Second: Safety and security requirements in mechanical workshops

First: When designing the workshop:

1- All workshop construction elements must be made of non-flammable materials.

2- The floor must be poured with concrete to prevent it from being soaked with petroleum and oils.

3- All electrical connections must be secure.

4- The workshop must be equipped with a circuit breaker to disconnect the electrical supply after the end of the daily workday or in case of an emergency.

5- The workshop must be equipped with a water supply, a wash basin, and an appropriate drainage system.

Second: During work in the workshop:

1- It is prohibited to make any additional electrical connections except with the knowledge of a qualified technician, regardless of the reason. A suitable place must be designated in each workshop, equipped with metal cabinets, to store workers' clothing.

2- A suitable place must be designated for storing hand tools, ensuring proper storage and return of tools after use.

3- Clear spaces must be provided around equipment being repaired or maintained, at least one meter on each side.

4- It is prohibited to store petroleum products inside the workshop.

5- It is prohibited to use petroleum products, kerosene, thinner, etc., for hand washing.

6- Workers must be provided with appropriate protective equipment for each job inside the workshop.

7- Lifting machines used in the workshop must be tested regularly by competent officials.

8- Machines must be equipped with appropriate protective equipment to prevent hazards arising from their use.

9- Smoking is prohibited inside the workshop, and a sign must be posted to this effect.

10- Ensure floors are clean and free of debris and obstructions, and do not leave fire extinguishers on the ground.

11- Fire extinguishers are provided in the appropriate capacity, type, and number appropriate to the size of each workshop.

Third: Chemical Hazards

Chemicals play a significant role in the lives of individuals and peoples, to the point that the well-being and progress of nations are measured by their discovery of chemicals and their use in various aspects of life. The use of chemicals is a double-edged sword. If used properly, they express a bright and beneficial side for humanity. However, if misused, they reveal a dark side that causes human destruction and wastes lives. Chemicals are found in the work environment in one of the following forms:

- Gases and vapors.
- Dust (organic and inorganic).
- Liquids (acids, alkalis, solvents).

Therefore, chemicals are among the most severe and dangerous substances facing humans. There are many reasons for this, including the following:

- Chemicals take more than one form; they exist as liquids, gases, and solids.
- They penetrate the human body quickly, via the respiratory and digestive systems and skin contact.
- Their effects on the body occur through their interaction with certain organs, thus severely affecting them, such as lung fibrosis and blood poisoning.
- The degree of acute effects caused by these substances in the body may occur immediately after their entry, after a period of time.
- Some of these substances are tasteless, colorless, and odorless, making them difficult for humans to sense or detect quickly.
- The rapid spread of these substances from their locations is comparable to their impact and the damage they cause.
- The presence of these substances in the body leads to imbalance and affects the efficiency of some body organs.
- They may affect some work equipment and devices, such as rust, corrosion, explosion, and spontaneous combustion.

Occupational safety and health requirements that must be met to protect workers from the risks of chemical materials.

1. The requirements for protecting workers exposed to the hazards of exposure to chemicals, whether gaseous, liquid, or solid, must be met, and these must be within the permissible limits specified in the attached table.

2. A preliminary medical examination must be conducted on workers upon their employment in a job that exposes them to chemical hazards to detect any apparent or latent medical conditions that could severely affect workers when exposed to the chemical pollutant. The results of the medical examination must be kept in the worker's file and compared with the results of subsequent tests.

3. Periodic medical examinations must be conducted on workers exposed to chemical hazards to detect any occupational diseases resulting from exposure early and ensure the continued medical fitness of workers for the nature of the work.

4. Effective technical means must be provided to protect against harmful chemicals, such as:

- Replacing industrial processes that use hazardous substances with harmless and less harmful ones

- Isolating hazardous industrial processes in designated areas to reduce the number of exposed workers, while providing protective measures for this small number of workers.

- Use fully enclosed machines that do not produce any impurities and do not require workers to come into contact with the damaged area whenever possible.

- Choose mechanically operated machines that do not require direct worker supervision, allowing them to be operated while workers remain at a safe distance from the machine. This allows workers to avoid inhaling harmful gases, vapors, dust, or liquid splashes from the machines.

- Use deposition or humidification methods to remove harmful dust or fumes.

- Use ventilation, whether general or local, near the location where harmful gases, vapors, fumes, or traces are rising to collect and dispose of them before they reach the workers' breathing environment.
- Use vacuum or humidification sweeping to remove dust and impurities from the location where they settle so they do not re-enter the air and be inhaled by workers if regular sweeping is used.

5. Periodic measurements of chemical hazards in the work environment must be conducted, depending on the type of activity being performed, and recorded and compared periodically to ensure they are within permissible limits.

6. Personal protective equipment (PPE) must be provided to workers that is appropriate to the nature of their work and complies with technical specifications. Therefore, sufficient water must be provided for workers to wash or shower after work and before leaving the workplace.

7. Workers must remove any harmful chemical contaminants from their bodies, and provide cleaning equipment (such as soap, towels, etc.). Emergency shelters must be provided in the workplace and easily accessible.

8. A designated place must be provided for workers to change into their work clothes or vice versa, depending on the nature of the work. These places must be located away from areas of exposure.

9. Workers must provide places for eating away from the workplace (exposure). Eating, drinking, and smoking are prohibited inside the workplace.

10. Workers must be educated about the dangers of chemicals in the work environment and how to protect themselves from them. They must also adhere to the warnings and alerts issued by chemical-producing companies.