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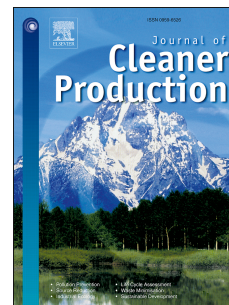
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## Barriers and strategies applying Cleaner Production: a Systematic Review

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### ABSTRACT

Cleaner production allowed businesses to visualize the concept of environmental sustainability in practice and to believe in the possibility of producing more with less, besides reducing environmental costs. However, although cleaner production has already been accepted and is increasingly applied, it is not a standard procedure for managing environmental aspects. Thus, the objective of this article is to identify the reasons why Cleaner Production is not widely adopted. For that, a systematic review was conducted, based on the review protocol Preferred Reporting Items for Systematic Reviews and Meta-Analyses. In total 37 articles were selected and they are distributed between the years of 1994 to 2014. It was possible to identify what is appointed by the authors as the strengths and weaknesses of regulations, methodologies and tools, related to the Cleaner Production application, as well as the barriers and the strategies to overcome it. The conclusions point that regulations need to be more than simply a legal requirement and be seen as an opportunity for improvement. Also, some characteristics were identified that must be emphasized in methodologies and tools that can help in the execution of CP programs. The barriers and strategies identified were classified in internal and external. They are related to culture, policies, methodologies adopted, education and lack of social pressure. In order to achieve success in adopting CP, it is necessary to promote the dissemination of knowledge and commitment with the subject by the entire chain, comprising business, academics, governments and community. It is expected that this review will help on the definition of further paths for CP adoption.

### *Keywords*

Tools; methodologies; regulations; strategies; barriers; pollution prevention.

### 1 Introduction

In 1991 the United Nations Environmental Program (UNEP) defined Cleaner Production (CP) as: “The continuous application of an integrated environmental strategy to

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