Potassium Cyanide
Sodium Cyanide

Work with cyanide-containing compounds requires special care. The Iowa State University Laboratory Safety Manual has prescriptive requirements for work with chemicals.

KNOW THE HAZARDS OF THE MATERIALS YOU ARE USING.

All research activities at Ames Laboratory require approval by the Safety Review Committee. The procedure used for this approval is **READINESS REVIEW**. Make sure the activity you are working on has been approved via the Readiness Review procedure and that you are authorized to be performing work. Ask your supervisor.

Here are some general recommendations for working with potassium and sodium cyanide:

Personal Protection

Eye Protection: Splash-proof safety goggles.

Gloves: Impervious gloves, latex or polyvinyl chloride (PVC)

Ventilation: Use in a hood with at least 100 fpm face velocity.

Respirator: Contact ESH&A regarding respiratory protection needs.

Clothing: Lab coat and impervious apron if significant splash potential exists.

NIOSH: Recommended Exposure Limit (REL), 10 minute ceiling.

Potassium Cyanide	5 mg/m^3
Sodium Cyanide:	5 mg/m^3

First Aid

If exposure is due to the release of hydrogen cyanide (HCN), immediately leave the area and call 911 for assistance.

If skin contact has been made by cyanide-bearing compounds, immediately flush skin with water for 15 minutes.

Notify your supervisor, ESH&A and/or Occupational Medicine if an exposure has occurred.

Handling Precautions

Avoid heating any cyanide salt to decomposition, as it will release HYDROGEN CYANIDE gas. Hydrogen cyanide is a toxic and flammable gas.

Avoid mixing cyanide salts with the following compounds:

- Acids, release of HCN
- Chlorates, potential explosive
- Nitrates and Nitrites, which are potentially explosive
- Oxidizers have the potential for explosion

Health Effects

Acute toxicity is high; ingestion of NaCN or KCN or exposure to their salts or their aqueous solutions by eye or skin contact can be fatal; exposure to as little as 50-150 milligrams can cause immediate collapse and death.

Symptoms of nonlethal exposure to cyanide include weakness, headache, dizziness, rapid breathing, nausea, and vomiting.

Cyanide salts are corrosive and toxic.

Decomposition products of HCN and nitrogen oxides are extremely hazardous.

LD_{50} (Lethal Dose for 50% of test subjects) is:

KCN, 8.5mg/kg, oral – rat
NaCN, 6.4 mg/kg, oral – rat

Storage/Disposal

Store separately from incompatible chemicals, especially acids and oxidizers.

Store in a cool dry location.

If more than one pound (1 lb.) of a cyanide salt is stored in the same physical location, notify ESH&A.

Spill Remediation

Spills of cyanide salts should be treated very cautiously.

Get assistance with large spills by calling 911 or the ESH&A office (294-2153).

Absorb small liquid spills onto an inert material. **DO NOT ALLOW SPILLED MATERIAL TO COME INTO CONTACT WITH YOUR SKIN.**

Dry spills can be shoveled into a secure container for later disposal. **DO NOT ALLOW SPILLED MATERIAL TO COME INTO CONTACT WITH YOUR SKIN.**

After a spill has occurred, ventilate any closed areas before re-entry.

PHYSICAL PROPERTIES

Potassium Cyanide

Formula: KCN
CAS# 151-50-8
Appearance: Colorless to white granules with a faint odor of bitter almonds.
Solubility: Soluble in glycerol, slightly soluble in methanol.
PH or 0.1N Solution: 11
RCRA: PO98
Shipping Description: UN 1680, Potassium Cyanide, Solid, 6.1, PGI

Sodium Cyanide

Formula: NaCN
CAS#: 143-33-9
Molecular Weight: 49.01
Appearance: Colorless to white granules with a faint odor of bitter almonds.
Solubility: Soluble in glycerol, slightly soluble in methanol.
Specific Gravity: 1.61, water = 1
RCRA: P106

Shipping Description: UN 1689, Sodium Cyanide, Solid, 6.1, PGI

References

Merck Index, 11th ed., Abstracts 4711, 7607, 8458, 8553

Health Care and First Aid in *Hazards In The Chemical Laboratory,* 4th ed., Bretherick, I., Ed., Royal Society of Chemistry, London, England, 1986, p. 132-4.

Handling And Use Of Chemicals in *CRC Handbook of Laboratory Safety,* 3rd., ed., Furr, A.K., Ed., CRC Press, Boca Raton, FL, 1990, p. 299-302.

Prudent Practices for Handling Hazardous Chemicals In Laboratories, National Academy Press, Washington, D.C., 1995, p. 394-395.

DISCLAIMER: This information is not intended to replace the Material Safety Data Sheet (MSDS). Always have access to a current MSDS for each chemical. It is the responsibility of the chemical user to be aware of the associated hazards.

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Handling Of Cyanide Compounds

Potassium Cyanide

Sodium Cyanide

AMES LABORATORY