

# ***Occupational cancer***

Dr.Omid Aminian

Associate Professor of Occupational Medicine

Tehran University of Medical Sciences

**two** million men and women die each year

as a result of

occupational **accidents** and work-related **illnesses**

**Most of the world's population (58%) spend one third of their adult life at work.**

# Global Burden of Disease

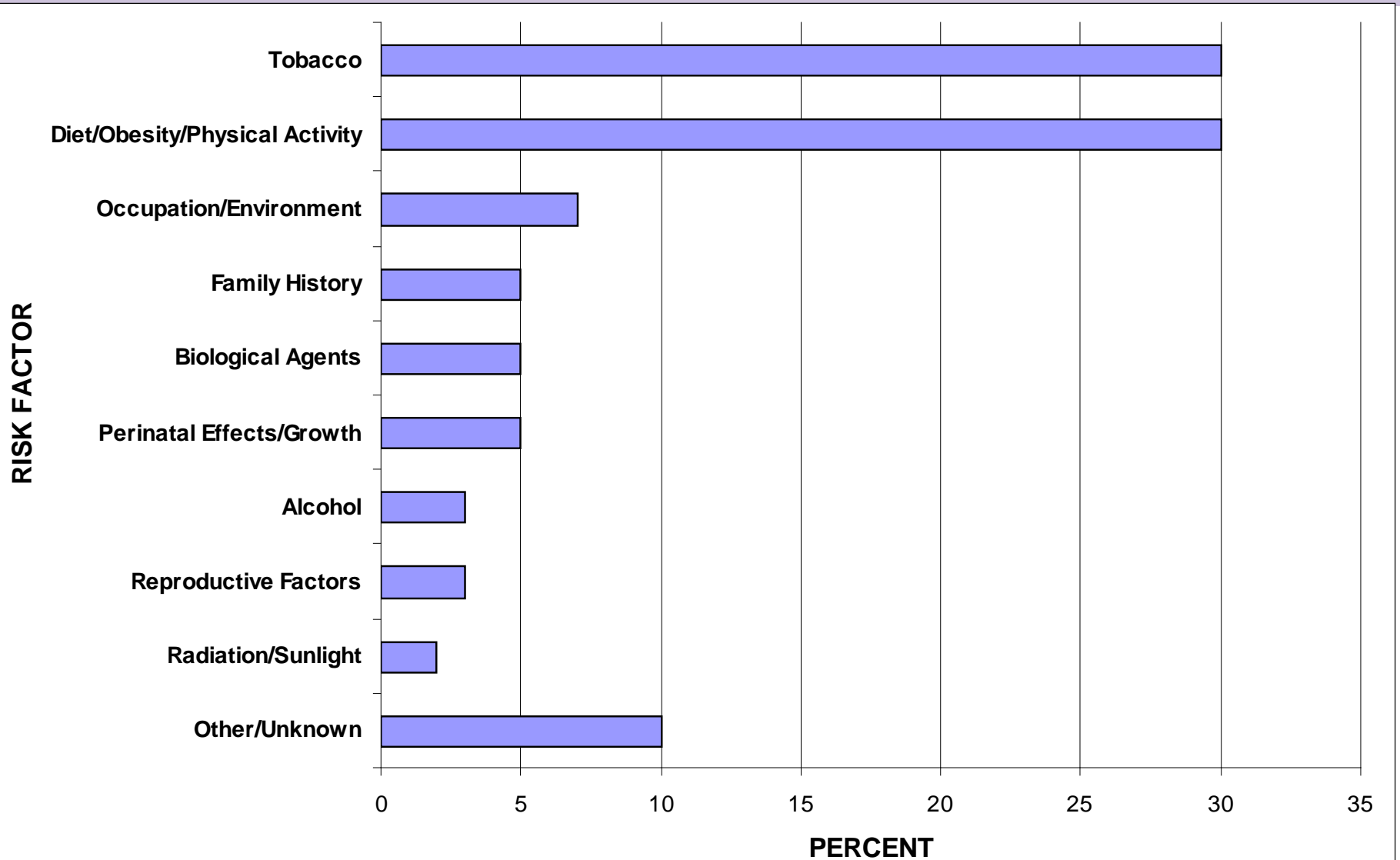
	death	DALYs	DALYs%
Occ injuries	300/000	10/531/000	1%
<b>Carcinogen</b>	<b>146/000</b>	<b>1/400/000</b>	<b>0.1%</b>
Hearing loss		4/200/000	0.3%
Back pain		800/000	0.06%
Work related COPD	243/000	3/000/000	0.3%
Lead exposure	234/000	12/900/000	0.9%
Urban air pollution	800/000	7/900/000	0.8%
Indoor smoke			2.7%

