

phosphorus

# DIFFERENT FORMS OF PHOSPHOROUS

- BLACK PHOSPHORUS
- VIOLET PHOSPHORUS
- RED PHOSPHORUS
- YELLOW/WHITE PHOSPHORUS



# USES OF PHOSPHORUS

INDUSTRIAL USE

BIOLOGICAL ROLE

TOXIC DOSE

# USE OF PHOSPHORUS IN WAR CRIMES

# phosphorous

- Local effects
  - Local damage to skin,GIT ,mucous membrane ,respiratory tract
  - Oxidative damage
  - Thermal damage
- Systemic effects
  - General protoplasmic poison
  - Impair ribosomal function and protein synthesis
  - Cause free radicle injury
  - Impair lipoprotein synthesis
  - Fatty degeneration

# Cardiovascular system

- Depress myocardial protein synthesis
- Impair contractility and cause vasodilation
- Common cause of early death

# Central nervous system

- Neuronal toxicity
- Cerebral hypo perfusion
- hypoglycemia

# Hepatic injury

- Hydropic or fatty infiltration of hepatocytes
- Residual fibrosis ,scarring and cirrhosis may occur
- Impaired lipoprotein



# Clinical presentation

- Burns



## **Physical examination**

- Garlic smell
- Presence of white particles
- Smoke

# Stage 1

- Last for several hours
- Nausea ,vomiting ,diarrhea, abdominal pain
- Mucosal burning
- Breath ,stool, vomitus have garlic odor
- Phosphorescent
- Tachycardia ,hypotension ,shock and coma may develop

## Stage 2

- Quiescent stage
- Last for 1-3 days
- Some gastrointestinal abnormalities may present

# Stage 3

- Few days after ingestion
- End organ damage
- Nausea ,vomiting, abdominal pain ,convulsions
- Liver injury

# DIAGNOSTIC TESTS

- ULTRAVIOLET LIGHT
- SERUM PHOSPHORUS LEVELS
- SERUM ELECTROLYTES & CALCIUM LEVELS

# TREATMENT

- **BURNS**
- RAPID DECONTAMINATION
  - Remove particles with forceps or debridement
  - Irrigate thoroughly with water/saline
  - Do NOT use CuSO<sub>4</sub> or Silver Nitrate solns
  - Do NOT use oil based ointments until Phosphorus completely removed



## SUPPORTIVE MEASURES

# Treatment

- Dilution
- Gastric lavage with
  - potassium permanganate
  - (1:5000)
  - SALINE OR TAP WATER
- Mineral oil cathartics
  - WHOLE BOWEL IRRIGATION
- Exchange transfusion

# CHRONIC EXPOSURE

PHOSSY JAW



# Autopsy findings

**1st 24 hours**

# After few days

- External
- Internal

# Difference between necrobiosis and acute yellow atrophy

# Samples

- Saturated solution of common salt

# Medico legal aspects

- Rodenticide
- Fire works
- Suicide
- Accidental