THE INFLUENCE OF CONNECTED URBAN AND OF EMERGING AGRICULTURAL SURFACE WATER FLOWS IN THE PRESENCE CONTAMINANTS (PHARMACEUTICAL COMPOUNDS) IN PROTECTED NATURAL WETLANDS

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The Mediterranean wetlands are unique in biological diversity and they offer multiple benefits constituting a great water reserve for the planet and to produce biomass and nutrients for the trophic chain. However, the increasing human impact and the socio-economic development of the last decades have produced important losses in these ecosystems. To study the impact of urban and traditional agricultural landscapes on natural protected wetlands new holistic and multidisciplinary approaches are necessary. In this work are methodology based in the combination of environmental forensic procedures under which different techniques, (such as Liquid chromatography-mass spectrometryanalysis of 16 water samples to determine 17 domestic use pharmaceutical compounds, aerial photographs and ortophotos to map surfaces water flows and Geographical Information Systems to integrate information from different sources and to establish the territorial implications of water flows and emerging contaminants from urban systems to open water in protected natural wetlands) are combined. The work has been developed in the Natural Park of La Albufera (Valencia, Spain), which includes a coastal lagoon, marshlands, dunes and pinewoods, surrounded by rice fields in its not urbanized part. In spite of this great ecological value, it suffers impacts derived from the high human and industrial occupation, and of the hydrological contributions from the connected irrigation systems. Result shows that after treatment, the presence of 12 pharmaceutical compounds is detected in the majority of the water samples analysed. Urban agglomerations and population concentration are determinants in the number or pharmaceutical and concentrations detected. Further, the traditional irrigation drainage systems are determinant in the surface water flows from the urban systems to the natural environments. In that later case they act as interconnection mechanisms from urban landscapes to the natural open waters in the protected Natural Park. Thus, further studies are needed to determine trends and rates of emerging contaminants inflows and the impacts into the wetland water and habitats to developed effective protection policies.

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