SAFETY CULTURE

-definition -

It is the way in which safety is managed in a workplace. It is the combination of beliefs, perceptions and attitudes of employees toward the safety of workers and the overall safety of the work environment.

The main purposes of OHS are;

** to assure safe and healthful working conditions for employees

(çalışanların sağlığını korumak)

**to prevent work accidents and occupational diseases.

(iş kazalarını ve meslek hastalıklarını önlemek)

**to provide security and continuity in production.

(üretimde güvenliği ve devamlılığı sağlamak)

**to provide a healthy and safe working environment

(Sağlıklı ve güvenli çalıma ortamı oluşturmak)

As a result, quality and efficiency increase

Because of lacking of H&S;

--Humans (physically and phsicologically)..
--Environment..
--Production.. And
--Economy

will get harm.

«Health and safety» definition

A multidisciplinary field concerned with the creation, design, implementation, communication and regulation of structures, systems, law, policy, procedures, processes and regulations that govern the health, safety and welfare of people.

«Health and safety» affects all people in every country and is concerned with the health, safety and welfare of every person. e.g. education, employment.

Briefly; **Systemic** and **scientific** efforts in order to get rid of hazardous conditions at workplaces during work.

ILO and WHO definition of Occupational Health

Since 1950, the **International Labour Organization** (ILO) and the **World Health Organization** (WHO) have shared a common definition of occupational health.

Firstly, according to this definition,
Occupational health should aim at:

the promotion and maintenance of the highest degree of **physical, mental and social well-being of workers in all occupations**;

the protection of workers from risks in their workplaces;

and, to summarize, the adaptation of work to man and adaptation of each man to his job".

işin insana ve insanın işine adaptasyonu

Basic Concepts & Definitions

Health:

- The World Health Organization (WHO) defined health as '***a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity.***

WHO'ya göre sağlık:

sadece hastalık ve sakatlık durumu değil, Ruhen + bedenen + sosyal açıdan iyi olma durumudur!!

Basic Concepts & Definitions

Occupational Health & Safety:

- Occupational Health and Safety is an area concerned with protecting safety, health and wellfare of the people engaged in the work or environment.

Basic Concepts & Definitions

Occupational Health & Safety:

Occupational health and safety is concerned with many types of *workplace hazards*, such as:

- Chemical hazards
- Physical hazards
- Biological hazards
- Psychological hazards
- Ergonomic hazards

- So;

«Occupational Health and Safe» is the whole of the work done to protect and improve the physical and mental health of the employee.

These studies are; **systematic and scientific studies** that are carried out in order to protect themselves from conditions that may harm health at workplaces.

Basic Concepts & Definitions

Workplace Hazards:

Occupational health and safety is concerned with many types of *workplace hazards*:

- Chemical hazards
- Physical hazards
- Biological hazards
- Psychological hazards
- Ergonomic hazards

HAZARD and RISK Definitions

Here, the shark is;

Hazard?

Risk?

Basic Concepts & Definitions

Hazard:

- Source, situation or act with a potential for harm in terms of human injury or illness, or combination of these. (OHSAS 18001 Article 3.6.)

- **Potential which exists at the workplace or may arise from outside the workplace to cause harm or damage which could affect the worker or the workplace; (OHS Law #6331, Article 3 (1))**

Basic Concepts & Definitions

Risk:

- Combination of the likelihood of an occurence of a hazardous event or exposure(s) and the severity of injury or illness that can be caused by the event or exposure(s)

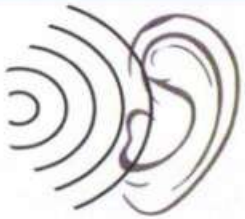
(OHSAS 18001 Article 3.21)

the combination of the **probability** of harm occurring and the **severity** of the harm once it occurs.

Basic Concepts & Definitions

- Hazard and risk relationship likes **potential energy vs kinetic energy relationship**.

- Hazard is accepted as potential energy,
- risk is accepted as kinetic energy.

