

PACKAGING WASTE MANAGEMENT

MANAGEMENTUL DE EURILOR DE AMBALAJE

CAMELIA CIOBAN¹

¹*Banat's University of Agricultural Sciences and Veterinary Medicine, Faculty of Food Processing Technology, Timi oara, România;
cameliacioban@yahoo.com*

Abstract: *The paper presents aspects of the recycling process concerning the improvement of pollution established by packagings along the production, using and distribution chain. To reduce the pollution of the environment the following methods can be used: reducing of size, shapes and types of resources, reusing of recycling packagings, recovering of energy by cremation, dis-persion and biodegradation, aplication of controlled unloading, introducing of aseptic packaging. The aim of this paper is to synthesize the advantages of the recycling technics mentioned above in saving and of the impact upon the environment.*

Keywords: *management, packaging waste, environmental protection*

INTRODUCTION

Packaging is one of the topics most often discussed in debates about the environment on the one hand it is a visible form of waste, and secondly because it is an everyday experience for most of us. Food packaging has become nowadays a huge polluting the environment. Packaging is now a specific element of consumer society and became a huge polluter ballast. Furthermore, market] packaging is evolving constantly appearing new packaging and processing, particularly disposable. Thousands of tonnes of packaging are discarded worldwide in water or in landfills, contributing to environmental degradation. Even if the garbage disposal in urban agglomeration areas is perfectly organized, storage and destruction remains the question of the conditions under which more and more packages are not cardboard but of plastic or glass.

While degradable cardboard and burns, plastics are not degraded while deaz and drizzling combustion without flame, with a high degree of pollution. As a result, the latest trend in packaging industry, has become greening, a trend that has led to biodegradable materials and reusable materials.

MATERIALS AND METHODS

Nowadays, the packing represents a specific element of the society, but it becomes a huge polluting balast. Thousand of tones of wrapping are thrown away all over the world, either in water or in the garbage pits, contributing also at the environment degradation. Consequently the european legislations intend decrease reduction, reuse and recycle of materials in packing production process to the minimum reduce of environment pollution. These things contribute to materials use reduction that can not recover on natural way.

An efficient use of materials supposes:

- Ø resources size, form and types decrease,
- Ø recyclable packings reuse ,
- Ø spreading and biodegradation,
- Ø controlled unloading application,
- Ø aseptic packing introduction

RESULTS AND DISCUSSION

RESOURCES SIZE, FORM AND TYPE DECREASE

It represents the first step in the process of making efficient the materials and prevent waste's formation. The only method that permits resources economy and reduced quantity of wastes is reduction at source. The resources including raw and auxiliary materials and the energy necessary for packing production . The reduction of weight, volume and number of materials use in packing structure are the main objectives in minimalization process of packing.

RECYCLABLE PACKINGS REUSE

It is the next step in making materials efficient and also in prevention of wastes formation. The process of reuse keeps the materials initial structure and it does not take supplementary time and energy. The rechargeable primary packing for liquid foods that have the possibility to be reload for many time are not used frequently. The weight of a glass bottle refilled is superior to the one use bottle. Mineral water bottle that accomplished a minimum of 25 rotation, weight 750 g to the one use bottle that weight no more than 500g.

The proces of reuse presumes a good pointed legislation on packing collection, sorting, transportation and storing.

Renewing by cleaning has a direct impact on water pollution through the use of cleaning powders and used water sweeping.

SPREADING AND BIODEGRADATION

In France, treating the wastes by spreading represents less than 10% of home-wastes total weight. The compostation is made in specially created places where materials destroy under direct effect of sun and humidity. As for cellulosic materials, the plants deliver useful substances for agriculture; generate methane and combustible gas. The biodegradable plastic materials rott to water and CO₂ under the action of microorganism in soil.

CREMATION WITH ENERGY RECOVERY

The quantity of wastes decreases so much up to 30% from the initial weight, and up to 10% from initial volume, and recovers at most 60% from initial energy used in production. Recovered energy could be used as heat or power. To protect the environment, it is necessary modern plants and washing up equipments, also the smoke neutralization in order to avoid atmosphere pollution through transmission of acids, heavy metals, CO₂, nitrogen oxides, dioxines.

Home-wastes are heterogeneous mixed-up with a certain percentage of humidity that can not be neglected, and diminish the caloric strength of materials. So that wastes may maintain the burning process, it is needed a superior caloric power of 5000 KJ/Kg. Also, there has been achieved great progress in pyrolyses from plastic material, so that almost 50% of materials weight is recovered as combustible with caloric value similar to petrol. Part of gas components can be turned into methane, ethane, ethylene and propane. The plastic wastes pyrolysis is possible at 400 -600 °C temperatures in inert atmosphere.

CONTROLLED UNLOADING APPLICATION

The method is less practised for home-wastes and it means a great reduce. This result is not dangerous for environment. The bottle is unalterable thing close in composition to rocks. The iron and aluminium once corroded change into oxides; the vegetal material rott up through photosynthesis to their natural state, but plastic materials suffer a slowly degradation up to CO₂ and H₂O.

