Benzene Encyclopedia Article

Benzene

The following sections of this BookRags Literature Study Guide is offprint from Gale's For Students Series: Presenting Analysis, Context, and Criticism on Commonly Studied Works: Introduction, Author Biography, Plot Summary, Characters, Themes, Style, Historical Context, Critical Overview, Criticism and Critical Essays, Media Adaptations, Topics for Further Study, Compare & Contrast, What Do I Read Next?, For Further Study, and Sources.

(c)1998-2002; (c)2002 by Gale. Gale is an imprint of The Gale Group, Inc., a division of Thomson Learning, Inc. Gale and Design and Thomson Learning are trademarks used herein under license.

The following sections, if they exist, are offprint from Beacham's Encyclopedia of Popular Fiction: "Social Concerns", "Thematic Overview", "Techniques", "Literary Precedents", "Key Questions", "Related Titles", "Adaptations", "Related Web Sites". (c)1994-2005, by Walton Beacham.

The following sections, if they exist, are offprint from Beacham's Guide to Literature for Young Adults: "About the Author", "Overview", "Setting", "Literary Qualities", "Social Sensitivity", "Topics for Discussion", "Ideas for Reports and Papers". (c)1994-2005, by Walton Beacham.

All other sections in this Literature Study Guide are owned and copyrighted by BookRags, Inc.

Contents

Benzene Encyclopedia Article.....1

Contents.....2

Benzene.....3

Benzene

Benzene (C_6H_6) is a compound that is widely used in the manufacture of a vast variety of items, including pharmaceuticals, varnishes, dyes, floor coverings, plastics, and artificial leather. Found in coal tar and petroleum, benzene is an excellent solvent for numerous organic and inorganic compounds such as oils, fats, resins, phosphorus, sulfur, and halides. Michael Faraday made his greatest contribution in chemistry when he isolated benzene in 1825, but its chemical structure remained a mystery for forty years. In 1865 German chemist Friedrich Kekulé suggested benzene was a planar hexagon, whose six carbon atoms were joined by alternating single and double bonds. In 1899 German chemist Johannes Thiele suggested that the bonds between carbon atoms exhibit resonance. In other words, each bond oscillated between being a double and a single bond.

Modern chemists consider benzene to have six identical carbon-carbon bonds, each intermediate between a single and a double bond; the carbon electrons are not localized and exist as a cloud around the molecule. There was not universal agreement in this concept; in the 1980s some chemists questioned this theory and suggested that von Stradonitz's original idea was more in keeping with the bonding energy which had been observed in benzene. Benzene's hexagonal ring structure is of considerable importance because it is the basis for most of the class of chemicals known as aromatic compounds.

A clear, colorless, highly flammable liquid, benzene produces severe, potentially fatal, irritation of the mucous membrane if inhaled. If absorbed through the skin, it can cause leukemia and other cancers. A 1997 report from the Chinese Academy of Medicine and the US National Cancer Institute links exposure to benzene to haemotological neoplasms, specifically, non-lymphatic leukemia and meylodyplastic syndromes, as well as non-Hodgkin lymphoma.