Hazard		Risk
Noise		**Permanent hearing loss** for those working in loud noises
Blood-borne Disease		contagious disease
Oxy-combustible gas system		**accident** of a person working with a non-protective oxy-gas system
Working at height		Falling from height Material drop

Tablo 1: Tehlike-risk kavramı

Basic Concepts & Definitions

Incident:

- A work related event in which an injury or ill health or fatality occured or could have occured

Accident:

- An incident which an injury or illness actually occurs

Near –Miss :

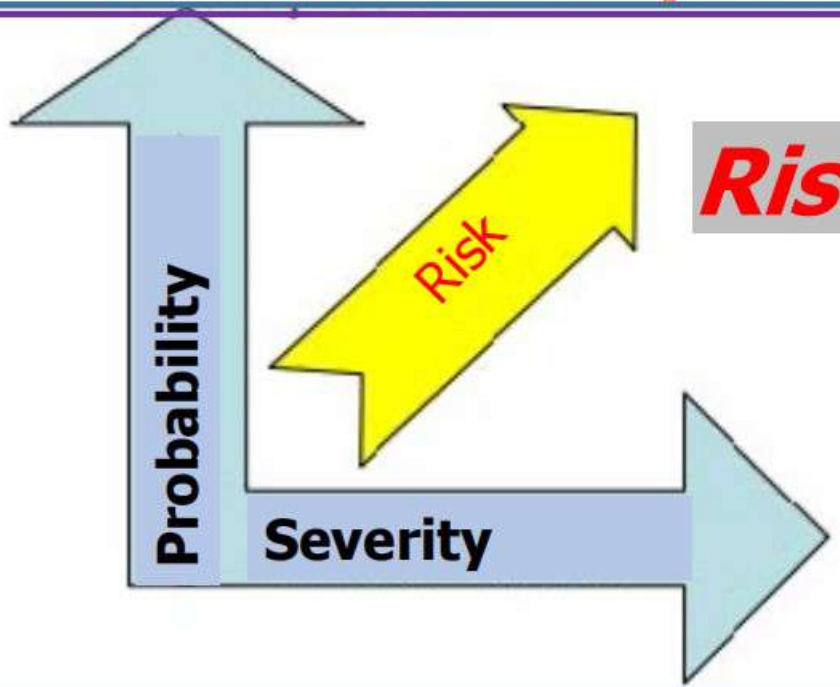
- An incident where no injury or illness occurs

(an event not causing harm, but **has the potential to cause injury or illness**)

Potential Energy

HAZARD

- **Potential to cause harm or damage which could affect the worker/the workplace. (OHS Law #6331, Article 3 (1))**



Risk = P x S

P: Probability

S: Severity

Kinetic Energy

98% of work accidents can be prevented !
2% of work accidents are unpredictable,
so it can not be prevented

100 % of occupational diseases can be prevented
by true OHS System!

Basic Concepts & Definitions

Occupational Disease Examples:

Contact Dermatitis → Sourced from working with chemicals (Chemical Hazard)

Occupational Cancer → Sourced from working with chemicals (Chemical Hazard)

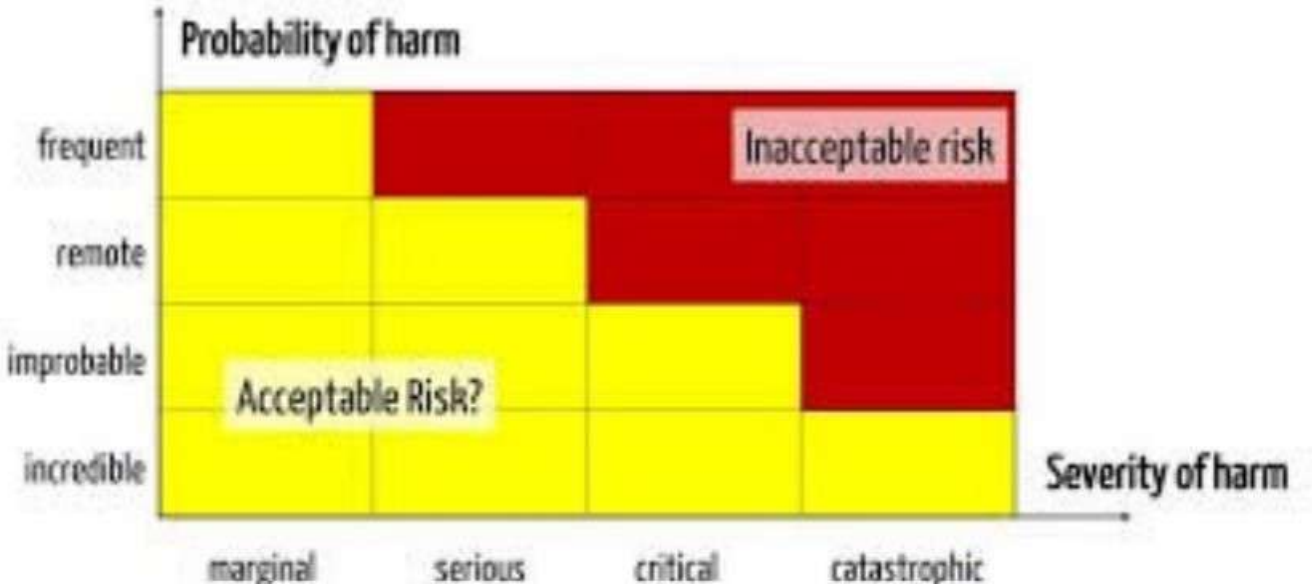
Musculoskeletal Diseases → Sourced from working position(s) (Ergonomical Hazard)

