

## Astatine - At

### Chemical properties of astatine - Health effects of astatine - Environmental effects of astatine

Atomic number	85
Atomic mass	(210) g.mol <sup>-1</sup>
Electronegativity according to Pauling	2.2
Density	unknown
Melting point	302 °C
Boiling point	337 °C (estimation)
Vanderwaals radius	unknown
Ionic radius	unknown
Isotopes	7
Electronic shell	[ Xe ] 4f14 5d10 6s2 6p5
Energy of first ionisation	(926) kJ.mol <sup>-1</sup>
Discovered by	D.R. Corson 1940



## Astatine

Astatine is a highly radioactive element and it is the heaviest known halogen. Its chemical properties are believed to be similar to those of iodine. It has been little researched because all its isotopes have short half-lives. All that is known about the element has been estimated from knowing its position in the periodic table below iodine and by studying its chemistry in extreme diluted solutions.

### *Applications*

Astatine is never encountered outside nuclear facilities or research laboratories.

### *Astatine in the environment*

Total world production of astatine to date is estimated to be less than a millionth of a gram, and virtually all of this has now decayed away.

## Health effects of astatine

The total amount of astatine in the earth's crust at any particular time is less than 30 grams and only a few micrograms have ever been artificially produced. This, together with its short lifetime, leaves no reason for considering the effects of astatine on human health.

Astatine is studied in a few nuclear research laboratories where its high radioactivity requires special handling techniques and precautions.

Astatine is a halogen and possibly accumulates in the thyroid like iodine. From a chemical point of view, one can speculate that its toxicity would mimic that of iodine.

## Environmental effects of astatine

Astatine does not occur to any significant extent in the biosphere and so normally never presents a risk.