

POISON CHEMISTRY - WHITE ARSENIC

Arsenic is a notorious poison; colourless, odourless white arsenic was a popular choice for poisoners, and was commonly known as 'The King of Poisons'.

HISTORY



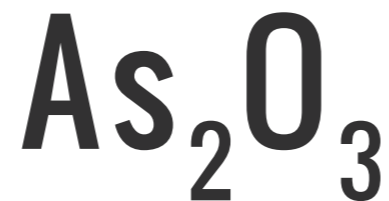
White arsenic has been known for centuries. In Ancient Rome, Nero's supposed use of it to poison his brother & become emperor is one of the first documented cases.



In the 17th & 18th centuries, white arsenic's use as a poison was widespread, and earned it the nickname 'inheritance powder'. However, its usage as a poison rapidly declined after the development of chemical tests.



Around 50,000 tonnes of arsenic trioxide are still produced annually, and used as a precursor to a range of compounds. It's also been used as a treatment for some leukaemias.

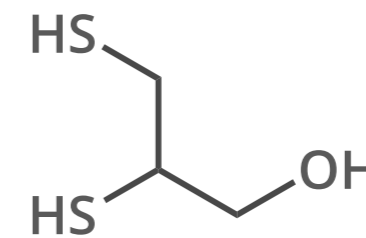


ARSENIC (III) OXIDE

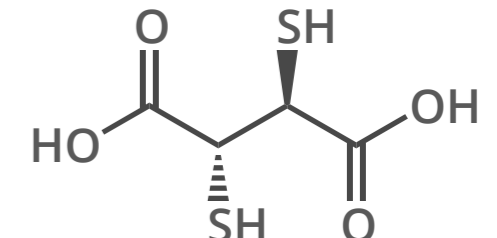


MEDIAN LETHAL DOSE: 15.1mg/kg

TREATMENT



DIMERCAPROL



DIMERCAPTOSUCCINIC ACID

Chelating agents, such as the above compounds, bind the arsenic ions and prevent them from inhibiting enzymes. However, chelation therapy itself can have side effects. Dimercaprol has been largely superseded by 2,3-dimercapto-1-propanesulfonic acid.

EFFECTS



HEADACHE



DISCOLOURATION OF NAILS



VOMITING & METALLIC TASTE



BREATH SMELLS OF GARLIC



STOMACH PAIN & DIARRHOEA



HAIR LOSS



CONVULSIONS

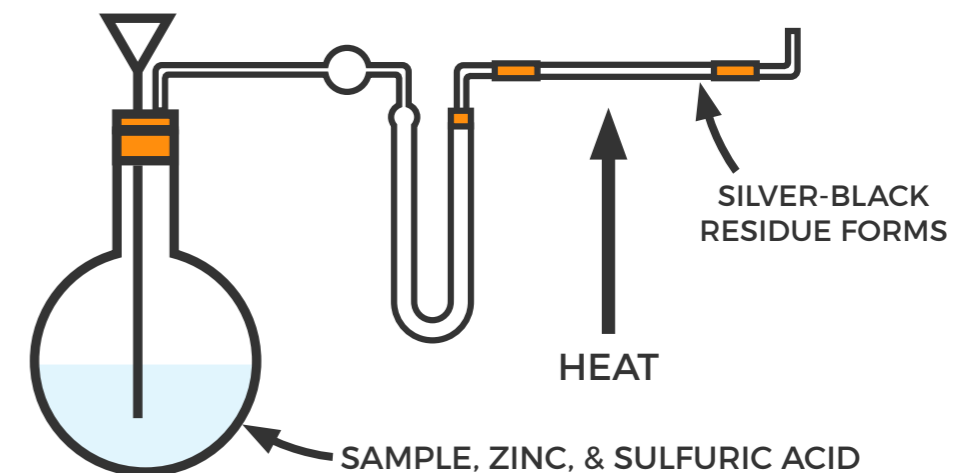


CONVULSIONS, COMA & DEATH

Symptoms usually appear around 30 minutes after ingestion. Arsenic interferes with cell enzymes, respiration and mitosis. The skin, lungs, kidneys and liver are the major organs affected, with death occurring either from circulatory inefficiency, or liver or kidney failure.



DETECTION



The Marsh Test involves reaction of a sample with zinc and acid. If arsenic is present, it is converted to arsine gas. Heating arsine decomposes it; a silver-black deposit of arsenic is formed on cooling. Modern spectroscopic methods are now used instead of this test.