Silicosis → Sourced from fine particles/dust (Physical Hazard)

Risk assessment

Acceptable Risk:

acceptable risk is a **risk** that has been reduced to a level that can be tolerated by the organization having regard to its legal obligations and its own **OSH** policy



Hammurabi Law (The first Law)

first law in the area of Occupational Health and Safety.

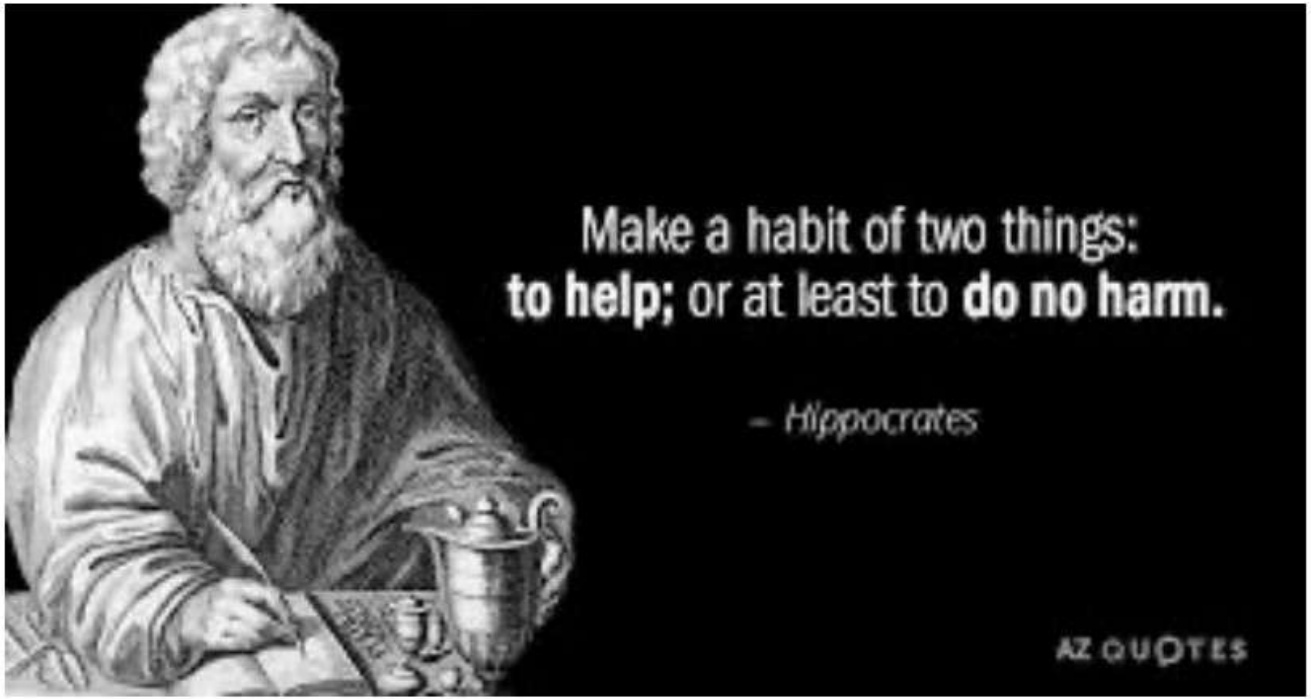
- In the B.C. 2000s, **Hammurabi,** the founder of the Babylonian Empire (1819-1950 BC) prepared **Hammurabi Laws. This law** included Health and Safety provisions on OHS.

