

Toxins Encyclopedia Article

Toxins

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Contents

Toxins Encyclopedia Article.....	1
Contents.....	2
Toxins.....	3



Toxins

Toxins are **chemicals** or physical agents that exert a toxic effect on living organisms. Toxic means poisonous: that is, causing a reaction with cellular components that disrupts essential metabolic processes. At some level of exposure, all chemicals, whether natural or synthetic, are toxic. All can either cause death or damaging effects soon after exposure, or can cause some other disease (such as **cancer** or **birth defects**) after longer-term exposure.

Although many people think toxins are mainly pesticides or industrial chemicals, they also include the poisons of marine animals, spiders, snakes, plants, and the extremely toxic botulinum toxins that can kill a human being with a single minuscule dose. Toxins can exert their effects on many different organs. The nervous system, the brain, the lungs, the skin, and the eyes are only some of the organs that can be damaged by toxins. Toxicologists use reports, **epidemiology**, and laboratory studies to characterize both the lethal doses of toxins and the doses of certain chemicals that can cause disease over the long term. Environmental laws regulate exposures to certain human-made toxins.