The Situation and the Development of Chinese Food Packaging

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Abstract: With the constant development of food packaging industry, the traditional food packaging industry has been out of date in the new era, which requires the emergence of a new type of food packaging to replace the traditional one. As a trend of new food packaging development, green food packaging is safer, healthier and with more environmental features. Since it is a kind of new packaging material, there still exist some inadequacies in green food packaging industry. However, the trend is unchangeable, which is the requirement for the development of productive forces and the demands of the times. Using qualitative and quota methods, this paper put forward the strategies for Chinese food packing.

Keywords: green packaging, food packaging, traditional food packaging

Part 1: Introduction

Packaging refers to the process to facilitate the protection of goods, convenient transportation, the promotion of sales and the technical methods uses by certain containers, materials and other aids. This modern packaging concept reflects the commodity packaging attributes the means and the production activities. Meanwhile, as a kind of commodity, packaging has not only practical value but also is an important means to achieve the product value.

According to the PRC national standard “Packaging Generic Terms”(GB4122-83), packaging: is a general term of containers, materials and ancillary items adopted according to certain techniques to protect products, provide convenient recreational transportation and promote sales, or the general items of containers, materials and ancillary items adopted to achieve the above mentioned purposes, or the operating activities by implementing certain technology in the process of using containers, materials and ancillary items.

To sum up, food packaging refers to the use of appropriate packaging materials, containers and packaging technology to package food so that food can maintain it value and original state in the course of transportation and storage.

Part 2: The Present Situation of Chinese Food Packaging

2.1 The Functions of Food Packaging
The basic functions of food packaging can be grouped into the following four points: First, food packaging can protect the quality of the food’s outward appearance, extend food preservation circulation, which are the most important function of food packaging; second, it can not only increase the food variety but also provide much convenience for production, circulation and consumption. Third, it can prevent food from contamination. Fourth, it can promote the rational flow of commodity circulation, therefore, to promote food competition and expand food sales.

Compare with the other packing, the most important character of the food packing is the safety. Food is the most important part in our daily life, which makes the problems of food packing safety become more and more obvious.

At present, the green packages which are popular and most advocated by consumers on the domestic market include paper packing, high-tech plastic food packing and so on. Tack the “Artificial Peel” for
example; it is a new kind of paper in the future. You skin and eat it just like you eat the orange, and the peal can be recycled. In China, we have already put a production of vegetable liquid packing preservation membrane on Chinese. Packaging design and decoration directly affect the level of competitiveness of the product itself; even have a deep influence on brand and the enterprise image. Delicate package can conquest buyers psychologically and increase purchase desire. Food packaging is a continuation of food production. Only by packaging, can food avoid various damages and deduction or loss of its value. Therefore, the input value in the food packaging will not only be compensated in sale but also the food value will be increased.

2.2 The Developing Trend of the Food Packaging Industry in the World
Currently, plastic products are commonly adopted in food packaging in most of the countries in the world. What we are most concerned is that under certain medium circumstance and temperature, the monomer and polymer additives in the plastic will dissolve and permeate into food and medicine in a small amount, therefore, to lead to acute or chronic poisoning, even a carcinogenic effect. Meanwhile, the huge wastes of the plastic products consumed every year in the world are hard to be decomposed, which pollutes the environment seriously. With the constant improvement of people’s living standard, the food safety is more and more concerned, and packaging has become a commonly existed problem throughout the world. Many countries and regions have begun to take actions. On one hand, they should research and develop new type of materials that is conformed to the environmental requirements for food safety. On the other hand, the government issues relevant regulations to promote and limit enterprises’ relevant conducts.

In this century, people can get high-tech plastic packing just like planting and harvesting wheat and potatoes. Along with the rapid development of science and technology and the growing concern about environmental protection, paper packing is developing into the type of function.