*Bu kanun İş Sağlığı ve Güvenliği kapsamındaki **ilk kanun** kabul edilir.*

Historical Development of OHS in the World

HIPPOCRATES

B.C. 460 - 370



He mentioned the harmful effects of

Lead (Pb) element

for the first time

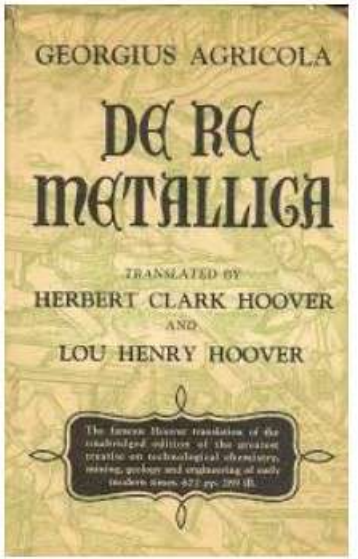
Kurşun zehirlenmesini tanımladı.

Historical Development of OHS in the World

- **Georgeius Agricola** (1494-1555):, the first known mineralogy scientist, published a book in 1530 "**De Re Metallica**" (based on *the Nature of Metals*)

It is about the state of the art of mining, refining, and smelting metals.

The book was an important chemistry text in the history of chemistry.



Question. Who wrote the «De Re Metallica» book?
Answer: Agricola

Bernardino Ramazini: father of OHS

(1633-1714- ITALIAN)


Bernardino Ramazzini, padre della Medicina del Lavoro

He wrote a book: «De Morbis Artificum Diatriba»

He focused on the worker's health problems in a systematic way.

He described diseases associated with various occupations.

He described metal poisining in miners.

He tried to build-up a relationship between disease and job tasks.

«what is your occupation?» question was asked by him.


DE MORBIS ARTIFICUM
BERNARDINI RAMAZZINI
DIATRIBA
ADALBERTI PAZZINI
OPUSCULUM
ROMAE MCMLIII

The period of *industrial revolution*

There are other laws to regulate the working hours and to make arrangements for who can work in mining operations and how many hours they can work.

1802: 'Health and Moral Acts of Apprentices
In England
Fisrt law regulating the workin hours
No children & women , 58 hours/week
Some limitations to working hours in mining operations.

1833: Factory Regulations for Machine Guarding

- Can't employ children younger than 10
- Younger than 18 can not be employed more than 12 hours

- **1847:** Employement Age regulated
  - Max 10 hours working

1867: the law enacted for child workers.

Tanzimat Period:

1865: Dilaverpaşa Regulations (DİLAVERPAŞA NİZAMNAMESİ)
during II. Mahmut period.

The first legal regulation on OHS in Turkey!!

DURING THE REPUBLIC PERIOD

First Labor law: → LAW NO 3008 in 1937

LAW NO 931 in 1967

LAW NO 1475 in 1971

LAW NO 4857 in 2003

Law on Occupational Health and Safety

First OHS LAW: 30 June 2012

(ilk iş sağlığı ve güvenliği kanunu)

http://iskanunu.com/portal/wp-content/uploads/2012/07/6331-sayili-is-sagligi-guvenligi-kanunu.pdf

https://www.lawsturkey.com/law/occupational-health-and-safety-law

According to this law:

- **ALL EMPLOYEES ARE PROTECTED WITHOUT PUBLIC AND PRIVATE SECTOR DISCRIMINATION…**

Including:

Without the number limit,
Officer, employee, employer, apprentice, intern, all employees,
All public and private sector jobs and workplaces,
All businesses including agriculture etc.

Exceptions:

Turkish Armed forces, police officers, disaster response teams,
home services, self-employed workers

law no. 6331

Before	After
• Worker healthy and safety • (işçi sağlığı ve güvenliği)	Occupational health and safety (iş sağlığı ve güvenliği)
• reactive approach • Post-accident • (Reaktif yaklaşımlar)	proactive approach Pre-accident (Proaktif yaklaşımlar)
• personal protection methods • (kişisel korunma yöntemleri)	Bulk protection methods (toplu korunma yöntemleri)

If you are an OHS Specialist; you must:

1) Identify hazards

(Ex. Mosquitos in workplace are hazards)

2) Identify risks

(Ex. allergy or taking germs into your body)

If you are an OHS Specialist; you must:

3) Determine precautions: for this;

1) eliminate hazard at source (remove the all hazard)

Kill all of them?

