Everday Chemicals: Aluminium Chlorohydrate

Aluminium chlorohydrate is an inorganic polymer, with the general formula $\text{Al}_n\text{Cl}_{3n-m}(\text{OH})_m$. It is synthetically produced from other aluminium compounds, and is a common active ingredient in anti-perspirants, along with other aluminium-containing compounds. It also finds applications in water treatment.

**Antiperspirants**

Aluminium chlorohydrate is the active ingredient in many anti-perspirants, used at a concentration of 10-25%. The exact manner in which it helps prevent perspiration has been debated, but it is now generally accepted that it forms a gelatinous aluminium hydroxide-protein gel, which acts to obstrue the sweat glands.

**Safety**

There is no scientific evidence that aluminium compounds in anti-perspirants can cause cancer, despite claims to the contrary. Research shows that only 0.012% of aluminium contained in anti-perspirants is absorbed through the skin. This is less than would be expected to be absorbed from food during the same time.

**Other Alternatives**

A range of similar aluminium-containing compounds can also be found in antiperspirants, and act to prevent perspiration in a similar manner. Generally, they are either types of aluminium chlorohydrates, or aluminium zirconium chlorohydrates. Aluminium zirconium chlorohydrates are thought to be more effective.

**Water & Waste Management**

Aluminium chlorohydrate is also commonly used in water and waste management processes to help remove dissolved organic matter and small particles of impurities. It acts as what is known as a ‘flocculating agent’, causing particles to lump together so they can then be removed from water.