

## Book review

### **PHOSPHATES IN SEDIMENTS: PROCEEDINGS OF THE 4TH INTERNATIONAL SYMPOSIUM, CARMONA (SPAIN), 9–12 SEPTEMBER 2003**

L. Serrano and H. Golterman (eds). Backhuys Publishers, Leiden, 2005. ISBN 90 5782 154 0, €88, 216 pp.

This comprehensive book comprises the Proceedings of the 4th International Symposium on 'Phosphates in Sediments', which was held in Carmona (Spain) between 9 and 12 September 2003. The overall quality of the papers is high. However, some papers are very specific with limited relevance for most professionals. There is a clear need for further research into the determination of potentially bioavailable phosphate!

Sediment is an important part of natural and constructed aquatic systems. It is important for water engineers to know the amount of phosphorus stored in the sediments because it can interfere with water quality targets and water management plans.

Sediments contaminated with nutrients and metals can be found in, for example, constructed wetlands, sustainable urban drainage systems and silt traps. Phosphorus is frequently the limiting nutrient responsible for eutrophication of natural lakes, drinking water supply reservoirs and storm-water detention ponds. In order to solve this practical problem, there is a need to link up scientists with engineers to solve water pollution problems caused by too much phosphorus in engineered systems.

Not all conference papers were submitted for a full review. Nine abstracts are printed instead of their full paper equivalents. Some of the abstracts summarise research on important analytical methodologies that would have been interesting for water management engineers and scientists. However, the editors should have dropped these abstracts to avoid confusion.

The main relevant themes for civil and environmental engineers with an interest in sediments and nutrients are exchange-and-release processes, distribution in sediments, analytical methodologies, transformation processes, and transport and fluxes. There are only a few practical papers.

Various papers demonstrate that it is important to track different phosphate forms, and to study their structure because organic phosphorus, in particular, does react differently under varying environmental conditions. Furthermore, it is important to be aware of the transport of different phosphorus forms through natural and engineered systems in order to quantify exchanges and to build up mass balances: for example, phosphorus transport within a sustainable urban drainage system treatment train (soil from gardens rich in phosphorus as part of the road runoff; swale, silt trap; detention pond; infiltration basin or urban river).

The conference has shown that there is a clear need for further research into

- (a) the improvement of different phosphorus extraction methods
- (b) the chemical composition of organic phosphates
- (c) the release of phosphate under anoxic conditions
- (d) the determination of potentially bioavailable phosphate and
- (e) the availability of phosphorus in acid sediments.

More contributions on the relationship between river water quality and land use, for example, would be welcome. Diffuse pollution from urban runoff should be studied more by the phosphorus research community. There is plenty of scope to study phosphorus in sediments associated with source control structures such as individual sustainable urban drainage systems (SUDS), for example. There is scope to link the most recent quantitative SUDS decision support model ([www.see.ed.ac.uk/research/IIIE/research/environ/uw12.html](http://www.see.ed.ac.uk/research/IIIE/research/environ/uw12.html)) that is relevant for water engineers and planners with qualitative nutrient balance models.

Unfortunately, this is Han Golterman's last major editing job as he has just retired. His contributions will be missed by the phosphate and sediment research communities.

M. SCHOLZ