study their risks, and finding solutions through the applied side of this science, the Occupational Ergonomics Program.

This research reviews the contributions and role that Industrial Hygiene can achieve through its stages and specialized in the applications of the scientific knowledge of Ergonomics through information and mechanisms by:

- To support the types of Occupational Ergonomics experience with medical information about the senses and internal organs of the body and the impact of exposure to damage to them.
- Incorporation of predictive or predictive mechanisms of risk in macro ergonomics methods specialized in studying systems, their interactions and their impact on humans.
- Contribute to the Occupational Ergonomics program by the specialists , and supporting all stages of data and information.

#### • Key words:

**Industrial Hygiene - Safety and Occupational Health - Exposure - Occupational Ergonomics - macro ergonomics**

**• Introduction:**

Industrial Hygiene (IH) is a modern science in the field of human health and society, It is not limited to man (the worker), but his scientific studies and researches extend to harms society after work , And this science has emerged mainly to keep abreast of the latest technological developments in the various manufacturing processes, as well as the tasks and complex mental processes that have become a large part of some work and jobs in the workplace, and one of the most important applications of this science is that it predicts or predicts The threat to which they may be exposed And the study of the anatomy and functions of human vital organs, which helps in identifying the sources of risk entry and how to determine prevention and prevention measures.

Taking advantage of the stages of Industrial Hygiene and its applications and the role of industrial hygienists in the workplace, the contributions and roles of professionals in Occupational Ergonomics (OE) can be identified in order to achieve complementarity that contributes to improving public health and human efficiency in the workplace.

**• The Research problem:**

The problem of research revolves around identifying the contributions of Industrial Hygiene (IH) as one of the most recent aspects of occupational safety and health science in Occupational Ergonomics, and defining the roles of professional support in the applications of Occupational Ergonomics.

**• Research Hypothesis:**

If the findings of Industrial Hygiene are detected in the applications of Occupational Ergonomics, this will predispose to exposure to all kinds of ergonomic hazards and reduce human injury and injury.

**• Research Objective:**

Disclosure of the contributions of the stages of Industrial Hygiene and the role of specialists in the applications of Occupational Ergonomics, which is reflected on improving the overall health of man and the efficiency of production.

**• The research limits:**

Research limits are limited to the study of Industrial Hygiene and its stages, how to analyze and study different exposure hazards, and its contributions to Occupational Ergonomics.

**• Research Approach:**

Analytical descriptive approach in theoretical framework.

**• Research importance:**

- Support of the Occupational Ergonomics with mechanisms to anticipate exposure or entry of danger to the human body.

- The use of methods of assessment and risk analysis and application in the assessment of the confrontation between the human and the components of the workplace (the technology of Occupational Ergonomics)
- Development and support of Ergonomist by the new mechanisms and to ensure that the process of modern technological developments.
- Demonstrating the advantages of Industrial Hygiene and its applications.

### • Research Finding:

The research reached a set of results that achieved the goals and the research plan, **as follows:**

- Determining the role of the industrial hygienist in the Occupational Ergonomics program and its role in the workplace.
- Developing the role of the stages of Industrial Hygiene in the technology of Occupational Ergonomics.
- To understand the contributions of the prediction stage in the macro ergonomics methods and their support to predict the risks and reactions of the systems.
- Explain the importance of supporting industrial health science and its stages for the development of the Occupational Ergonomics program.

### • References:

- 1- Barbara, A. Plog , Fundamentals of Industrial Hygiene . National Safety Council , 2006.
- 2- Brian M. Kleiner, Macroergonomics: Analysis and design of work systems. Department of Industrial and Systems Engineering, Virginia Polytechnic Institute and State University , 2006
- 3- HW Hendrick - Theoretical Issues in Ergonomics Science, Taylor & Francis,2000
- 4- HW Hendrick ,Applied ergonomics, Elsevier, 2008.
- 5- Hendrick, Hal. , Brian Kleiner- Macroergonomics Theory, Methods, and Applications, CRC Press,2005
- 6- Willian S.Marras, Occupational Ergonomics-Principles of Work Design,CRC press,2005.

### • Web sites:

- 1-<http://scans.library.utoronto.ca/pdf/7/35/report1919grea/report1919grea.pdf>
- 2-<http://www.skymark.com/resources/leaders/taylor.asp>
- 3-macroergonomics analysis and design.pdf
- 4- <http://citeseerx.ist.psu.edu/viewdoc/download?doi=10.1.1.564.7927> =pdf
- 5- <http://www.bcpe.org>
- 6- <https://www.prospects.ac.uk/job-profiles/ergonomist>