

The first Sherry Rowland Tribute Paper: Williams and Crutzen mark the beginning of the Anthropocene

In 2012, after a distinguished 60-year career in environmental chemistry and environmental activism, Professor Sherwood (Sherry) Rowland passed away (aged 84). To commemorate Professor Rowland, and to thank him for his decade of service on the Editorial Advisory Board of *Environmental Chemistry*, we have initiated a series of papers in his honour.

Each year, an outstanding scientist or scientists across the field of environmental chemistry will be invited to write an article of their choosing that encompasses the vigour, rigour and philosophy of Sherry Rowland. It seemed fitting that the topic chosen to begin the series be compatible with Rowland's passion for understanding and delineating the impact of human activities on our earth. Fitting also that one of the authors, Paul Crutzen, shared the Noble Prize in 1995 with Sherry Rowland and Mario Molina for their work on atmospheric ozone chemistry and the inherent dangers of its diminishing levels in the stratosphere.

In the first of the Sherry Rowland Tribute Papers,^[1] Jonathan Williams and Paul Crutzen, from the Max Planck Institute for Chemistry, Mainz, review the current status of the Anthropocene, a term coined and championed by Crutzen.^[2] The Anthropocene is proposed as the new geological epoch, replacing the Holocene; it recognises that humans have become a significant geophysical force, and marks our impact on the earth and its climate. Over the last 10 years, the term has been increasingly used in the general science arena,^[3,4] and now appears on the verge of being adopted by learned Geological Societies.^[5]

But when did the Anthropocene actually start? Williams and Crutzen consider various possible time points to mark the beginning of the Anthropocene – to plant the 'Golden Spike' in the geological time scale. For example, should the start date coincide with the sharp increase in the use of fossil fuel from the mid-1800s, which has led to a marked and readily measured change in the carbon isotopic signature?^[6] Or should we go further back to when levels of atmospheric methane began to substantially increase?^[7] Williams and Crutzen finally place the Golden Spike in the late 1950s at the time of the atmospheric atomic weapons testing that left a clear and traceable global radioactivity signal of ¹²⁹I. The longevity of that signal

(¹²⁹I has a half-life of 15.7 million years) will ensure that it remains in the geological record as an Anthropocene signpost for many millions of years, and in the distant future will allow estimates of just how long humans ruled the earth and how their epoch influenced planetary evolution.

Environmental Chemistry is delighted to bring you the first Sherry Rowland Tribute Paper. We thank our inaugural authors Jonathan Williams and Paul Crutzen for 'setting the scene' with such a thought-provoking contribution. In the coming years, we aim to bring you a continuing series of enlightening papers from our most influential natural scientists, thereby honouring the life and career of Sherry Rowland, and revealing ever more about the chemistry of our environment.

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