

B.Sc. III Year (Theory)
Semester –VI
Paper XX (C)
Microbiology and Disease Management

Unit-2

Disease management:
2. Control methods

e. Rhodenticides – Zinc Phosphoid

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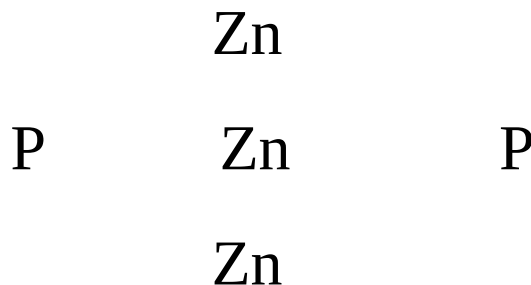
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RHODENTICIDE

Zinc phosphide:

It is rhodenticide. Its chemical group is inorganic phosphide.

Empirical formula is Zn_3P_2



A rhodenticide of high mammalian toxicity in the presence of dilute acid will decompose to liberate phosphine. It is a grey powder of high melting point which sublimes when heated in the absence of oxygen. Practically it is insoluble in water and ethanol. It is soluble in benzene and carbon disulphide. It is soluble when dry but decompose slowly in moist air.

What is zinc phosphide?

Zinc phosphide is an inorganic compound that combines phosphorus with zinc. It is used in rodenticide baits. When an animal eats the bait, the acid in the animal's stomach turns the zinc phosphide into phosphine.

Phosphine is a very toxic gas. Phosphine is also released by aluminum phosphide and magnesium phosphide. These are used as fumigants in stored grain.

Zinc phosphide has been registered for use in pesticide products in the United States since 1947.

What are some products that contain zinc phosphide?

Zinc phosphide is only used as a rodenticide. It is made into bait that will attract the pest, such as gophers, ground squirrels, or field mice. There are over 80 products containing zinc phosphide registered for use in the United States.

Always follow label instructions and take steps to avoid exposure. If any exposures occur, be sure to follow the First Aid instructions on the product label carefully. For additional treatment advice, contact the Poison Control Center at 1-800-222-1222. If you wish to discuss a pesticide problem, please call 1-800-858-7378.

How does zinc phosphide work?

When zinc phosphide is eaten by either an animal or a person, stomach acid causes it to release the toxic gas phosphine. Baits containing zinc phosphide are especially dangerous to animals that cannot vomit, such as rats, mice, and rabbits.

The phosphine in the stomach then crosses into the body's cells, and stops the cells from producing energy. This causes the cells to die. Zinc phosphide affects all cells, but targets cells in the heart, lungs, and liver.



It reacts violently with acids with decomposition to the spontaneously inflammable phosphine gas. Vapour pressure is very low. Phosphine odour detectable at 1.5-3.0 ml/m³ depending on its purity. Mice, rats, ship rats, field mice, gophers, ground squirrels, prairie dogs mainly controlled. Under exposed conditions toxicity is lost in about two weeks. Its mode of action is probably decomposes phosphine in the stomach and is absorbed both as phosphine and phosphide. It has toxic action on the heart, liver and kidneys.

Death occurs from heart and kidney failure. After massive dose, death may occur in 70 minutes, with smaller doses, death may be delayed from 24 hours up to 2-3 days. A dose of 5 gm has caused death to man. It is very toxic substance. Keep dry and away from acids of all kinds.

Thank You