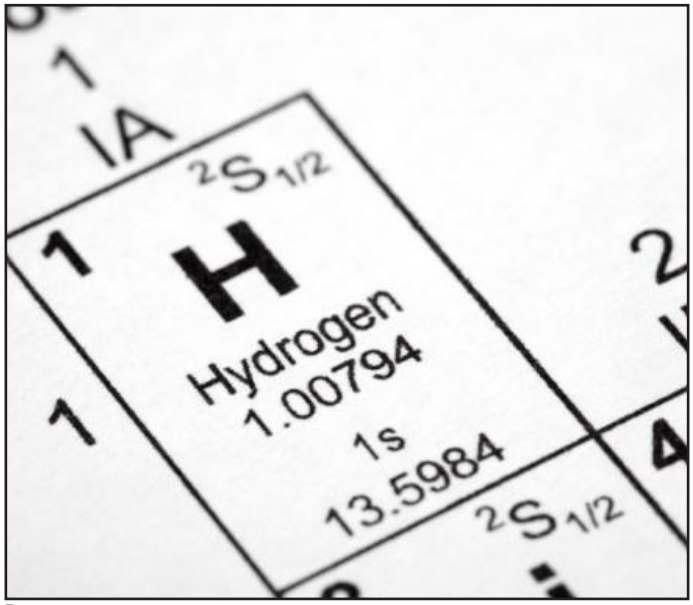
# Foreword

## Scientific illiteracy

Chemistry is the basic science that enables us to understand biological phenomena. Life, including environment, infra and supra individual live organisms from microbes to giant mammals is driven by chemical processes. Therefore life sciences are dedicated to the knowledge of principles to make our life better and easier, also to learn the means and the ways of influencing natural processes in favour of enhancing environmental quality, to produce food and feed, to create and use advanced materials as well as to save our lives by improved medical and pharmaceutical patterns. Consequently chemistry should be reasonably a part of public literacy at least on a rudimentary level. Regrettably the case is much different. Scientific illiteracy, and the growth and spreading of pseudoscience and false philosophies degrade the knowledge of the society.



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Recently I had a conversation with a high rank government official who had rather strong belief and an irrevocable opinion blaming nitrogen to be a poisonous chemical substance. For my greatest surprise I was the first person to inform her that nitrogen is an essential macro element for any live organism, and the fact, that some 78 per cent of the atmosphere is made of this material. After this meeting I had a feeling that there must be some problems with our education system.

Hundred years ago uneducated cleansing women had sufficient knowledge on basic household chemicals, their effect and possible interactions. The use of acids and alkaline substances was an everyday practice with no major problems in general. According to press information eight toilettes were blown up by mixing non appropriate doses of bleaches and acids, and two swimming pools had to be closed temporarily for developing chlorine gas in one single year only in our country.

However the case is more serious than meeting people with less information on chemical processes. Today there are worldwide movements of rather aggressive nature to propagate pseudoscientific theses and to influence – sometimes violently – the society to accept their superstitious ideas. Quite frequently they reach the level of politics and turn to be active participants in the processes of decision making.

The story of dihydrogen monoxide is a good example for highlighting the system of manipulating the public with arguments of no scientific value as well as making attempts to influence politics. First in 1997 activists circulated protesting charts that were undersigned by twenty eight thousand citizens in favour of influencing the government to ban dihydrogen monoxide – the invisible killer! All facts written were true concerning this molecule. These are as follows: "Dihydrogen monoxide is colourless, odourless, tasteless, and kills uncounted thousands of people every year. Most of these deaths are caused by accidental inhalation, but the dangers of dihydrogen monoxide do not end there. Prolonged exposure to its solid form causes severe tissue damage. Symptoms of dihydrogen monoxide ingestion can include excessive sweating and urination, and possibly a bloated feeling, nausea, vomiting and body electrolyte imbalance. For those who have become dependent, dihydrogen monoxide withdrawal means certain death. Dihydrogen monoxide is also known as hydric acid, and is the major component of acid rain. It contributes to the *Greenhouse Effect*. It may cause severe burns. It contributes to the erosion of our natural landscape. It accelerates corrosion and rusting of many metals. It may cause electrical failures and decreased effectiveness of automobile brakes. It has been found in excised tumours of terminal cancer patients". Thanks to God, governments did not respond in this case and did not ban the use of water. But they do regularly in many other – almost similar – cases.

What can we do? There is quite a lot to do. Lack of knowledge can only be treated by education, dissemination of information, convincing the public and in general by teaching the young generation. A scientific paper has a double task in this process. We have to encourage scientists to publish their research results, and on the other hand any journal has a responsibility in providing a bridge between authors and readers.

*Márton Jolánkai*