

## Fosamine Ammonium

Manufactured by Dupont, fosamine ammonium (Krenite™) has been registered by EPA since 1979 for non-crop uses and conifer release applications in forestry. It is a post-emergent pesticide used for the control of woody plants. One formulation contains a surfactant (Ren-nex 31™ or poly-oxyethylene tridecyl ether) to aid plant leaf absorption of the pesticide, and another product formulation label also recommends the addition of a surfactant.

Since Krenite™ is not registered for use on cropland, EPA does not require the manufacturer to perform or submit carcinogenicity bioassays or other chronic health effects data, prior to registration, consequently no information is available on these crucial points. However, in 1984, EPA issued a data call-in for environmental fate and potential for groundwater contamination data, as well as for limited chronic toxicity data.

In general, the acute toxicity of Krenite™ has been found to be quite low for mammals, birds, fish, bees, aquatic invertebrates, etc. Oral and dermal LD50's in animal tests are all in the gram/kg range. Of several mutagenicity assays submitted to EPA

for review, only one, a test in cultured Chinese Hamster Ovary cells, showed chromosomal aberrations. Researchers have found that low concentrations of fosamine ammonium sprayed on chicken and quail eggs induced dose-dependent skeletal abnormalities in the embryos. A

stable, with only 3% degraded after 4 weeks.

In a recent Final Environmental Impact Statement, the Region 6 Forest Service concluded that they would not use fosamine ammonium in their programs because the data, where they existed, were of such poor quality that they were unable to adequately quantify its risks.

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### *chemicalWATCH* Stats:

**CAS Registry Number:** 25954-13-6

**Chemical Class:** Organophosphonate subclass of organophosphate

**Use:** Brush control agent, plant growth regulator.

**Toxicity rating:** Slightly toxic

**Signal Words:** Caution

**Health Effects:** Fosamine ammonium may cause eye irritation, blurring in vision, nausea and headaches.

**Environmental Effects:** Fosamine ammonium is not very persistent and degrades rapidly in most soils.

rat study for birth defects was negative.

The major metabolite of Krenite™ is carbamoyl phosphoric acid (CPA). Animals typically excrete both unchanged fosamine ammonium and CPA in urine and feces within 72 hours of exposure.

Limited information on environmental fate is available. Fosamine ammonium is highly water-soluble and shows no tendency to bioaccumulate, and CPA is readily susceptible to microbial degradation. Half-lives in soil depend on the soil clay content and the availability of microbes, but in most cases range from 1 week to 10 days. In water, degradation depends on pH, proceeding more rapidly under acidic conditions (pH<7.0). Still, at pH 7 fosamine ammonium was very

### **UPDATE: September 2007**

In August 1994, DuPont requested the voluntary cancellation of direct applications to water, ditchbanks, and to other sites that are adjacent to and surrounding domestic water, supply reservoirs, supply streams, lakes and ponds (aquatic uses). By December 1994, the EPA signed the Reregistration Eligibility Decision (RED) for fosamine ammonium.

Studies showed no clinical signs of acute delayed neurotoxicity in hens at doses of 2000 mg/kg/

day. Possible neurotoxic effects were observed in rats, but not statistically significant at 1000 and 2000 mg/kg. There is sufficient evidence to characterize the potential subchronic toxicity from mammalian oral exposure to the pesticide, based on dogs and rat studies. Fosamine ammonium has been placed in toxicity category IV for acute oral and inhalation toxicity, and category II for acute dermal toxicity. There are no registered food uses for fosamine ammonium, and no dietary exposure is expected.

Major degradates of fosamine ammonium are carbamoylphosphonic acid (CPA), carboxylphosphonic acid (ING-3003), and carbon dioxide (CO<sub>2</sub>). However, no definitive environmental fate data are available for CPA or ING-3003. Fosamine ammonium is stable to hydrolysis and photodegradation in air, water and soil. It also has a low probability to impact ground-water quality.

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