

Washtenaw/Livingston MCA, HEMS MCA
System Protocols - Hazardous Materials Medical Response Team
HYDROGEN SULFIDE, SULFIDES AND MERCAPTANS

Initial Date: April 24, 2019
Revised Date: Nov. 5, 2025

Section 11-10

Hydrogen Sulfide, Sulfides and Mercaptans

FORMS: Gas (hydrogen sulfide, methyl & short-chain alkyl mercaptans), liquid (other mercaptans).

ROUTES OF EXPOSURE: Skin and eye contact, inhalation, skin

absorption. SIGNS AND SYMPTOMS:

CNS: Headache, confusion, dizziness, excitement, tiredness and a garlic taste in mouth. Decreased LOC, coma and seizures.

Eye: Chemical conjunctivitis, lacrimation and photophobia.

Cardiovascular: Cardiovascular collapse, tachycardia and arrhythmias.

Respiratory: Irritation of respiratory tract, cough, dyspnea and tachypnea. Respiratory arrest and pulmonary edema may be present.

Gastrointestinal: Nausea, vomiting, hemorrhage, perforation, abdominal pain, painful swallowing, profuse salivation, and burns to the mouth, esophagus, stomach and gastrointestinal tract may occur.

Skin: Dermatitis, sweating and local pain. Cyanosis may be present.

Other: Symptoms may be delayed. The ability to detect the product by smell may be lost after a short exposure time.

Pre-Medical Control

PARAMEDIC

1. Follow **General Hazardous Materials Treatment** protocol.
2. Administer oxygen 10-15 L via non-rebreather mask or BVM.
3. In the symptomatic patient with significant presumed exposure (known chemicals on-scene, on-scene clues such as odor/colored gas, severe and rapid presentation), administer the Cyanokit®.
 - A. The starting dose of hydroxocobalamin for adults is 5 g (i.e., two 2.5g vials OR one 5g vial) administered as an intravenous (IV) infusion over 15 minutes (approximately 15 ml/min), i.e., 7.5 minutes/vial. See charts below for pediatric dosing (70 mg/kg).

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Broselow (Weight)	Age	Cyanokit® Dose (~70 mg/kg) IV/IO	Cyanokit® Volume to Administer² IV/IO
3-5 kg (6-11 lbs)	0-2 months	250 mg	10 mL³
6-7 kg (13-16 lbs)	3-6 months	500 mg	20 mL³
8-9 kg (17-20 lbs)	7-10 months	625 mg	25 mL³
10-11 (21-25 lbs)	11-18 months	750 mg	30 mL³
12-14 kg (26-31 lbs)	19-35 months	900 mg	36 mL³
15-18 kg (32-40 lbs)	3-4 years	1100 mg	44 mL³
19-23 kg (41-51)	5-6 years	1400 mg	56 mL³
24-29 kg (52-64)	7-9 years	1750 mg	70 mL³
30-36 kg (65-79 lbs)	10-14 years	2500 mg	100 mL⁴ (1/2 bottle)
Adult	>14 years	5000 mg	200 mL⁴ (full bottle)

- B. Each vial of hydroxocobalamin for injection is to be reconstituted with diluent (not provided with Cyanokit®) using the supplied sterile transfer spike.
1. The recommended diluent is 0.9% Sodium Chloride injection (0.9% NaCl).
 2. The line on each vial label represents the volume of diluent. Following the addition of diluent to the lyophilized² powder, each vial should be

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repeatedly inverted or rocked, not shaken, for at least 30 seconds for the 2.5g bottles prior to infusion, 60 seconds for the 5g bottles.

3. Hydroxocobalamin solutions should be visually inspected for particulate matter and color prior to administration.
 - a. If the reconstituted solution is not dark red or if particulate matter is seen after the solution has been appropriately mixed, the solution should **not be administered to the patient** and should be discarded.
- C. There are a number of drugs and blood products that are incompatible with Cyanokit®, thus Cyanokit® requires a separate intravenous line for administration.
- D. Depending upon the severity of the poisoning and the clinical response, a second dose of 5 g may be administered by IV infusion for a total dose of 10g in adults. The rate of infusion for the second dose may range from 15 minutes (for patients in extremis) to two hours, as clinically indicated. Contact medical control for second dose instructions for pediatric patients.