

Editorial

Organic matter is of a complex nature including living organisms, plant residues and macromolecules as well as small simple organic acids. Numerous essential ecosystem functions can be associated with organic matter. For example in soils, organic matter contributes to the nutrition of plants via the cycling of elements but also contributes to the physical quality of soils by promoting aggregation. In fresh waters, groundwaters or in marine environments, organic matter is strongly involved in reactions and transport phenomena. Thus, dynamics of organic matter are closely related to dynamics of many other elements, essential nutrients or undesirable contaminants. While there are strong similarities in the roles of organic matter in soil and aquatic environments, there are also important differences. In soil, the importance of the interactions between the various constituents may enhance or lower the effects of organic matter. In contrast, in aquatic systems, the potential role of organic matter may be more fully expressed despite a greater dilution. All these media -soils, sediments and fresh or marine waters- are living systems and biological reactors in which organic matter is an essential constituent. Each of these scientific field is concerned by the studies on the nature of organic matter and is interested in improving the knowledge of the functions of organic matter. However the objectives of each research are not similar in each field, although they relate to the same object. It is thus difficult to gather all the outcomes of research on the organic matter which come from the various

disciplines, specially if these ones remain partitioned.

One of the objectives of the French Group of the IHSS (International Humic Substances Society) is to promote interdisciplinary approaches through the various workshops that this group organises. After Toulouse in November 1996 on "Humic substances in the environment" and Dijon in November 1997 on "Analysis and diversity of natural humic substances", the last symposium was organised in Versailles in June 1999 jointly by the Unit of Soil Science of INRA - Versailles (National Institute of the Agronomic Research), the "Geochemistry and Metallurgical Chemistry Laboratory", and the "Isotopic Biogeochemistry Laboratory" of the University Paris VI, Pierre and Marie Curie, with the title "Nature and functions of the organic matter in the environment". This meeting gathered scientists who study different aspects of the organic matter including its characterisation, its origin, its fate and its role in natural or anthropic environments. Three sessions were organised: (i) methods of study of the organic matter, (ii) dynamics of the organic matter and (iii) reactivity of the organic matter towards organic or mineral pollutants. The diversity of the communications showed the multiplicity of the approaches, sometimes necessary with regard to the scientific questions, but also the consensus around the problems the study of organic matter raises. It is obvious that only a synthesis between the various approaches of each of the various disciplines will allow significant insight. The

papers presented here are selections of the presentations carried out in French during this symposium⁽¹⁾. I would like to express my thanks to the contributing authors and to Dr. G. Guyot and his team with C. Courant who agreed to deal with the proposed subject and to organise this special issue.

The new challenge for the scientific community concerned with the improvement of knowledge on the nature and functions of the organic matter in the environment relates to the development of new

tools in order to be able to study organic matter in the laboratories but also *in situ*, in real situations. Beyond the comprehension of the functioning of the ecosystems, the sustainable management of the ecosystems is in question, and the organic matter can be one key of the answer.

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(1) Actes du colloque "Nature et fonctions de la matière organique dans l'environnement", Versailles, 02-03/06/1999, INRA, Unité de Science du Sol, 75 pages.