2) replace hazardous substance with non-hazardous substance (Substitution,

Replace mosquitos with other insects

3) take engineering precautions (controls)

draining swamp

4) take administrative precautions

Caution signs

5) Use personal security equipments

Like mosquito net

If you are an OHS Specialist; you must:

- **4) Educate the employees**

- **5) Prepare the first aid and fire fighting plans**

- **6) Check properly these studies**

According to the Law No: 6331

Workplaces are classified as;

1) Less Hazardous (Az tehlikeli)

2) Hazardous (Tehlikeli)

3) Much Hazardous (Çok tehlikeli)

In very hazardous workplaces;

Only and only If you have Class (A) OHS certificate, y**ou can work as an OHS specialist in vey hazardous wokplaces.**

In hazardous workplaces;

If you have Class (B) OHS certificate, y**ou can work as an OHS specialist in hazardous wokplaces. But also, if you have Class (A) certificate you can work too.**

In less hazardous workplaces;

If you have Class (C) OHS certificate, y**ou can work as an OHS specialist in less hazardous wokplaces. Also, if you have Class (B) and (A) cetificate you can work too**

Roles and Responsibilities of Occupational Health and Safety Experts

- **Consultancy;**
- **Risk assessment;**
- **workplace surveillance;** Periodic maintenance, control, measurement planning, Prepare an emergency plan such as fire
- **education, information, registration;**
- **Cooperation with relevant units;**

1

In less hazardous workplaces with 1000 or more workers, at least «1» occupational safety expert is employed for every 1000 workers.

If the number of workers are more than 1000, additional calculations must be made for others

2

In hazardous workplaces with **500** or more workers, **at least «1»** occupational safety expert is employed **for every 500 workers**.

If the number of workers are more than 500, additional calculations must be made for others

3

In highly hazardous workplaces with **250** or more workers, **at least «1»** occupational safety expert is employed **for every 250 workers.**

If the number of workers are more than 250, additional calculations must be made for others

Which of the following is true for the working time of the OHS expert who will be employed in a less hazardous workplace with 1200 employees ?

A) At least 2 occupational safety specialists must be assigned.

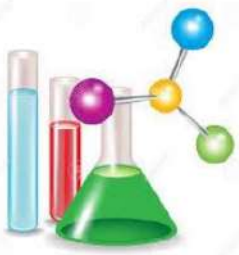
B) At least 1 «Class-C» and at least 1 «class B», totally2 OHS experts must be assigned.

C) at least 1 OHS expert must be assigned, additional calculations must be made for other 200 people.

D) at least 3 OHS expert must be assigned 36 hours per month and additional 5 minutes per workers.

DEFINITONS

A chemical substance is a form of matter having constant chemical composition and characteristic properties.



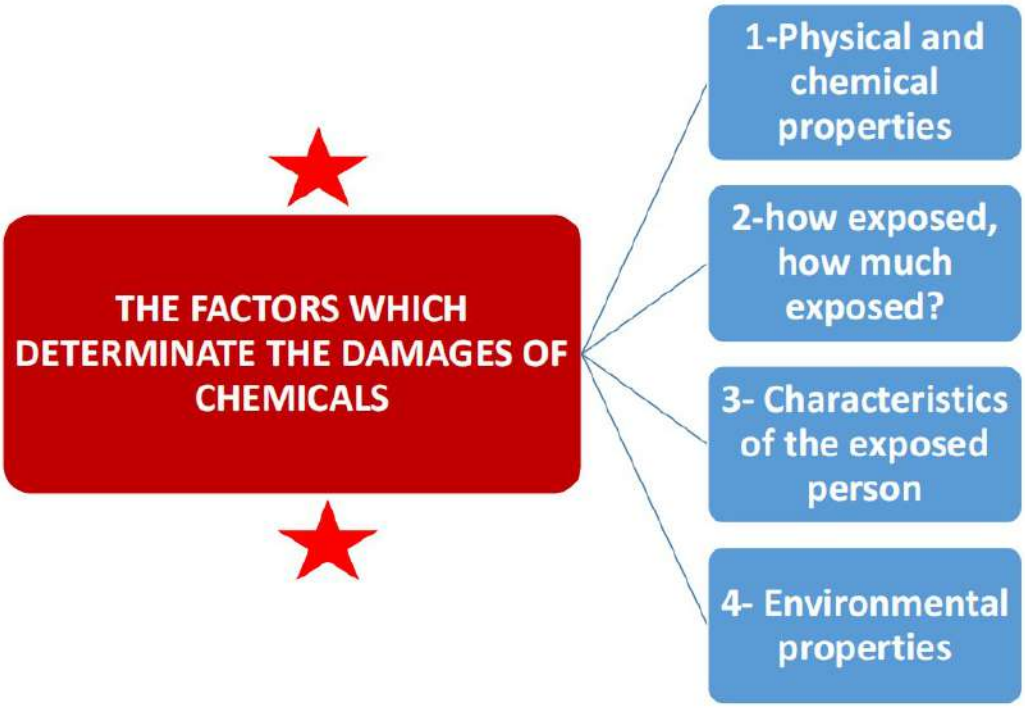
pharmaceutical preparation : **is mix or solutions of at least two or more substances.**

