

Half-Life Encyclopedia Article

Half-Life

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Contents

Half-Life Encyclopedia Article.....	1
Contents.....	2
Half-Life.....	3

Half-Life

A term primarily used to describe the physical half-life, how **radioactive decay** processes cause unstable atoms to be transformed into another element, but can also refer to the biological half-life of substances that are not radioactive.

Specifically, the physical half-life is the time required for half of a given initial quantity to disappear (or be converted into something else). This description is useful because radioactive decay proceeds in such a way that a fixed percentage of the atoms present are transmuted during a given period of time (a second, a minute, a day, a year). This means that many atoms are removed from the population when the total number present is high, but the number removed per unit of time decreases quickly as the total number falls.

For all practical purposes, the number of radioactive atoms in a population never reaches zero because decay affects only a fraction of the number present. Some infinitesimal number will still be present even after an infinite number of half-lives because with each time period half of what was present before decays and is lost from the sample. Therefore, determining the point at which half of the original number disappears (the half-life) is usually the most accurate way of describing this process.

See Also

Radioactivity