

# **Acute professional phosphine intoxications: a retrospective study by the Belgian Poison Centre**

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## **BACKGROUND:**

Phosphine is a popular fumigant in use for fumigation of containerships. A recent publication by the European Agency of Safety and Health at work (EU-OSHA)[1] has mentioned the presence of phosphine exceeding the occupational exposure limit values (OELs) in containerships in European harbours. Occupational accidents with phosphine seem to happen in all sectors of the freight transport sector.

## **OBJECTIVE:**

To analyse the pattern and the incidence of acute occupational intoxications with phosphine and to describe accidental aetiology, clinical presentation and medical care.

## **MATERIALS AND METHODS:**

A retrospective review of acute occupational exposures to phosphine reported to the Belgian Poison Centre over a 20-year period between January 1, 2000 and December 31, 2018 was performed. Only acute and professional intoxications with phosphine were included. Co-intoxications were excluded.

## **RESULTS:**

We retrieved 34 occupational calls for phosphine covering 24 incidents with 26 victims. It is a very small number in comparison to our total number of calls (1,021,861) in that period, but there seems to be a difference between the period 2000-2009 (8/528,976 calls or 0.002%) and the period 2010-2018 (25/492,885 calls or 0.01%).

Most of the incidents (66.6%) happened in harbours. In 12.5%, other sectors were involved and in 20.8% of cases the location was not specified. Victims were mostly (69.2%) seafarers, dock workers or custom officers.

Gastro-intestinal symptoms (38.4%), neurologic symptoms (38.4%) and respiratory symptoms (30.7%) were most common. In 46.1% of victims there was more than one symptom present and in 26.9% there were no symptoms. All symptomatic victims had moderate symptoms and no fatalities have been reported. However, 69% of victims had to be hospitalised and 26.9% had to consult a general practitioner.

## **CONCLUSIONS:**

Phosphine intoxication is not a common reason for calls to the Belgian Poison Centre although there seems to be an increase of calls the last years. Further monitoring is needed.

Seafarers, dock workers and custom officers seem to be at risk of exposure. This suggests that strict precautions are needed when handling phosphine in fumigation processes on ships. Since the symptoms are often vague, first-responders need to pay attention to the possible occurrence of acute phosphine intoxication as it is a life-threatening intoxication. It remains a diagnosis not to miss.

## **References:**

[1] <https://osha.europa.eu/en/tools-and-publications/publications/health-risks-and-prevention-practices-during-handling-fumigated/view>