

Highlights of Analytical Chemistry in Switzerland

Division of Analytical Chemistry

A Division of the Swiss Chemical Society

Acesulfame: From Sugar Substitute to Wastewater Marker

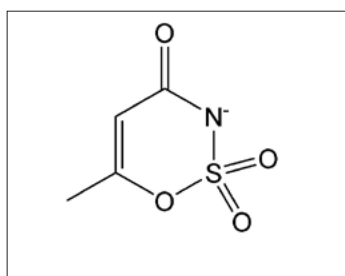
Ignaz J. Buerge* and Thomas Poiger

*Correspondence: Dr. I. J. Buerge, Agroscope Changins-Wädenswil Research Station ACW, Schloss, CH-8820 Wädenswil, Tel.: +41 44 783 63 83, Fax: +41 44 780 63 41, E-Mail: ignaz.buerge@acw.admin.ch

Keywords: Acesulfame · Artificial sweetener · Chemical marker · Domestic wastewater · Groundwater

Groundwater is an important drinking-water resource and deserves a high level of protection. Contamination may originate from various sources such as agriculture, households, industry, and traffic, and knowledge on the relative contribution of these sources is necessary to take efficient protection measures.

In search of a 'perfect chemical marker' of domestic wastewater from households in groundwater, we examined artificial sweeteners as they are consumed in considerable quantities with food and beverages. Some sweeteners pass through the human metabolism largely unaffected and thus reach the environment associated with domestic wastewater. One of these sweeteners, the sulfoamide acesulfame, was found ubiquitously in wastewater, surface waters, and groundwater from Switzerland.

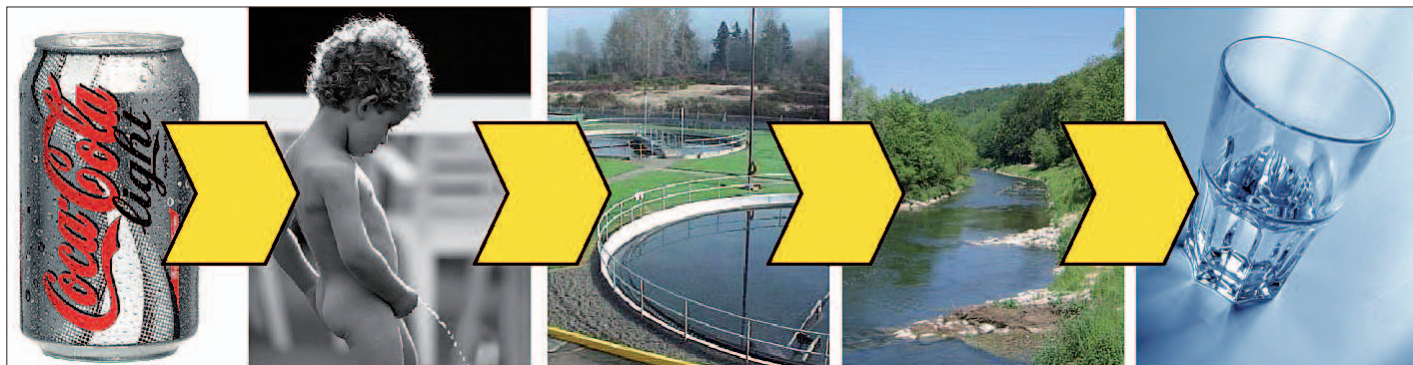


Chemical structure of the artificial sweetener acesulfame. The compound is negatively charged at environmental pH values and thus very mobile.

Received: January 14, 2011

References

I. J. Buerge, H. R. Buser, M. Kahle, M. D. Müller, T. Poiger, *Environ. Sci. Technol.* **2009**, *43*, 4381.



The fate of acesulfame from its consumption as sugar substitute in light-beverages to renal excretion, passage through wastewater treatment plants, discharge to surface waters, infiltration into groundwater, and detection in tap water. Second photo from the left: 1art1 GmbH

Can you show us your analytical highlight?

Please contact: Dr. Veronika R. Meyer, EMPA St.Gallen, Lerchenfeldstrasse 5, 9014 St.Gallen
Phone: 071 274 77 87, Fax: 071 274 77 62, Mail to: veronika.meyer@empa.ch