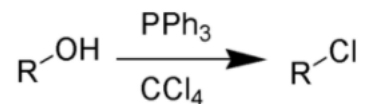


What solvent was restricted under Montreal Protocol?

**CCl<sub>4</sub> (carbon tetrachloride)**

Carbon tetrachloride was first synthesized from reacting chlorine with chloroform, but was later more commonly produced from methane. It was used as a solvent in a variety of reactions because of it can dissolve a wide range of non-polar organic compounds. One of the major applications is the well-known Appel reaction:



In addition, carbon tetrachloride was also commonly used in refrigerants, cleaning products, pesticides and dry-cleaning agents.

However, carbon tetrachloride is highly toxic and is one of the most potent hepatotoxins and carcinogens. It can also cause localized cellular injury via a free-radical mechanism, which can further lead to liver and kidney damage, central nervous system damage and prolonged exposure can cause coma and death.

Due to its high toxicity and ozone depleting potential, carbon tetrachloride was listed as one of the restricted chemicals under Montreal Protocol in 1987. From then on, it has been phased out in most of the places around the world.

Useful links:

<https://www.nap.edu/read/4795/chapter/20>

<https://www.epa.gov/ozone-layer-protection/ozone-depleting-substances>