

# Fertilizers

Spring is the time of year when fertilizers are used extensively in both the residential setting and the agricultural setting. In general, the liquid and granular fertilizers used in the residential setting have low degree of toxicity. Mild irritation is expected with exposure to these types of fertilizers. Farmers typically use anhydrous ammonia as a fertilizer. Anhydrous ammonia is extremely caustic, causing burns to the skin and mucous membranes.

Fertilizers contain three primary elements. They are nitrogen (N), phosphorous (P) and potassium (K). They are usually represented on the package as a percentage of their weight i.e. 10-8-6 meaning 10% of N, 8% of P and 6% of K. Formulation percentages vary depending on intended use and desired effects. Fertilizers may contain other components such as herbicides, insecticides and other additives. Toxicity potential and management will be determined by the individual added components. Also, some fertilizers may contain iron, copper and zinc. Toxicity may develop from these ingredients if enough of the non-chelated forms are ingested.

Mild irritation of oral or nasal mucous membranes may occur with exposure to fertilizers. Mild ocular irritation is to be expected also. Cardiac arrest has been reported in animals exposed to ammonium sulfate. Ammonium sulfate has caused seizures and metabolic acidosis in controlled rabbit studies. Methemoglobinemia may occur in children less than 1 year old due to the conversion of nitrates to nitrites by bacterial flora in the intestine.

Minor oral exposure to fertilizers, such as hands to mouth, can be treated by simple dilution with water or milk: then observing for oral and/or GI irritation. Use of gastric lavage and/or activated charcoal may be considered in large or intentional ingestions. If methemoglobinemia does occur, methylene blue at 1-2mg/kg of a 1% solution should be used. Remember that some of these fertilizers may contain insecticides and herbicides. Use specific management recommendations for these ingredients. Inhalation exposure requires moving the patient to fresh air and monitor for respiratory distress. If coughing or difficulty in breathing develop, evaluate extent. Administer oxygen and assist ventilation with use of beta-2 agonists or corticosteroids aerosols as needed. Irrigate exposed eye with copious amounts of tepid water or normal saline, if available. If corneal damage has occurred, treat appropriately with antimicrobial and/or anti-inflammatory ocular medications. Remove contaminated clothing and irrigate all exposed dermal areas with soap and water. If second or third degree burns develop (significantly more likely with use of anhydrous ammonia), treat appropriately.

If you have any questions regarding exposure to and treatment for fertilizers, please contact the Poison Center at **1-800-222-1222**.... twenty-four hours a day seven days a week.