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A Brazilian Study Applied to the Regulatory Environmental Issues of Nanomaterials

Authors : Luciana S. Almeida

Abstract : Nanotechnology has revolutionized the world of science and technology bringing great expectations due to its great potential of application in the most varied industrial sectors. The same characteristics that make nanoparticles interesting from the point of view of the technological application, these may be undesirable when released into the environment. The small size of nanoparticles facilitates their diffusion and transport in the atmosphere, water, and soil and facilitates the entry and accumulation of nanoparticles in living cells. The main objective of this study is to evaluate the environmental regulatory process of nanomaterials in the Brazilian scenario. Three specific objectives were outlined. The first is to carry out a global scientometric study, in a research platform, with the purpose of identifying the main lines of study of nanomaterials in the environmental area. The second is to verify how environmental agencies in other countries have been working on this issue by means of a bibliographic review. And the third is to carry out an assessment of the Brazilian Nanotechnology Draft Law 6741/2013 with the state environmental agencies. This last one has the aim of identifying the knowledge of the subject by the environmental agencies and necessary resources available in the country for the implementation of the Policy. A questionnaire will be used as a tool for this evaluation to identify the operational elements and build indicators through the Environment of Evaluation Application, a computational application developed for the development of questionnaires. At the end will be verified the need to propose changes in the Draft Law of the National Nanotechnology Policy. Initial studies, in relation to the first specific objective, have already identified that Brazil stands out in the production of scientific publications in the area of nanotechnology, although the minority is in studies focused on environmental impact studies. Regarding the general panorama of other countries, some findings have also been raised. The United States has included the nanoform of the substances in an existing program in the EPA (Environmental Protection Agency), the TSCA (Toxic Substances Control Act). The European Union issued a draft of a document amending Regulation 1907/2006 of the European Parliament and Council to cover the nanoform of substances. Both programs are based on the study and identification of environmental risks associated with nanomaterials taking into consideration the product life cycle. In relation to Brazil, regarding the third specific objective, it is notable that the country does not have any regulations applicable to nanostructures, although there is a Draft Law in progress. In this document, it is possible to identify some requirements related to the environment, such as environmental inspection and licensing; industrial waste management; notification of accidents and application of sanctions. However, it is not known if these requirements are sufficient for the prevention of environmental impacts and if national environmental agencies will know how to apply them correctly. This study intends to serve as a basis for future actions regarding environmental management applied to the use of nanotechnology in Brazil.

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