Hydrogen Peroxide

Hydrogen peroxide (H₂O₂) is an oxidizing agent commonly found in mouth rinses, tooth whiteners, skin disinfectants, hair dyes, and ear wax removers. It has many industrial uses including bleaching paper and textiles, and for rocket propulsion. In veterinary medicine 3% H₂O₂ is used to induce vomiting in animals. H₂O₂ is available in concentrations from 3%, commonly used as an antiseptic at home, to >90%, which is used as rocket fuel.

Hydrogen peroxide can be toxic if ingested, inhaled, or if contacts the skin or eyes. When H₂O₂ comes in contact with tissue, it decomposes into oxygen and water. The oxygen causes toxicity through corrosive local tissue injury and oxygen gas formation. The strength of the reaction is determined by the concentration of the H₂O₂. For example, one mL of 3% household strength H₂O₂ liberates 10 mL of oxygen and one mL of 35% “food-grade” H₂O₂ liberates more than 100 mL of oxygen. These oxygen gas bubbles have the potential to get into the blood stream (gas embolization) and cause significant injury.

Dilute (<10%) H₂O₂ is an irritant, whereas higher concentrations are caustic. Ingestions of small amounts of the household 3% hydrogen peroxide frequently cause spontaneous vomiting, mild throat and GI irritation. The majority of these cases are managed at home with poison center follow-up.

Ingestions of large volumes of household 3% H₂O₂ or small volumes of high concentration H₂O₂ should be evaluated at a health care facility for caustic injury and for oxygen embolism. Health care providers should monitor patients for abdominal pain, hematemesis, confusion, seizures and dyspnea. Desaturations on pulse oximeter, hemodynamic instability and neurological deficits may indicate gas emboli.

Patients with symptoms of oral or gastric injury should have a GI consult for possible endoscopy. Systemic gas emboli may involve any organ, requiring CT scans. Hyperbaric oxygen may reduce the size of the gas embolism.

Contact the IPCC with your hydrogen peroxide cases by calling 1-800-222-1222.

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