have you ever been to a pharmacy?
sometimes the pharmacist mixes a few drugs and makes a new drug. That is the name of the Pharmaceutical preparation.

* **A chemical substance** can be simple substances, chemical compounds.
*It occurs naturally
* *It can be produced,*
* *It can occur during any process,*
* *It can be produced as waste*
* *It can be occurred accidently*

Hazardous Chemical Substances

Any toxic, harmful, corrosive, irritating or asphixiant substance with
a) a prescribed exposure limit.
b) Or which have a detrimental effect on health.


THE FACTORS WHICH DETERMINATE THE DAMAGES OF CHEMICALS
1-Physical and chemical properties
2-how exposed, how much exposed?
3- Characteristics of the exposed person
4- Environmental properties

(Exposure Limit Definitions)

MAC Limit: (Müsaade edilen azami konsantrasyon):

★ **maximum permissible concentration of a chemical substance in the workplace air which generally does not have known adverse effects on the health of employees**.

TLV: (Ortalama Eşik değer- *Treshold Limit Value*):
Çalışanlara zararlı etki göstermeden çalışılabilecek **ortalama** konsantrasyon.

TWA

TLV-TWA (zaman ağırlıklı ortalama-*Time Weighted Avarage*) : eight-hour time-weighted average (TWA).

This is the maximum amount or concentration of a chemical that a worker may be exposed for 8 hours.

STEL

TLV-STEL *(ShortTerm Exposure Level)* : time-weighted average concentration of a substance over a 15-minute **period** thought not to be injurious to health.

ASBESTOS

★ Permissible Exposure Limit (PEL) for asbestos is **0.1 fiber per cubic centimeter** of air as an eight-hour time-weighted average (TWA). ★

Sınır Değer

İşveren, işçilerin maruz kaldığı havadaki asbest konsantrasyonunun, sekiz saatlik zaman ağırlıklı ortalama (twa) değerinin 0,1 lif/cm³'ü geçmemesini sağlayacaktır.

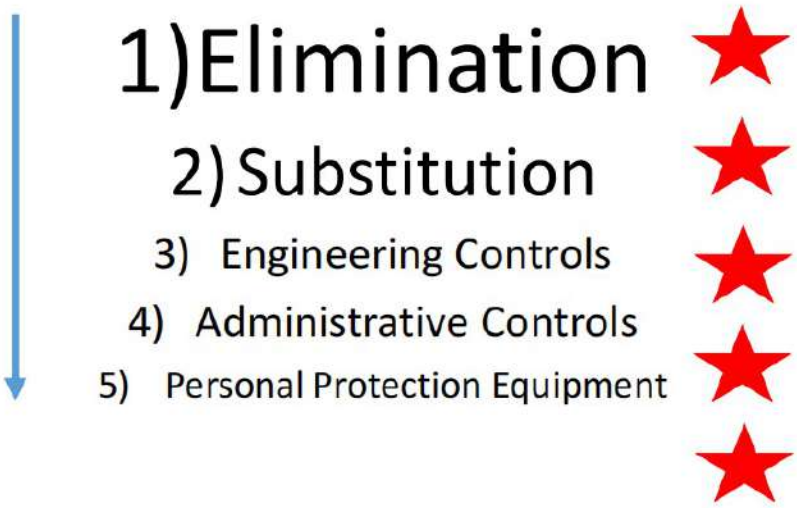
What is the limit value that should not be exceeded in terms of chemical environment factors?

a) MAC
b) STEL
c) TWA
d) MSDS

Which of the following is a substitution study for protection from hazards?

