

ÁREA TEMÁTICA: Reciclagem

WOOD WASTE REUSE: A BRIEF REVIEW AND STUDIES CASES

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ABSTRACT

The increasing demand for material goods and consequently the generation of solid waste from its consumption and production has been giving greater interest to alternatives and strategies, aimed to avoid or minimize possible environmental impacts related to these activities. One of the problems that cause impacts in products production is the generation of waste after consumption. These products also generate problems, when, after their useful life, there are no suitable proposals for their destination. In the case of wood, companies in furniture, construction, metallurgical and logistic industries end up treating wood waste improperly, either to get rid of the problem of the volume of refuse generated, or lack of choice for the final destination of the wood. Reuse of materials and, in this case, wood, has a significant response in the fields of reuse of wood waste, as one of these initiatives, since its application reduces the volume of waste destined for landfills and gives other functions to materials that before they would be discarded. This paper presents a literature review on the reuse and reuse of wood waste, addressing its importance in the Environmental Management System, as well as current environmental legislation, international and national practices, advantages and disadvantages, and the presentation of case studies with reuse of solid waste.

Keywords: Solid Waste Management; Solid Waste; Environmental management.

1. INTRODUCTION

In the Environmental Management ambit, solid waste reuse is a priority, which encompasses non-generation, source reduction, reuse, recycling, energy recovery and environmentally correct disposal of solid wastes (BARBIERI, 2016). There is a big difference between recycle and reuse, where recycling is characterized by reprocessing and production of new materials, and reuse, in turn, is reuse without reprocessing (RUTLAND COUNCIL, 2017). Both processes are equally important in their contribution to the environment and waste management. The aim, after all, is the same: to combat waste of materials and to contribute to liabilities reduction in landfills and the exploitation of natural resources.

The reuse of solid waste is the action or practice of using something again, either for its original purpose, or to fulfill a different function; being a priority in Solid Waste Management (BRAZIL, 2010).

Historically, the main motivation for the practice was financial and social, since several socio-environmental movements began to emerge in the 70's, and this is a subject addressed in several congresses (THOMSON, 2017). In countries with emerging economy, financial motivation has become necessary, since practice helps with time, money, energy and resources (NYC REUSE SECTOR REPORT, 2017).

Currently, several items are commonly used for reuse, such as: Building materials; furniture and office supplies; electronic materials; art materials; excess food items and equipment; in addition to household items.

In the case of wood waste, companies in the furniture, construction, metallurgical and logistic industries end up treating inadequately the wood residues, being this type of waste, an excessive generation associated to its low cost of exploitation, result in environmental damages. As alternatives to minimize the problems associated to new wood products production are the care with the residues generated through waste reuse.

Thus, the general objective of this study was to describe and identify some methods of waste reuse and wood residues reuse and by-products of various activities that generate these residues.

2. OBJECTIVE

The objective of this study is to show a brief review and cases in wood waste reuse.

3. METODOLOGY

In this study methodological procedures of qualitative research were used, carrying out a bibliographical and documentary review, making a survey of the main technical articles related to the subject, as well as current Brazilian resolutions and electronic sites with relevant information.

4. RESULTS AND DISCUSSIONS

4.1. Waste reuse aspects and practices

4.1.1. Brazilian Legal Aspects

In Brazil, according to Law 12305 / 2010 Art. 9 (BRAZIL, 2010), states that: "In the management and management of solid waste, the following order of priority must be observed: no generation, reduction, reuse, recycling, treatment of solid wastes and environmentally appropriate disposal of tailings. "And in paragraph XVIII of Art. 3 of Law 12305 / 2010 (BRAZIL, 2010) defines the reuse of solid waste as:" Process for the use of solid waste without its biological, physical or physical-chemical transformation, observing the conditions and the standards established by the competent organs of Sisnama."

4.1.2. International and National Reuse Practices

In the USA, Australia and Europe, in particular, one of the main solid waste reuse practices occurs within the business environment, through "Good Housekeeping" programs and in society through "Reuse Centers", which are exchange and donation centers of used materials in good condition for reuse (NYC REUSE SECTOR REPORT, 2017, EUROPEAN COMMISSION, 2016, ZERO WASTE EUROPE, 2017, QUEENSLAND GOVERNMENT, 2015). In the USA stand out initiatives such as Goodwill Industries; Second Harvest Food Bank; Habitat for Humanity ReStores; and Materials for the Arts. In Australia, in turn, there are initiatives such as Reverse Garbage; The Bower Reuse and Repair Center and Remida. In relation to the European Union, reuse is in programs such as the EU Circular Economy Package and Zero Waste Europe.

