

What is zinc sulfate?

Zinc sulfate is a combination of sulfur and zinc. It is an [herbicide](#) typically used for moss control. The toxicity of zinc sulfate depends on the amount of zinc in the product. Zinc is an essential mineral for human, animal, and plant nutrition. Zinc can be found naturally in the environment, foods, and water.

Products that contain zinc have been registered for use in pesticide products in the United States since 1973.



What are some products that contain zinc sulfate?

[Products](#) containing zinc sulfate can be granular, pelleted, tableted, wettable powders, or dusts. Currently there are nine products containing zinc sulfate 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 sulfate work?

Zinc binds to proteins or organic acids in plants. In high concentrations, it affects the growth of moss and other plants, and damages the cells causing them to turn yellow.



How might I be exposed to zinc sulfate?

You can be exposed if you are applying zinc sulfate and you get it on your skin, breathe it in, or accidentally eat a product. This can also happen if you get some on your hands and eat or smoke without washing your hands first. You can [limit your exposure](#) to zinc sulfate by following all label instructions carefully.

NPIC General Fact Sheets are designed to provide scientific information to the general public. This document is intended to promote informed decision-making. Please refer to the Technical Fact Sheet for more information.

What are some signs and symptoms from a brief exposure to zinc sulfate?

Our body needs zinc for its normal functions, but eating too much zinc sulfate can lead to nausea, metallic taste, stomach ache, vomiting, and bloody diarrhea. Breathing in zinc sulfate can irritate the respiratory tract, cause nausea, vomiting, stomach ache, dizziness, depression, metallic taste in the mouth, and death. Exposure by skin contact can damage the skin leading to ulcers, blisters and scarring. Zinc sulfate can cause severe eye irritation, resulting in redness and pain.

Zinc is also an essential nutrient for animals. Much like humans, however, too much zinc can cause vomiting, diarrhea, lack of appetite, depression, yellow coloration of the skin, increased heart rate, bloody urine, and alterations of blood chemistry. See the fact sheet on [Pets and Pesticide Use](#) for more information.



What happens to zinc sulfate when it enters the body?

Zinc is an essential element and it is required to support the normal function of the human body. Our body adjusts its internal environment to keep zinc levels steady. The zinc in zinc sulfate enters into the body if ingested, inhaled or by skin contact and enters the bloodstream. Once inside, zinc moves throughout the body, binds to proteins, and enters different organs.

Zinc can be found in the bone, brain, heart, intestine, liver, kidney, lungs, muscle, pancreas, prostate, skin, and stomach. Excess zinc is mainly eliminated in the feces; it can be excreted in the urine, sweat, and skin.

Is zinc sulfate likely to contribute to the development of cancer?

Cancer studies in animals exposed to zinc sulfate have resulted in different findings. One study in rats resulted in cancer, in contrast to a study in mice with no evidence of cancer. The U.S. Environmental Protection Agency concluded that there is not enough information to determine whether or not zinc sulfate can cause cancer in humans.

Has anyone studied non-cancer effects from long-term exposure to zinc sulfate?

Scientists studied long-term exposure to zinc sulfate in rats and found no adverse health effects. A study in dogs fed zinc sulfate resulted in changes of the blood chemistry. In one study miscarriages were found when pregnant rats were fed zinc sulfate throughout their pregnancies. In other studies, mice, rats, and hamsters were given zinc sulfate during pregnancy and no effects were found.

When people eat too much zinc over a long period of time, it can affect the stomach and intestine, the respiratory system, and the pancreas. It can also interfere with the correct balance of other essential minerals like copper, iron and magnesium. This can cause nutritional deficiencies, and harm the chemical balance between good and bad cholesterol.

Are children more sensitive to zinc sulfate than adults ?

While, [children may be especially sensitive to pesticides](#) compared to adults, there are currently no studies showing that children have increased sensitivity specifically to zinc sulfate.

What happens to zinc sulfate in the environment ?

Zinc naturally occurs in the environment. It can be found in animals, plants, and [soil](#). Zinc may come from natural sources, pesticides, or human activities such as farming, and the production of batteries, animal feed, and metals. Zinc is also used as a food additive.

Zinc sulfate is an inorganic salt that dissolves in water to form zinc ions. The formation of zinc ions depends on water pH and the presence of agents that can bind and capture zinc. Solubility makes zinc available to plants and other organisms in soil; that availability depends on soil pH. Zinc in the environment is considered immobile because different substances bind to it.



Can zinc sulfate affect birds, fish, or other wildlife ?

Zinc salts are slightly toxic or practically non-toxic to [birds](#) and highly toxic to [freshwater fish](#) and [invertebrates](#). No data were available on toxicity to bees. Bees and other pollinators are not likely to be harmed because they do not eat much plant material.

Where can I get more information ?

For more detailed information about zinc sulfate please visit the list of [referenced resources](#) or call the National Pesticide Information Center, between 8:00 AM and 12:00 PM Pacific Time (11:00 AM to 3:00 PM Eastern Time), Monday - Friday, at 1-800-858-7378 or visit us on the web at <http://npic.orst.edu>. NPIC provides objective, science-based answers to questions about pesticides.

Date Reviewed: June 2012

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