# ***What is Occupational Cancer?***

- Occupational cancer is cancer caused by exposure to carcinogens in the workplace.

Occupational cancer **%5-%10** ALL NEOPLASM

# What causes cancer?



# ***Carcinogens***

- *A carcinogen is an agent which is responsible for causing cancer*

**Chemical carcinogens**

**Physical carcinogens**

**Biological carcinogens**

# ***IARC CLASSIFICATION***

**International Agency for Research on Cancer**

**Group 1 : agents carcinogenic to human**

**Group 2A: agents probably carcinogenic to humans**

**Group 2B: agents possibly carcinogenic to humans**

**Group 3 : agents not classifiable as carcinogen**

**Group 4: agents probably not carcinogenic**

# Is there a safe level for exposure to carcinogens?

- It is generally agreed that where the carcinogen directly affects the gene (is genotoxic) there is no safe level of exposure
- **A safe level of exposure is difficult to define.**

**Uncertainty about safe levels of exposure to carcinogens has resulted in the principle of keeping exposure “as low as reasonable achievable “  
ALARA principle**



# Does smoking cause cancer in the workplace?

- As well as being a significant cause of cancer in its own right, smoking has been shown to have a synergistic effect with some other carcinogens.

Asbestos and smoking, which both cause lung cancer, are prime examples of this

These substances include radon, arsenic, aromatic amines and crystalline silica.

# Cancer 2020 targets

- **Cancer Prevention Targets**
  - Tobacco use
  - Diet and nutrition
  - Healthy body weight
  - Alcohol consumption
  - Occupational carcinogens
  - Environmental carcinogens
  - Ultraviolet exposure
  - Viral infections

Malignant tumors may represent to occupational carcinogens such as coal tar and physical agents such as sunlight. Skin cancer is the commonest form of cancer



# Ultraviolet Radiation & Skin Cancer

Outdoor workers typically receive **5 to 10** times more sun exposure yearly than indoor workers

Employees who work outdoors for all or part of the day have a higher than average risk of skin cancer

The association between occupational UV exposure and SCC is well and consistently documented epidemiologically

# Occupations especially at risk due to the outdoor nature of the work

- Building and construction workers
- Swimming pool
- Police and traffic officers
- Agricultural, farming
- Fisheries workers
- Road workers
- Municipal employees
- Outdoor sports coaches
- Forestry workers
- Mining and earth resources workers

# ***IARC Group 1 Chemicals***

<b>AGENT</b>	<b>TARGET ORGAN</b>	<b>MAIN INDUSTRY</b>
Arsenic compounds	skin, Lung	Glass, metals, pesticides
Coal-tar pitches	Skin, lung, bladder	Building material, electrodes
Coal tars	Skin, lung	Fuel
Mineral oil	Skin, Scortom	Lubricants
Shale oils	Skin	Lubricants fuels
Soots	Skin, lung	Pigments, Rubber industry
PAH	Skin, lung	

# ***PREVENTION***

1. Hazards identification
2. Engineering controls
3. Chemicals substitution
4. Personal hygiene
5. Personal protection(gloves,barriercream,clothing)
6. Education & training
7. Preemployment & periodic examination

***The wealth of business is best founded  
on the  
health of its workers***



