



**Disaster and Terrorism Response:
Emergency Preparedness Tools for Pharmacists and
Health-System Pharmacy Departments
FACT SHEET**

CYANIDE

EXAMPLES: Hydrogen cyanide, hydrocyanic acid, prussic acid, potassium cyanide, sodium cyanide, cyanide chloride.

MECHANISM OF ACTION: Cyanide interferes with aerobic metabolism and prevents cells from utilizing oxygen. In essence, cyanide produces cellular suffocation. Exposure can also cause lipid peroxidation in the brain by inhibiting antioxidant enzymes.

CLINICAL EFFECTS: The expression of cyanide toxicity is amount dependent (the greater the amount, the more rapid the onset of clinical effects and patient demise). Patients who sustain highly toxic amounts are less likely to survive than those who are exposed to low or moderate amounts of cyanide. Clinical signs and symptoms may include:

- Flushing
- Tachypnea
- Vomiting
- Tachycardia/bradycardia
- Hypertension/hypotension
- Seizures
- Coma
- Cyanosis
- Odor of almonds on the breath
- Death

TREATMENT: Termination of exposure as quickly as possible, personal protection of the caregiver, immediate decontamination of the victim and supportive care are the cornerstones of initial patient management. A cyanide antidote kit (traditional cyanide antidote kit or hydroxocobalamin) should be used to treat symptomatic patients.

Cyanide Antidote Kit

- **Amyl nitrite**-inhale 30 seconds of every minute while sodium nitrite infusion is being prepared. Do not delay the administration of sodium nitrite.
- **Sodium nitrite**
Children - 0.15-0.33 ml/kg IV (up to 10 ml) over 5-20 minutes
Adults - 300 mg IV over 5-20 minutes
- **Sodium thiosulfate**
Children - 1.65 ml/kg of a 25% solution over at least 10 minutes
Adults - 12.5 gm IV over at least 10 minutes

Hydroxocobalamin

Children - 70mg/kg IV over 15-30 minutes

Adults - 5 gm IV over 15 minutes

A second dose may be administered if needed.

Note for disaster management: The use of the cyanide antidote kit is relatively contraindicated in patients who are suffering from smoke inhalation which will result in carbon monoxide poisoning. **Hydroxocobalamin is not contraindicated and is the preferred antidote to treat patients who are suffering from both cyanide and carbon monoxide poisoning.**

For 24/7 assistance in the emergency management of an actual or suspected chemical terrorism exposure, contact a Certified Regional Poison Information Center at 1-800-222-1222.

Edward P. Krenzelo, PharmD, FAACT, DABAT
Director
Pittsburgh Poison Center
University of Pittsburgh Medical Center
Professor of Pharmacy and Pediatrics
University of Pittsburgh
Information is accurate as of May 2007.

©2007, American Society of Health-System Pharmacists, Inc. All rights reserved.

ASHP is a service mark of the American Society of Health-System Pharmacists, Inc.; registered to the U.S. Patent and Trademark Office,

The information presented herein reflects the opinions of the authors. It should not be interpreted as an official policy of ASHP or as an endorsement of any product.

Because of ongoing research and improvements in technology, the information and its application contained in this fact sheet are constantly evolving and are subject to the professional judgment and interpretation of the practitioner due to the uniqueness of a clinical situation. The authors and the ASHP Research and Education Foundation have made reasonable efforts to ensure the accuracy and appropriateness of the information presented in this document. However, any user of this information is advised that the authors and the ASHP Research and Education Foundation are not responsible for the continued currency of the information, for any errors or omissions, and/or for any consequences arising from the use of the information in the document in any and all practice settings. Any reader of this document is cautioned that the ASHP Research and Education Foundation makes no representation, guarantee or warranty, express or implied as to the accuracy and/or appropriateness of the information contained in this document and specifically disclaims any liability to any party for the accuracy and/or completeness of the material or for any damages arising out of the use or non-use of any of the information contained in this document.