

## **PACKAGING MATERIALS: RESEARCH AND IMPACT ON THE HUMAN BODY**

With the rise of industry and trade to a higher level, in order to have an attractive appearance of the product, to promote itself and to be able to maintain its properties both during transportation and storage, the problem of packaging, packaging equipment and a bright quality label has become relevant. Fundamentally new types of packaging and methods of its processing are being developed. The problem of wastes disposal is particularly acute. People spend a lot of money so that the packaging has not only an attractive appearance, but also can protect the products from the effects of environmental factors on it. [2]

People should learn about the impact of other products, different types of packaging material and be able to choose safer for health. Packaging is the most important part of almost any production. Different materials can be used for packaging - paper, fabric, polyethylene, plastic, alloys of light metals and many other materials. It is necessary to draw attention to the advantages and disadvantages of polyethylene packaging.

Polyethylene packaging is the most popular type of packaging today. Polyethylene bags are universal. They are quite resistant to many external actions of the environment. They protect the product from moisture and dirt. In addition, polyethylene packaging or packages with a company logo can serve as company advertising and product promotion. In many countries, environmentalists are against the use of polyethylene packaging, they demand the use of other types of packaging - paper, fabric, cardboard. Such a demand is fully justified - polyethylene is durable. The relevance of polyethylene packaging is explained by the fact that it is the cheapest type of packaging for the manufacturer of goods. This is a decisive argument when choosing a packaging material in most cases. [7] The classicist of packaging theory, T. Hein, believes that the main difference between a supermarket and a traditional market is that in the former, the act of sale actually takes place without human participation, since the role of the seller is largely played by packaging. [6]

**The purpose of packaging is to attract a person's attention and at the same time make him trust what is inside. [9]**

As you know, any product needs packaging. Packaging is used for various purposes. It protects the product from contamination and spoilage, facilitates the transportation and storage of the product. It gives expressiveness to advertising activities and makes distribution of goods possible. [4]

<i><b>Packaging function</b></i>	<i><b>Packaging task</b></i>
Localization function	Limitation in some volume of a certain number of products
Protective function	Provides protection of the product from environmental influences and protection of people from dangerous products with the help of packaging
Ensuring ease of use of the product	The packaging should provide the consumer with the maximum and most specific services
Communication function	Packaging must convey all the necessary information to the consumer

The packaging consists exclusively of:

- a) consumer packaging, i.e. packaging that constitutes a product unit for the end user or consumer at the time of purchase;
- b) group packaging, which constitutes a group of a certain number of units of the product at the time of purchase;
- c) transport packaging, which facilitates the movement and transportation of a certain number of units of the product in order to avoid mechanical damage. [8] A container is an industrial product intended for packaging, storage, movement and sale of goods in the sphere of circulation.

**Materials.** The material of manufacture is the leading feature of the classification. Previously, paper, cardboard, glass, sheet metal (tin), leather, and even straw and vines were used to design finished products.

**Wooden container.** Wooden packaging is the main component in the structure of packaging and today is the main type of packaging for packaging and transportation of consumer goods.

**Cardboard and paper containers.** Cardboard and paper containers - crates (boxes), boxes, bags, packages belong to promising types of containers. Production of transport containers from corrugated cardboard is widely used in global practice.

**Metal containers.** Compared to other types, metal containers have the highest mechanical strength, tightness and heat resistance. Barrels, drums, cylinders, flasks are used for packaging goods. [6] Metal packaging has positive qualities: it preserves the taste of products; protects against the harmful effects of the environment.

Negative qualities: there is a hidden danger; contains heavy metals (lead). Heavy metals have a negative effect on the nervous system, blood cells, and contribute to the development of cancer. Experts do not recommend buying dented and rusted canned goods.

**Polymer container.** The polymer container has an insignificant specific weight in the total volume of the container. It is promising, has sufficient strength, is chemically resistant, and is light. The main types of consumer and transport polymer containers are cans, boxes, vials, packages, boxes, bags, canisters, etc.