In Brazil, waste reuse is already a social form. However, there are markets that aim at the reuse of bottles, batteries and batteries, and construction waste.

4.1.3. Programs and practical initiatives

Among the main programs and practices applied to solid waste reuse (U.S. EPA, 2017) are deposit programs, which are offered to customers a financial incentive to return containers for reuse; closed-loop programs, or closed-loop programs, where it applies to companies that transport the goods to the market, bringing back to the supplier boxes and pallets used to transport the goods for later reuse; refilling programs or refill programs, also aimed at the reuse of packaging; regifting, where they are passed on, sold and / or donated some items such as clothes to other people or companies; repurposing, where another function is given to some specific residue, especially for decorations; repairs and reuse of reusable items are also practices of reuse; and reverse logistics applied to cartridges and printer toners.

4.2. Wood waste reuse cases

The wood waste reuse application has been studied, and it is possible to find works in different areas, such as civil construction, commercial, and services are one of the areas most studied today. In this part of the paper is showed some cases found in literature will be presented.

The waste reuse was evaluated by Silveira et al. (2017), where the objective of the work was the reuse of solid waste from various sectors, presenting as a socio-environmental solution the

production of puffs for use in shared spaces. Wood pellets from a construction materials company were used as bases for the puffs, and for the preparation of the cushions were used flaps from a textile company, and for the filling, residues of polymers and phenolic sand from laboratories of Unisinos, a University from the region, and a company from the region of Santa Cruz do Sul, Brazil, where these materials are identified as elastic, suplex and lycra. The puffs were arranged in study areas of the Unisinos, and in a public school of the region. The project had a lot of interest for partners in making the puffs and also interest in another school in the region. Through this work, the authors concluded that simple initiatives can bring good results and minimize environmental impacts, such as a longer life for materials, incorporating in new processes or reusing for other purposes.

Facchin et al. (2015) carried out a study of waste reuse in the process of discarding wood pallets at a metallurgical company located in the city of Caxias do Sul, Brazil, with the main focus being the presentation of a possible improvement to be implemented in the company and in the creation of an industry that reuses these pellet residues for the manufacture of furniture and utensils that will be used and donated by the organization itself. The work used quantitative research, through analysis of annual consumption and destination costs, quantitative gender questionnaires, and implementation of the furniture manufacturing project cost, and qualitative research through a questionnaire in the form of a semi-structured interview to employees who work in the logistics sector of the company. The idea proposed, through the results presented, was well accepted by the company's employees, since, in addition to contributing to the sustainability of the company, it helps the environment and the day to day operations performed, allowing some to develop voluntary activities. The authors also noted that low transport costs and continuous sustainability should be of paramount importance for the development of a company, and today, competition between companies and the strong fight for the best place in the labor market can help in the development and growth of organizations. Because it is an improvement, the authors present that should be presented and analyzed by the company management. If it is to compare the economy that this improvement can bring the company, all expenses with recycling and freight paid by the discard will be reverted as profit for the company.

5. CONCLUSION

The present work presents a bibliographical survey, which shows two cases of solid wood waste reuse, presenting alternatives for reuse of these residues, avoiding improper disposal.

It is understood that the classification of literatures can contribute to the improvement of the theme allowing different points of view such as: comprehensiveness of approaches, type of approach and focus.

The work presents an evident focus on the environmental and financial practices, evidencing the concern with the large generation of wastes that are not used by the companies, as well as viable alternatives for the reuse of these wastes.

We have found that the reuse of solid waste is the action or practice of using something again, being a priority in Solid Waste Management. For companies to be sustainable, it is no longer a choice but a condition of survival in the face of new governmental, legal, social and market requirements.

Therefore, it was possible to conclude that simple initiatives can bring good results and minimize environmental impacts, such as a longer life for materials, incorporating new processes or reusing them for other purposes.

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