RECYCLABLE PACKINGS REUSE

Another important way to value the packings represents material recovery they were made of this situation applies to materials possible of

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reuse paper, carton, metal, glass, and certain plastic materials. Metal packings need to be sorted out, pressed up and metal. The glass packing need to be sorted out too, the cullet sent for melting to glass factories. All over the world, are produced over 100 tones, out of which 40 tones are obtained from used steel. In Europe, 50% of metallurgy production is achieved from recyclable steel, and so are obtained 65millions of tones. These secondary resources are mostly made of metals and have low prices. They can determine energy economy, reduce of water and little pollution. A few tones of recyclable steel represents an economy of 1,5 tones of iron ore, 0,5 tone coke, 70% energy and 40% water.

It has been discovered that glass, aluminium, steel and paper recycled equivalents have a lower effect upon environment than their homologues in pure state. Their reuse involves substantial economy of energy. The use of recycled paper means 35% less water pollution, and 75% less air pollution. The use of recycled steel means 85 % less pollution air. Also per tone, the glass has a less influence upon environment, being followed by paper and aluminium. The glass can be recycled for over and over. Theoretically it is possible to be made new vessels starting with 100% cullets without a quality lost. Energy economy represents about 100 Kg melted calcium carbonate/tone. The production of new glass involves a high consumption of energy in the fusion process, and environment pollution because of pollutants spread out in atmosphere. Mixing up sorted wastes of glass with new material to obtain new glass vessels allows great energy saving, because these wastes melt to a lower temperature than sand, feldspar and other raw materials used for glass production. Sorting glass by colour is essential to surecolour standards. Also, mixed cullets replaces up to 20% of gravel and sand used in a conventional mixture of asphalt.

As to plastic materials, the recovery of materials needs to be efficient, the separation, sorting out and cleaning up of different types of material. Most of plastic transparent vessels used for food drinks are made of PET and weight 50 g. Being heavier than paper wrapping, are easier to clean and separate. Besides, they are easier to recycle, because resin does not degrade too much in recycling process and can be also retrieved. Mixed materials can be changed in inferior materials according to the impurities and heterogeneous composition. For plastic materials, the problem of pollution can be viewed from two sides: the wastes resulted from use, and the gas

emitted when destroying through cremation. The polyethylene and polypropylene are two very good burning out materials, being considered the perfect combustible. The polychlorure of vinyl and polystyrene are considered secondary degree pollution facts. The only materials with demonstrated value of recyclable materials are PEHD, used to pack milk, and PET used to pack sodas. PEHD and PET are easily identified by consumer, and it makes them easy to be collected.

As for paper and carton packing, the best choice is the unwhitened recycled paper, as the industrial type material like wavy carton, chipboard and inferior paper of packing (Kraft type). Industrial materials are made of 100% recycled paper, easy to recycle and biodegradable. Even though paper and carton are considered ecological packings, the methods of whitening and decoloration are dangerous to the environment. After the decoloration process results a toxic mud that contains ink, adhesives, pigments and impurities. This mud ends the garbage pit, where can filter into the freatic layer, and can contaminate it. Or it can end in crematorium where burned ink grows up pollutants carried on air and contaminated ashes. More toxic than mud is the secondary product of chlorine whitening process that paper factories use to whiten paper paste. The whitening method forms up the organochlorine compounds, extremely toxic for environment. A less toxic method to whiten paper paste is the one with hydrogen peroxide, and it has been used in Europe for many years.

Aluminium as wastes can be recycled over and over, diminishing with 90% the quantity necessary to produce the same product of alumina.

ASEPTIC PACKING

The technology of aseptic processing and packing requires a lower quantity of energy than to produce the pack as for its transport and distribution. The aseptic packing called also as box for drinks presents a list of advantages to preserve the energy and the environment.

The aseptic packaging is made of a multilayer pellicula that combine paper, plastic materials and aluminium characteristics. Materials recycling means the separation of boxes layers to recover paper paste that is up to 70% from the aseptic packing. The paste is reused to produce paper and egg wrapping. The aluminium mixture and plastic film left is cremated with energy recovery.

CONCLUSION

To limit the use of ecosystem naturale resources and to minimise the wastes left from high consume of packing certain solution need to be respected :

1. replacement of packings made of unrecyclable materials with recyclable material packings ;
2. increasing of recovery, reuse and recycle degree;
3. reducing the volume of container after use, can destroy the material after use innocuous by the destruction of material
4. creation of biodegradable packaging;
5. tehnology development of ecologic production;
6. minimum material consumption;
7. packing design to require a minimum of energy and raw material;
8. packing reduce and overpacking.

REFERENCES

1. APOSTOLP., M RCULESCU C.,(2006)Managementul de eurilor solide, Editura AGIR, Bucure ti .
2. BOLD, O. V.; M R CINEANU, A. (2003). *Managementul de eurilor solide*. Bucure ti: Editura Matrix Rom.
3. UNGUREANU, C.; (2006). *Gestionarea integrat a de eurilor municipale*. Timi oara: Editura Politehnica, ISBN 973-625-386-4.
4. WEHRY, A.; ORLESCU, M.; (2002). *Reciclarea i depozitarea ecologic a de eurilor*. Timi oara: Editura Orizonturi Universitare.