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ANALYSIS AND MANAGEMENT OF SPECIFIC PROCESSES FROM ENVIRONMENTAL ENGINEERING AND PROTECTION BASED ON SUSTAINABILITY INDICATORS

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Abstract

This paper describes the scientific framework established within doctoral and postdoctoral programs designed to contribute to a thorough understanding of the specific processes involved in environmental engineering and protection, as to improve the environmental management and performance in an efficient and sustainable way. A coherent conceptual framework is developed for the analysis and management of some specific approaches in engineering and environmental protection (pollution phenomena, decontamination processes/remediation, reactive and proactive advances), evaluated by applying a set of sustainable development indicators, able to compare, evaluate and develop a set of methods and approaches based on concepts and scientific methods, which will make process analysis solid. The study includes some groups of activities such as: selection and processes analysis considering pollution/remediation based on the behaviour of environmental contaminants, considering the source-pathway-receptor chain, starting with process baseline, target and projection; selection of the most relevant sustainability indicators for the evaluation of prevention, control and remediation of environmental components processes; performance evaluation, thresholds, causal loops, model construction and scenario analysis.

Various approaches are applied to provide a systematic categorization of socio-economic, environmental and natural resource information under four headings: pressure (stresses or agents of environmental change), state (resources assets, environmental quality), impact and societal response. Indicator integration is also addressed as a means by which individual and quite different indicators in a framework can somehow be viewed together to provide a global view of sustainable development. Sustainability diagrams, as well as indices would ensure clarity for users offering a high level of prominence.

Key words: close-loop, eco-efficiency, environmental pollution, prevention, remediation, sustainability indicators

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