CLOUDS ON THE HORIZON

NIRANJANI MANIAM, SUPIAN BIN SAFAAI
HOSPITAL TENGKU AMPUAN AFZAN, KUANTAN

Introduction

Maleic anhydride is used in the formulation of resins. Exposure to maleic anhydride may occur from accidental releases to the environment or in workplaces where it is produced or used. Acute inhalation exposure of humans to maleic anhydride has been observed to cause irritation of the respiratory tract and eye irritation. Chronic exposure to maleic anhydride has been observed to cause chronic bronchitis, asthma-like attacks, and upper respiratory tract and eye irritation in workers. In some people, allergies have developed so that lower concentrations can no longer be tolerated. [1]

Case Description A 57 years old man not wearing a proper personal protective equipment inhaled maleic acid gas while washing a tanker with the gas valve dislodged unsure duration of exposure. Patient developed shortness of breath, vomiting and sore throat. Upon arrival to hospital noted GCS full, blood pressure normotensive, heart rate normal, tachypneic oxygen saturation under room air 76% with lung bronchospasm . Given nebulization, dexamethasone injection and started on non-invasive ventilation. Initial arterial blood gas was compensating metabolic lactic acidosis. Blood investigations shows mild transaminitis. Chest x-ray shows features of pneumonitis. Airway endoscopy by ENT team noted edema of bilateral arythenoid and no vocal cord edema .

Discussion Maleic anhydride is a cyclic dicarboxylic anhydride with the molecular formula C4H2O3, characterized by a five-membered ring containing two carbonyl groups and a double bond, making it highly reactive. Maleic acid anhydride exposure can cause allergic sensitisation in the airways caused by specific Ig E antibodies. Upon exposure, Ig E antibodies can trigger immune responses, which result in inflammation of the mucous membranes of the respiratory tract. The allergic hypersensitivity is generally irreversible and incurable.[2]IExposure at a concentration of 20 ml/m3 (about 80 mg/m^3) induced irritation of the eyes, the nasal mucosa and the respiratory tract after 5 minutes.[2,3]

Conclusion : A harmful contamination of the air can be reached very quickly .Maleic anhydride is a hazardous substance that can cause skin and eye irritation, and respiratory problems upon inhalation, necessitating the use of appropriate protective wear and safe handling practices.

Keywords
Maleic anhydride , hazardous, airway, protection

References:
1. National Toxicology Information Program, National Library of Medicine, Bethesda, MD. 1993.
2. Barker RD, .Occup Environ Med 1998;55(10):684-691
3. Tenkhoff N. A clinical and immunological study on 92 workers occupationally exposed to anhydrides. Int Arch Occup Environ Health 1995;67(6):395-403