

# Poisoning due to Chlorine Gas

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## Case Report

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### INTRODUCTION

Chlorine gas, also known as bertholite has been used in warfare, first in World War 1 and again in 1997 against the Iraqis, sickening over three hundred and fifty (350) persons.<sup>1</sup> The element is used for purifying water and in swimming pools. Cases of accidental poisoning due to chlorine have mainly been in the form of bleach. Presented is an incident in which sixty to eighty (60 - 80) persons were affected by exposure to chlorine gas.

### CASE REPORT

An old cylinder exploded at a High School in Rural Jamaica releasing chlorine gas. Sixty to eighty (60 - 80) persons including five (5) adults were affected. Victims experienced irritation of the respiratory tract (burning sensation of nasal passages, throat, chest and lung), headaches, belly pains, nausea, vomiting and wheezing in asthmatic patients. The emergency physician reported that a mass casualty triage approach was used in determining who gets treatment first: There were fifteen to twenty (15 - 20) patients in the urgent category, ten to fifteen (10 - 15) patients in the intermediate, and the rest were categorized as mild. Treatment included: Nebulizing with ventolin and lidocaine, Oral and IV steroids and Panadol.

### DISCUSSION

Inhalation is the main route of exposure to chlorine gas and is detected in concentrations as low as 1 ppm. 1 ppm to 3 ppm is enough to produce mild mucus membrane irritation. Information as to the concentration of chlorine involved in the incident is not known, however, exposure to 3 to 6 ppm produce burning of the eyes, nose and throat, sneezing, coughing and bloody nose among other symptoms.<sup>2</sup> Chlorine is a toxic, corrosive gas that affects the respiratory system. Inhalation may cause coughing, choking, nausea, vomiting, headache, dizziness, difficulty breathing; some symptoms of which were experienced by persons in the incident.

Recommended treatment/management involves: Monitoring for respiratory distress and maintaining ventilation and oxygenation.<sup>2</sup> Treat bronchospasm with inhaled beta-2-agonist and oral or parenteral corticosteroid as was done by the emergency doctor in this incident. He added the lidocaine to act as a local anesthetic and Panadol for pain

## CONCLUSION

Exposure to chlorine gas is potentially dangerous. Moderate to severe exposure can result in residual pulmonary dysfunction. These long term sequelae of acute exposure may persist for many years, therefore proper storage and handling procedures should be followed.<sup>2</sup> Cylinders of chlorine gas must be stored properly in a well ventilated, secure area, protected from the weather. Cylinders should be stored upright with valve outlet seals and valve protection caps in place. They should be routinely checked for leaks. Leaks may be detected by placing a rag dampened with ammonia over the system.<sup>3</sup> White fumes indicate escaping gas. Storage temperature should not exceed 125 degrees F. Cylinders must not be dragged, rolled or dropped. Regulators and valves must be kept free of moisture as most metals are corroded in the presence of moisture. If proper procedures are not followed, it is possible to have a situation as in the aforementioned incident.

## REFERENCES

1. Chlorine <http://en.wikipedia.org/wiki/Chlorine> (downloaded October 22, 2008)
2. MICROMEDEX® Healthcare series Vol. 137
3. Standard Operating Procedure for Chlorine Gas  
[http://www.materials.drexel.edu/safety/SOP/sop\\_chlorine\\_gas.pdf](http://www.materials.drexel.edu/safety/SOP/sop_chlorine_gas.pdf) (downloaded October 23, 2008)

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