SOLID WASTE CHARACTERIZATION IN AN INTEGRATED MANAGEMENT CONTEXT

ABSTRACT

The present thesis deals with the characterization of solid waste, in an integrated management context, as well as its importance in a sustainable development perspective. The focus given to the characterization has as basis the pursuit of the objectives outlined, in 1997, in the Plano Estratégico Sectorial de Gestão dos Resíduos Sólidos Urbanos.

Being solid waste a direct consequence of the daily activities of our societies, it is important to understand how their main characteristics evolve in time quantitative and qualitatively. The characterization of solid waste is a tool that allows getting together important information to the study and applicability of suitable and efficient management models, mainly in what concerns the gathering, transport, valorisation and treatment of waste.

Campaigns of characterization were isolatedly carried out in several countries last century - there are registers in the 70s and 80s in Brazil and USA, but attempts to its uniformization in Europe date from the end of that century.

It is relevant the existence of different origins and types of waste, namely domestic, industrial, commercial, services, among others. So, it is necessary that the methodologies to adopt in each campaign of characterization of solid waste might keep up with that diversity and might be sufficiently flexible to answer all pursuit objectives, without loss of criterion.

In this research work, we intend to assess the possibility of a unique methodology to the accomplishment of a solid waste campaign characterization, regardless the country where it is elaborated and its application.

In this context, after framing issues related with the management of solid waste in Portugal, it is considered pertinent to survey the methodologies used in several campaigns, to identify the most difficult aspects in planning and executing campaigns and, also, their main differences.

From data gathered in fieldwork between 2002 and 2004, that comprise the case study, the pertinent aspects to the application of a methodology are analysed, in order to consolidate factors of greater divergence or considered essentials to the application of a method. The case study falls upon urban and domestic waste.

As far as target components are concerned, a list with a common trunk is proposed. The desegregation in other subcomponents is considered in terms of the specificness of each characterization campaign.

In what concerns the sampling process, the collected results are analyzed aiming at the definition of the quantity of each sample and the number of samples to characterize in each campaign.

From the analysis of compiled values, the determination of intervals of admissible values for the amount of each component is established. Knowledge of these values allows monitorization of the results obtained by sampling.

From the results obtained it could also be concluded that the domestic solid waste is just a fraction (44%) of what is disposed in sanitary landfield under the broad designation of solid urban waste and that it has a different physical composition.

In what concerns the deposition in the available infrastructures, we believe that it is important to re-evaluate the potential for recycling of the diverse components, namely the plastic package waste stream.