http://pubchem.ncbi.nlm.nih.gov/

http://toxnet.nlm.nih.gov/cgi-bin/sis/search/r?dbs+hsdb:@term+@rn+@rel+7758-16-9

DISODIUM PYROPHOSPHATE

disodium hydroxy-(hydroxy-oxido-phosphoryl)oxy-oxido-oxo-phosphorane

CASRN: 7758-16-9 - *For other data, click on the Table of Contents*

Human Health Effects: **Skin, Eye and Respiratory Irritations:** An irritant to skin, eyes, and mucous membranes. [Lewis, R.J. Sax's Dangerous Properties of Industrial Materials. 9th ed. Volumes 1-3. New York, NY: Van Nostrand Reinhold, 1996., p. 1426]**PEER REVIEWED**

Life Support:

- This overview assumes that basic life support measures have been instituted.

Clinical Effects:

0.2.1 SUMMARY OF EXPOSURE

0.2.1.1 ACUTE EXPOSURE

A) The most frequently seen effect following ingestion or rectal administration is gastrointestinal irritation. If a significant amount of phosphate is absorbed, hyperphosphatemia, hypocalcemia and hypomagnesemia may occur.

B) Fluid and electrolyte abnormalities have been reported

following exposure by oral, rectal, and intravenous routes.

C) Severe hyperphosphatemia and hypocalcemia may result in tetany, seizures, bradycardia, prolonged QT interval, dysrhythmias, coma, and cardiac arrest. Severe dehydration, hypernatremia, hypotension, metabolic acidosis and tachycardia may also develop.

D) The elderly, young children, and patients with renal insufficiency are at increased risk of toxicity.

0.2.3 VITAL SIGNS

0.2.5 CARDIOVASCULAR

0.2.5.1 ACUTE EXPOSURE

A) Tachycardia, bradycardia, heart block, EKG changes, and cardiac arrest have been reported secondary to electrolyte abnormalities.

B) Excessive absorption of sodium may aggravate congestive heart failure.

C) Hypotension secondary to dehydration may occur.

0.2.6 RESPIRATORY

0.2.6.1 ACUTE EXPOSURE

A) Hyperventilation may occur secondary to hypocalcemia.

0.2.7 NEUROLOGIC

0.2.7.1 ACUTE EXPOSURE

A) Coma, seizures, and tetany have been reported secondary to electrolyte abnormalities.

0.2.8 GASTROINTESTINAL

0.2.8.1 ACUTE EXPOSURE

A) Nausea, vomiting, abdominal pain, and diarrhea are common, leading to dehydration.

0.2.10 GENITOURINARY

0.2.10.1 ACUTE EXPOSURE

A) A mild diuresis may be noted following excessive absorption of these compounds.

B) Acute renal failure in association with electrolyte imbalances was reported following therapeutic oral administration of a phosphosoda solution.

0.2.11 ACID-BASE

0.2.11.1 ACUTE EXPOSURE

A) Metabolic acidosis is a frequent occurrence following administration of hypertonic phosphate enema solutions.

0.2.12 FLUID-ELECTROLYTE

0.2.12.1 ACUTE EXPOSURE

A) Hyperphosphatemia, hypocalcemia, and tetany have occurred following overdosage with a phosphate-containing laxative and following recommended doses in patients with renal insufficiency.

B) Fluid and electrolyte abnormalities (dehydration and hypokalemia) may be noted secondary to excessive diarrhea.

0.2.15 MUSCULOSKELETAL

0.2.15.1 ACUTE EXPOSURE

A) Carpopedal spasm is a common presenting sign in inorganic phosphate poisoning and associated hypocalcemia.

0.2.20 REPRODUCTIVE HAZARDS

A) At the time of this review, no data were available to assess the potential effects of exposure to this agent during pregnancy or lactation.

Laboratory:

A) Monitor fluid and electrolyte status, including serum phosphate, calcium, potassium, sodium and magnesium concentrations.

B) Obtain an ECG and institute continuous cardiac monitoring.

Treatment Overview:

0.4.2 ORAL EXPOSURE

A) EMESIS: Ipecac-induced emesis is not recommended because of the potential for CNS depression, seizures and cardiovascular instability.

B) GASTRIC LAVAGE: Consider after ingestion of a potentially life-threatening amount of poison if it can be performed soon after ingestion (generally within 1 hour). Protect airway by placement in Trendelenburg and left lateral decubitus position or by endotracheal

intubation. Control any seizures first.

1) CONTRAINDICATIONS: Loss of airway protective reflexes or decreased level of consciousness in unintubated patients; following ingestion of corrosives; hydrocarbons (high aspiration potential); patients at risk of hemorrhage or gastrointestinal perforation; and trivial or non-toxic ingestion.

C) Hydrate with 0.9% of 0.45% saline as clinically indicated. Correct hypocalcemia, hypomagnesemia, hypernatremia, and hyper or hypokalemia. Monitor urine output.

D) CONGESTIVE HEART FAILURE patients with an excessive sodium load and normal renal function may be managed with a diuretic such as furosemide (1 mg/kg IV to a maximum of 40 mg).

E) SEIZURES: Administer a benzodiazepine IV; DIAZEPAM (ADULT: 5 to 10 mg, repeat every 10 to 15 min as needed. CHILD: 0.2 to 0.5 mg/kg, repeat every 5 min as needed) or LORAZEPAM (ADULT: 2 to 4 mg; CHILD: 0.05 to 0.1 mg/kg).

1) Consider phenobarbital or propofol if seizures recur after diazepam 30 mg (adults) or 10 mg (children > 5 years).

2) Monitor for hypotension, dysrhythmias, respiratory depression, and need for endotracheal intubation. Evaluate for hypoglycemia, electrolyte disturbances, hypoxia.

F) HYPOTENSION: Infuse 10 to 20 mL/kg isotonic fluid. If hypotension persists, administer dopamine (5 to 20 mcg/kg/min) or norepinephrine (ADULT: begin infusion at 0.5 to 1 mcg/min; CHILD: begin infusion at 0.1 mcg/kg/min); titrate to desired response.

G) ATROPINE: ADULT DOSE: BRADYCARDIA: 0.5 to 1 mg IV every 5 min. ASYSTOLE: 1 mg IV every 5 min. Maximum total dose 3 mg or 0.04 mg/kg. Minimum single dose 0.5 mg. PEDIATRIC DOSE: 0.02 mg/kg IV repeat every 5 min, minimum single dose 0.1 mg; maximum single dose child

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Emergency Medical Treatment: Emergency Medical Treatment: