

# IUPAC Provisional Recommendations

## Glossary of Terms Used in Neurotoxicology

The primary objective of this Glossary of Terms Used in Neurotoxicology is to provide clear definitions to readers who contribute to studies relevant to neurotoxicology, or must interpret them, but are not themselves neurotoxicologists, neuroscientists or physicians. This applies especially to chemists who need to understand the literature of neurotoxic effects of substances without recourse to a multiplicity of glossaries or dictionaries. The Glossary includes terms related to basic and clinical neurology as far as they are necessary for a self-contained document, particularly terms related to diagnosing, measuring, and understanding the effects of substances on the central and peripheral nervous systems. The glossary consists of about 750 terms

as primary alphabetical entries, including Annexes of common abbreviations and examples of chemicals with known effects on the nervous system. The authors hope that, in addition to chemists, this glossary will be helpful, to groups including toxicologists, pharmacologists, medical practitioners, risk assessors, and regulatory authorities. In particular, it should facilitate the worldwide use of chemistry in relation to occupational and environmental risk assessment.

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## Stamps International

### Otto Wichterle: An Eye for Hydrogels



Soft contact lenses, worn these days by an estimated 125 million people worldwide, were invented in the early 1960s by Otto Wichterle (1913-1998), an ingenious Czech organic chemist. It was in the mid-1950s that he first prepared poly(2-hydroxyethyl methacrylate), a novel polymeric material that was transparent, absorbed up to 40% of its weight in water to form a colloidal gel, and exhibited suitable mechanical properties for further processing. In a seminal paper published in the 9 January 1960 issue of *Nature*,

Wichterle and Drahoslav Lím, one of his colleagues at the Institute of Macromolecular Chemistry in Prague, outlined the syntheses and properties of hydrophilic gels based on pHEMA and disclosed their potential use in the fabrication of soft contact lenses and other highly biocompatible products. The polymers used to manufacture soft contact lenses were continuously refined in the ensuing decades, particularly to improve oxygen permeability and comfort. The world market value of contact lenses (80% of which are of the soft variety) is now nearly US\$8 bil-

lion. Significantly, the development of new hydrogels as drug delivery agents, cell culture platforms, artificial cartilage, and other applications in the healthcare industry has been a very active area of research in chemistry and biomedical engineering in recent years.

The Czech stamp illustrated here was issued in 2013 to commemorate the centennial of Wichterle's birth. In addition to his pioneering work on hydrogels, he studied the polymerization of  $\epsilon$ -caprolactam to produce Nylon 6 and investigated the conversion of vinylic halides such as 1,3-dichloro-2-butene to ketones (a variation of the Robinson annulation that now bears his name). He published more than 150 scientific articles and obtained approximately 180 patents for his multiple contributions to chemistry and materials science. In 1967, he became the founder and first president of IUPAC's Macromolecular Division, which became the Polymer Division ("Division IV") in 2004. Shortly after democracy was restored in his homeland at the end of 1989, he was elected President of the Czechoslovak Academy of Sciences, a belated honor for a man who served his country in both the political and scientific arenas. Interestingly, even though Wichterle is universally considered the father of soft contact lenses, he never stopped wearing his own pair of eyeglasses!

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