

Tracers: Elements of Evidence in Environmental Research

2 Detective Work

Lead Article

3 Tracers – Making the Invisible Visible

Research Reports

6 Determination of the Compound-Specific Isotope Signature of Chemical Pollutants

8 Biological Tracers in Ecotoxicology

10 Sediments – Archives of Detergents

12 RNA – A Tracer to Detect Microorganisms

14 Silver as a New Tracer for Diatom Production

16 Temperature Microstructure as a Tracer of Turbulence and Mixing

18 Identification of Groundwater Habitats Using Radon as a Tracer

20 Conservative Elements on New Trails

Forum

22 “Emerging Water Contaminants” An Interview with Ruth Gonseth

In Brief

24 Publications 2870–2987, Books

27 In Brief

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Phone +41-1-823 55 11
Fax +41-1-823 53 75
<http://www.eawag.ch>

Editor Martina Bauchrowitz, EAWAG

Translations Norbert Swoboda, USA

Linguistic revision Patricia Colberg, USA; Helen Bruegger, Zurich

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Detective Work



Bernhard Wehrli, chemist and head of the department “Surface Waters”

Sherlock Holmes, Philip Maloney, Guido Brunetti, Stoner McTavish and other famous figures from the world of detective stories baffle the reader with their abilities to solve cases by assembling the whole scenario of a crime by observing minute details. Although environmental research is usually far less spectacular, it likewise involves the collection of clues and use of circumstantial evidence. Many processes occurring in water cannot be readily observed. Colorless nitrate, for example, is transformed by bacteria to invisible and odorless nitrogen gas. Despite the fact that our analytical methods can prove that nitrate disappears from the water, it remains difficult to determine how, where and by which microorganisms this transformation is accomplished.

Detectives often have the options of arresting, interrogating or observing a suspect in the hope of catching him/her in the act of committing another crime. Environmental research is faced with similar choices: one can bring nature into the laboratory and perform experiments under controlled conditions or attempt to uncover relevant processes with intensive and elaborate observations in the natural setting. Tracers are often extremely useful tools in the latter case; they expose otherwise invisible processes and put researchers on the right track. Some of the “detective methods” employed in modern environmental research are documented in this issue of EAWAG news.

Over the past few years, EAWAG has invested heavily in the development of tracer methods. Our research interests cover a wide range of areas, including research on turbulence phenomena in aquatic physics, transport and degradation of environmental pollutants, and processes in molecular biology. This scientific detective work requires

modern analytical tools. We have developed collaboration with research groups at the ETH-Zurich and with laboratories of the Canton of Zurich in order to share available infrastructure. The stable isotope mass spectrometer at EAWAG, for example, was acquired jointly with ETH-Zurich.

The introduction of such new techniques requires for mutual information and discussion. During the last winter semester, the Friday seminar of EAWAG was therefore dedicated to the topic of isotopic tracers. I am sure that these initiatives will improve our detective work for the environment.

