

Occupational Hematology

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A stylized silhouette of a mountain range in a darker shade of teal, located in the bottom right corner of the slide.

HEMATOLOGIC EFFECTS OF OCCUPATIONAL HAZARDS

- ◆ **Disorders Associated With Shortened Red Blood Cell Survival**
 - Hemolysis produced by oxidant chemicals
 - Hemolysis Associated With Exposure To Heavy Metals
- ◆ **Disorders Affecting Blood Cell Formation & Morphology**
 - Hematologic Cancers
 - Aplastic Anemia
 - Myelodysplastic Syndroms
 - Toxic Thrombocytopenia
- ◆ **Agents That Interfere With Oxygen Delivery**
 - Methemoglobinemia
 - Sulfhemoglobinemia
 - Carboxyhemoglobinemia

Carbon Monoxide

- ◆ Measure by carboxyhgb
 - 10-20% headache
 - 30% coma
 - 50% death
- ◆ Chronic exposure promotes atherosclerosis
- ◆ People with CAD are very sensitive

Chemicals Associated With Methemoglobinemia or Oxidative Hemolysis

-Aniline	Rubber, dye
-Nitroaniline	Dyes
-Toluidine	Dyes, organic chemicals
-O-toluidine	Laboratory analytic reagent
-Naphthalene	Fumigants used in clothing
-Nitrates	Soil fertilizers
-Trinitrotoluene	Explosives

Chemicals reported to cause aplastic anemia

Chemical	use
Benzene	Intermediate in synthesis of fabrics, pesticides, rubber. solvent for glues
Trinitrotoluene	Production of explosive
Hexachlorocyclohexan	Pesticides
Arsenic	Manufacture of glass, paints, enamels, weed killer tanning agents, pesticides
Ethylene glycol monomethyl or monobutyl ether	Production of paints, lacquers, dyes, inks, cleaning agents

Toxic agents associated with isolated thrombocytopenia

Toxic agent	use	mechanism
TDI	Polymerizing agent	immune
DDT Lindane Dieldrin pyrethrin	insecticide	Megakaryocyte hypoplasia
Turpentine	Organic solvent	immune
Vinyl chloride	plastics	Liver insufficiency with hypersplenism

Screening for hematologic disease

1. History
2. Physical Examination
3. Examination of the Blood
4. Bone Marrow Examination

PREVENTION

1. Identification of Hazards
2. Evaluation of Hazards
3. Engineering control
4. Substitution
5. Personal hygiene
6. Personal Protection Devices
7. Education & Training
8. Employment Examination