**Vacuum polyethylene.** Vacuum polyethylene, in which meat and fish, vegetables, cheese and other products are often packed, preserves their freshness longer, but in an oxygen-free environment, certain types of bacteria that become active after the package is opened multiply perfectly. And if you also keep it open in the refrigerator for some time, then the chances of getting poisoned increase dramatically. For packages in which crackers, chips and sweets are packed, toxic glue, which causes oncological diseases, is often used to bind them. [5]

**Polyethylene bags** have a dangerous effect on human health:

1. Products in a bag spoil faster, because there are many bacteria on polyethylene;
2. Condensation forms in a tightly closed transparent bag, in which mold quickly develops;
3. Storing food with high acidity has a destructive effect on the upper layer of the package. Chemical compounds penetrate into products and poison them;
4. During freezing, polyethylene releases toxins that are dangerous for humans.

**Damage to the environment:**

1. Polyethylene bags decompose naturally within 100-500 years.

2. In the process of burning, a huge amount of carcinogens are released into the atmosphere, which pollute the air and destroy the ozone layer.

3. According to ecologists, 1% of polyethylene on the planet is recycled. [1]

**What can they be replaced by? We offer you four alternatives to using plastic bags:**

1. **Eco-bags.** They are produced from natural or synthetic materials using production waste or secondary raw material. They are very durable, easy to wash and reusable.

2. **Woven mesh handbags** are not only an ecological alternative to bags, but also a fashion trend.

3. **Paper bags, kraft paper bags, wrapping paper** are environmentally friendly and safe products that do not harm nature.

4. **Fabric bags** for loose products (flour, cereals, sugar).

**The best container is glass.**

Disadvantages: fragility; high specific gravity.

Advantages: glass is inert; does not release harmful substances into food; is used endlessly. [10]

**Foil.** Aluminum foil is versatile, easy to use and, in addition, allows you to make the cleaning process as fast as possible. However, if you often cook with foil, you should definitely know the following facts. Aluminum is a neurotoxic heavy metal that has long been associated with the development of Alzheimer's disease. Exposure to this toxin can lead to impaired coordination, memory, and balance. Unfortunately, for many who suffer from Alzheimer's disease, it is the ongoing memory loss that creates a huge metaphorical gap with loved ones that cannot be bridged.

This toxic metal tends to accumulate in the bones. It directly competes with calcium for a place in the bones. Inhaling aluminum can cause breathing problems, including pulmonary fibrosis. If you often grill with aluminum foil, you can be left with a pair of sick lungs. The foil in which food is wrapped and grilled emits aluminum flakes into the air at high temperatures, which fly away with the smoke.

**Conclusion:**

1. Do not cook food with aluminum foil.

2. Use it only for storing cold products in the refrigerator.

3. A better alternative would be glassware and a complete rejection of foil. Do not store spices, tomatoes or citrus fruits in foil.

4. Never! Together with the acid, aluminum will also enter the food.

Get rid of aluminum cookware. [11]

**Creative packaging abroad:** protein-rich buns began to be produced in such an interesting package in the form of press cubes (inside each package was a coupon for a free visit to the fitness center); Parmesan cheese in the form of pencils (sharpener included. Now decorating pasta or salad has become even easier!); Spaghetti "New York"; "Green Berry" tea; honey complete with bees; Japanese cookies; butter; tea bags on hangers; the original packaging of Eat&Go sandwiches (a successful solution of the developers of this packaging allows you to fold it with an accordion as the sandwich is consumed); chewing gum in the form of a dinosaur, where the gum acts as teeth; olive oil "Mini Olive". [3]

The main legislative and regulatory framework for maintaining the quality of food products is regulated by the Laws of Ukraine. [4] Remember! Health is the most precious treasure of a person! Appreciate it!

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