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Water Quality Management: The Brazilian and the American Models

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Abstract

All over the world, the continuous population growth, the increasingly urban and industrial concentration and the increasingly expansion of the irrigated agriculture, lead to an increase in the water demand and depletion, which can lead to water scarcity for many of its designated uses.

In Brazil, Law 9433, enacted in 1997, established the National Water Resources Policy and created the National Water Resource Management System, introducing a new integrated approach to environmental management policies and economic-based instruments. This Law defined the hydrographic basin as the unit of planning, considering the water multiple uses, introducing many changes at the institutional and policy instruments levels. From the policy instruments perspective, the Law established new management instruments and worked towards the integration of these new instruments with the other instruments defined by the Brazilian environmental legislation: water bodies designated uses x water bodies framework.

The Resolution 357 enacted in 2005 from the National Environmental Council (Conselho Nacional de Meio Ambiente – CONAMA), set the environmental guidelines for implementing water bodies' framework, and established the classification of water bodies and the conditions for discharging effluents into them. However, this Resolution left much to be improved. For instance, this Resolution established fixed limits for effluent discharges, making no distinction between these discharges according to the related industrial activity or technology. Furthermore, it did not consider the carrying capacity of the water bodies that will receive the discharges, and it is not linked to the other instruments set forth in Law 9433. This might reduce the efficacy of the instruments and generate diseconomies for public and private agents. As a result, many criticisms in this respect prompted CONAMA to promise a revision of the effluent discharge limits. The wisest course would be to base this revision mainly on the international water management experience. This article aims at contributing to this effort, by analyzing the case of the United States (US), which can provide valuable insight in terms of defining water quality standards and effluent discharge limits based on control technologies and industrial typologies. Some of the main water pollution control instruments predicted in the US Clean Water Act (CWA, 1972), the policy that regulates the water resources management in the US, are analyzed in this paper: the Total Maximum Daily Load (TMDL), the National Pollutant Discharge Elimination System (NPDES) and the Assessment Total Maximum Daily Load Tracking and Implementation System (ATTAINS). Finally, based on the US model this paper made some suggestions that could be incorporated in the Brazilian legislation.

Keywords: Water Resources Management, Water quality, Effluent Discharges, Brazil, United States.