



# Academic<sup>th</sup>

INTERNATIONAL WORKSHOP  
ADVANCES IN CLEANER PRODUCTION

“CLEANER PRODUCTION TOWARDS A SUSTAINABLE TRANSITION”

## **Analysis of Metal Chip Recycling Methods Contaminated Considering Approaches to Eco- Efficiency and Eco-Effectiveness**

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### **Abstract**

The Brazilian law requires that the proper disposal of industrial solid waste is mandatory of the generator. However, due to ignorance or lack of professionals in the environmental area on business, this issue becomes one of the main difficulties encountered in order that the manufacturing process generates, in most cases, waste and environmental impacts, which do not receive the due attention. In other hand, this waste can be utilized as an alternative source to increase eco-efficiency and as a larger object to eco-effectiveness, reducing the impacts, increasing the economic and environmental efficiency and contributing to sustainability. The metal-mechanical sector also faces the problem of environmental management, need urgently adapt to the production process, innovative technologies to act in order to achieve sustainability. Thus, the aim of this study is to evaluate the eco-efficiency and eco-effectiveness of the methods used in the cleaning of metallic chips contaminated with cutting fluid metallurgical enterprises. So, a study on the reuse of aluminum chips was done by analyzing the cleaning methods used, the method efficiency, the allocation if cannot be reused and evaluated within the aforementioned characteristics, which is the most eco-efficient and/or eco-effective. This review was performed by criteria identified in the literature, to which you can evaluate methods as eco-efficient and eco-effective. In practice found only eco-efficient methods, and among them, some with eco-effective practices. The results show that the culture of repair, reuse, recycle and intended instead to promote actions such as the remodeling of a production system in a closed cycle where no waste generation is now even more practical and realistic. Nonetheless, it is clear that eco-efficient and eco-effective principles improve the environmental performance of companies, reducing expenses related costs for inputs, raw materials and disposal of waste, and contribute to achieve higher levels of sustainability.

**Keywords:** *Eco-efficiency; Eco-effectiveness; Metalurgy; Metallic Chips*