

White Phosphorus

What is white phosphorus?

- White phosphorus is a white to yellow waxy solid with a garlic-like odour.
- It ignites instantly upon contact with oxygen. Burning phosphorus produces dense, white, irritating smoke.
- It is often used by militaries to illuminate battlefields, generate a smokescreen, and as an incendiary substance.



Effects of the exposure to white phosphorus

- White phosphorus is harmful by all routes of exposure.
- Once ignited, white phosphorus is very difficult to extinguish. It sticks to surfaces like skin and clothing.
- White phosphorus can cause deep and severe burns, penetrating even through bones, and has been known to reignite after initial treatment.
- The smoke from burning phosphorus is also harmful to the eyes and respiratory tract due to the presence of phosphoric acids and phosphine.
- Systemic effects may be delayed for up to 24 hours after exposure.
- In severe cases of exposure, delayed systemic effects can include cardiovascular effects and collapse, as well as renal and hepatic damage and depressed consciousness and coma.



Guidance to be used when providing immediate care to a person exposed to white phosphorus

- After exposure, the priority is to stop the burning process.
- Exposed skin and wounds should be continuously washed (flushed) with cool saline or water or immersed in water. At the same time, phosphorus particles are being removed (visible particles should be removed with forceps). It is important to use cool rather than warm water.
- Care should be taken to avoid transferring contamination to unexposed skin when removing phosphorus particles.
- Since white phosphorus can spontaneously ignite, care should be taken to prevent exposure to all sources of ignition such as naked flames, electrical equipment, and the smoking of tobacco products.
- Keep the patient away from the exposure area, then carefully remove his clothes and personal belongings, taking into account that contaminated clothing can ignite or reignite.
- Place contaminated items in a water-filled closable container that is clearly labeled as a hazardous material.
- Rinse and irrigate the skin with cool water and keep exposed areas wet to stop ignition, for example by covering them with wet cloths, during transportation to the treatment unit.
- Removed phosphorus should be submerged in cold water to prevent ignition. Embedded white phosphorus particles may be difficult to see but can be visualized using ultraviolet light.
- Further management depends on the severity of the burns and should be guided by a burn specialist.
- If the eyes have been exposed to white phosphorus or smoke from white phosphorus use, first irrigate the eye with plenty of water or 0.9% saline for 10–15 minutes (remove contact lenses if this can be done easily).
- If there are particles of phosphorus in the eye, evert and turn over the eyelids and remove the particles while continuing to irrigate/wash.
- Place removed particles underwater in a container. Give a full eye examination and urgently refer the injured person to an ophthalmologist if there is evidence of injury.

