

## 88 Primary Treatment for White Phosphorus Burns

Eldad A, Chaout M, Wysoki M  
Israel Defense Forces Medical Corps and Burns Unit  
Hadassah University Hospital  
The Laboratory for Experimental Surgery  
Jerusalem, Israel

**Introduction:** White phosphorus (WP) is an extremely active material. It ignites spontaneously at 33°C upon exposure to atmospheric oxygen. When absorbed, WP is toxic to the liver, kidneys, and red blood cells, and may cause arrhythmias and cardiac failure. White phosphorus is used in fireworks and multiple military ammunitions. Many modalities of primary treatment were suggested in the past, from neutralization of the active material with CuSO<sub>4</sub> in various forms, the use of potassium permanganate, mechanical removal, and water irrigation. This study compared traditional modalities with a newly suggested method for free radical scavenging.

**Methods:** On a rat model, 50 mg of WP were ignited under dorsal skin flap.

**Results:** It was demonstrated that treatments with CuSO<sub>4</sub> and nonabsorbable, non-toxic CuSO<sub>4</sub> emulsion did not prevent mortality of the exposed animal; neither did treatment with potassium permanganate soaks, water soaks, Water Jell dressings, or Super Oxide Dismutase in sub-lesional injection. A 10-second irrigation of the wound with tap water proved effective in reducing mortality and morbidity of the animals.

**Conclusions:** It is suggested that no neutralization or isolation from oxygen is effective in prevention of toxic effects of white phosphorous. Mechanical removal of all particles—preferably water irrigation is the treatment of choice for white phosphorus burns.

## 89 Industrial Chemical Accidents and Organization of Emergency Assistance

Fonrouge JM, \*Fontanella JM, \*\*Petit P\*\*\*

\* Université de Bordeaux I, SAMU 71, MD, DEA,  
Centre Hospitalier  
Chalon S/Saone, France  
\*\* SAMU 03  
Montlucon, France  
\*\*\* Université de Lyon  
Lyon, France

When an alarm is given of a chemical accident, the company's internal emergency plan (Plan d'Operation Interne [POI]) corresponding to the European standard defined by the Seveso Directive, is activated.

Taking into account possible worsening of the situation (escape of toxic gas and fire), the local authorities implement the "Particular Intervention Plan" in order to protect and aid the population in the vicinity of the industrial area.

Next, the various emergency teams arrive: firefighters, SAMU (medical team), police, telecom, social workers, etc.

This film shows the organization of emergency services and how major accidents may be dealt with appropriately.

## 90 The Effect of Chemical Warfare Mask on Patients with Ischemic Heart Disease or Chronic Lung Disease

Nahtomi O, \*Roth A, \*\*Struhar D, \*\*Ziv I, \*Hendler I, \*Epstein Y, \*Wiener M, \*Meyerovitch J\*

\* NBC Branch, Medical Corps, Israel Defense Forces

\*\* Soraski Medical Center

Tel Aviv, Israel

**Objective:** The effects of the increase in respiratory work wearing a protective chemical warfare (CW) mask on the ill has not been investigated. The goals were to: 1) evaluate the physiological effects of the CW mask on two patient groups having ischemic heart disease (IHD) or chronic lung disease (CLD); and 2) assess the potential role of adding a blower with air flow of 40-46 l/min, in reducing respiratory work in this population.

**Methods:** A total of 41 patients were examined: 21 with IHD, and 20 with CLD, in a controlled, cross-over design. The protocol was based on the cardiorespiratory exercise test. Respiratory and ECG parameters were monitored at rest, during exercise, and at recovery.

**Results:** Wearing the mask caused a significant increase in ventilation and O<sub>2</sub> consumption. Moreover, eight patients did not complete the protocol because of bad subjective feeling and two patients had ischemic changes on the ECG following exercise. The addition of a blower to the mask was associated with a significant decrease in respiratory work, smaller ECG changes, and improved subjective feeling.

**Conclusion:** Protective CW mask substantially increases the respiratory work in patients with IHD or CLD. Adding a blower to the mask will reduce the respiratory work and ease their bad subjective feeling. Therefore, it is recommended that a blower should be added to the CW mask in these patient groups.

## 91 Unanticipated Problems Stemming from a Long-Term Hospital Alert for Non-Conventional Warfare

Michaelson M, Geva H, Revach M, Reznikivitz S

Rambam Medical Center

Haifa, Israel

Rambam is a 900-bed general hospital serving the population of Northern Israel. Before the Gulf War began, the hospital's resources had to be organized to accept civilian, non-conventional war injuries. Anticipated problems included:

- 1) preparing for mass casualties;
- 2) lack of treatment experience, treatment stations, and specific equipment for non-conventional war injuries;
- 3) decontamination of the injured;
- 4) protection of staff and patients; and
- 5) anxiety and stress of staff and public.