Carbon Tetrachloride Encyclopedia Article

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Carbon Tetrachloride

Carbon tetrachloride (CCl_4) is a clear, colorless, nonflammable liquid composed of one carbon atom and four chlorine atoms. It has historically been used as a solvent but in recent years concerns over its negative effects on health and the environment have led to severe curtailing of its production.

Carbon tetrachloride was discovered in 1839 by German-born French chemist Henri Victor Regnault (1810-1878). Regnault, who developed vinyl chloride and several other important industrial compounds while studying the action of chlorine on ethers, prepared carbon tetrachloride for the first time by chlorinating chloroform. During the late 1800s, a process was developed for manufacturing carbon tetrachloride by chlorinating carbon disulfide (CS_2). Large-scale production of the chemical began in the early 1900s, and the process is still in use today.

Before the negative effects of carbon tetrachloride were widely recognized it was used as a common industrial chemical. Because it dissolves grease quite effectively, the fluid was once widely used for dry-cleaning clothes and removing spots from fabrics. The compound has also been used in fire extinguishers. It was discovered however, that its fumes are toxic and prolonged exposure to the chemical can cause death. Therefore, today other chemicals have replaced carbon tetrachloride in many applications, and one of its few remaining uses--in the manufacture of chlorofluorocarbons (CFCs)--is gradually being phased out. In fact, a 1996 study reported that carbon tetrachloride is virtually nonexistent in the U.S. because of the elimination of CFCs 11 and 12.