a) local ventilation to a welding bench
b) use of safety belts in scaffolding
c) use of gloves to protect against the effects of a chemical
d) replacing a harmful chemical with a less harmful chemical

Let's remember the «control hierarchy»



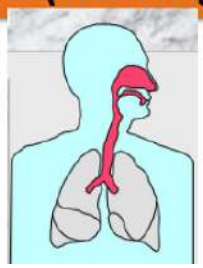
According to 6331 ISG law, what does STEL mean?

a) Material Safety Data Sheets (MSDS)
b) International Marine Organization
c) Maximum weight that can be lifted by hand
d) Concentration of a substance over a 15-minute period.

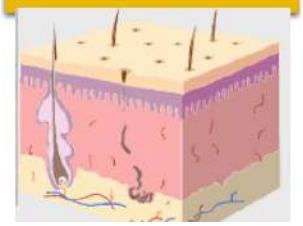
ROUTES OF INTAKE CHEMICALS TO THE BODY

Chemicals harm the health by entering the body in three ways.

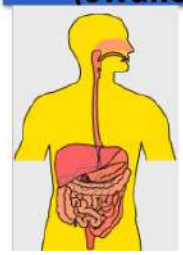
INHALATION (breathing)



SKIN ABSORPTION



INGESTION (swallowing)



ROUTES OF INTAKE CHEMICALS TO THE BODY

INHILATION

Breathing in dusts, gases and vapours is the **most common** route of entry.

Inhalation may result in:
Bronchitis; asthma; cancers, etc.

ABSORPTION

Absorption through the skin (or eye) is another route of entry for toxic substances.

Effects include:
Burning of the skin/eye; Irritation of the skin (dermatitis); sensitising effects (contact dermatitis); skin cancer;

INGESTION

Swallowing substances is the least common route of entry for toxic substances. However, they can pass through the digestive system, and affect the gastro-intestinal organs of the body:
Chemicals may be wallowed accidentally if food or hands are contaminated.

The workplace should keep records of assessment for 40 years.

Should keep «medical surveillance records» for 40 years.

If the activity of that workplace ceases, then records must be delivered to the provincial directorate of social security institution ***(SGK İl müdürlükleri)***

Which of the following is wrong with regard to the entry of chemical agents into the body?

a) Through inhalation

b) Through absorption through the skin

c) Through digestion

d) By thermal radiation

CLASSIFICATION ACCORDING TO THE REGULATION ON HEALTH AND SAFETY PRECAUTIONS IN «WORKING WITH CHEMICAL SUBSTANCES»

KİMYASAL MADDELERLE ÇALIŞMALARDA SAĞLIK VE GÜVENLİK ÖNLEMLERİ HAKKINDA YÖNETMELİK'E GÖRE SINIFLANDIRMA

1. Explosives (E),
2. Oxidizing gases (O),
3. Flammable gases
4. Highly Flammable gases (F),
5. Extremely flammable gases (F+)
6. Toxic (T),
7. Very toxic
8. Harmful (Xn),
9. Corrosive (C),
10. Irritant (Xi),
11. Allergic,
12. Cancinogenic, (T)
13. mutagen,
14. Toxic for fertility
15. Environmental hazard (N)

Chemical hazard symbols

Some of the chemical hazard symbols are shown here. The chemical containers must be labelled by these symbols with respect to its content.

Chemical hazard symbols shown with black symbols on orange sheets

Biological and radiation hazard symbols are shown here. They are shown black symbols on yellow sheets

What is the difference between flammable, highly flammable and extremely flammable gases?

- Extremely flammable: Flash point below < 0 C, Boiling point is 35 C

- Highly flammable: Flash point below < 21 C

- Flammable: Flash point is between < 21-55 C

Toxic (T)

Poisonous. Containing or being poisonous material especially when capable of causing death or serious debilitation

VERY toxic (T+)

Very poisonous.

Harmful (Xn)

Xn: Nocif
(zararlı)

Substances that cause acute or chronic damage or death on human health when inhaled, taken by mouth, absorbed through the skin

Corrosive (C)

C: Corrosive
(Aşındırıcı)

In contact with living tissue, they can cause tissue destruction.

Irritant (Xi)

Xi: irritant
(Tahriş edici)

It is not **corrosive**, but which causes a reversible inflammatory effect on living tissue by chemical action at the site of contact.