General speaking, the worldwide reform of food packaging are mainly reflected in the following three aspects:
2.2.1 Saving Materials
The wasting of food packaging resources has brought the countries all over the world many inconveniences and caused relevant ecological and social problems as well, which has had a bad effect on people’s normal life. According to the survey, in Japan, 90% of the milk is sold with the package of folding lines, which is a good education for children to get in touch with and use the green product with the function of environmental protection early time. The cost of this kind of foldable package is low. It can not only reduce the occupying space but also facilitate the transportation circulation and cut down the transportation cost. Another example is the popular Japanese beverage “Yakult”. This healthy drinking product adopts a specially designed cup-shaped container, which can be opened from the bottom. By using this kind of design, consumers can easily fold the containers to facilitate re-transportation and re-circulation. Also in Japan, a packaging design competition is held every year in Tokyo. A beverage packaging known as “Ecopac” has ever won the prize and its design has ever been widespread. Its packaging consists of 100% re-circulated cardboard box and sack used to hold beverage inside the box, which is also known as the design of “bag in box”. The purpose of this design is to enable consumers to separate the cardboard box and the sack easily, which will be easy to handle in re-circulation. Now this kind of packaging is commonly adopted in beverage and alcohol packaging on Japanese market. Another kind of popular packaging design called “Standing Bag” is replacing plastic bottle packaging on the market. Comparing the sack packaging with bottle package, the plastic materials used in sack package is only 1/5of the bottle package. Besides beverage, the edible oil on Japanese market is packaged with compound paper bags, which also cut down the usage of plastic materials.

The Japanese expert further points out that some of the food can be put on market without packaging, such as fruits and vegetables. The survey of Japanese Chamber of Chain Commerce indicates that except for tomatoes, pears and strawberries, 90% of the vegetables and fruits can be sold without packaging, which is helpful to keep the fruits and vegetables nutritious and fresh. These kinds of green packages are worthy for reference.
2.2.2 Safeguarding Environmental
With the scientific development and the improvement of people’s living standard, the safety and the environmental protection of the food packaging is drawing more and more attention from publics. They no longer just attach importance to the safety of food quality. What’s more, they begin to realize the effect of the food packaging on food and the effect of discarded food packaging on the environment. Some experts believe that even if the food itself is green, it will lose its original value if it is polluted in the process of packaging and sales. Therefore, green food packaging plays equally decisive role in the green consumption. Based on the above discussion, we can conclude that we should develop the food packaging materials that can be repeatedly used and are harmless to the ecological environment and people’s health.
A Japanese company has ever developed a kind of packaging for beer presented as gifts to their customers. The packaging box is made from wheat shell delicately so that the packaging of this material can be dissolved naturally into fertilizers after being discarded. From the above analysis, we are sure that the designer of this product must have taken a detailed research on ecology and circulating technology. Under the guidance of the idea “Infinite Resource”, the packaging of environmental safety should follow the positive circle of “resource—machining—sale—use—discarding—recycling”. The packaging with such materials and design will be viewed as the example of “safe material” and “safe packaging” As a kind of safe material, “Baisheng” plays a special role in the packaging design. In 1991, there was a special section for introduction and displaying the achievements in this aspect in the exhibition hosted by Japanese Packaging Design Association. The specialty of this white paper bag is that: in the process of manufacturing, the seeds of trees have been added in the materials, therefore, after discarding, the paper will be discarded and the seeds will be sprouted and even grow up. This packaging design project has no doubt promoted the circulating technology into a new field, which is helpful for us to protect ecological environment. The design of the Japanese Group of “Protecting the earth from the future advance” is innovative. For example, the package they designed can be consumed together with the inner goods completely and the plastic hollow ball used to package edible oil is the edible plastic that can be dissolved by heating. Nowadays consumers gradually accept these kinds of safe materials.

2.2.3 Facilitating Recycling
With the objective of protecting environment, proper styles must be adopted in packaging design to encourage consumers to recycle the discarded packaging. Again the easy-open beer can promoted by the Japanese company is easy to be recycled. After finishing drinking, consumers only need to bend the can according to the direction to reduce the volume. By statistics, there are 250, 000,000 sales machines selling canned beverage in the streets in the towns of Japan. The sales volume amounts to 350 billion canned beverage per year. Some relevant departments have taken much effort to recycle the discarded cans; therefore, the packaging design of this project has come into being. Up to now, the recycling rate of the empty steel cans have been up to 45.7%, the empty aluminum 43.5%. However, in the U.S.A, the recycling rate of the empty aluminum can is 63.6% in 1990. Therefore, the Japanese government has carried on some measurements to encourage the recycling of the empty cans, such as, the method of rewards, or each shop provides simple and convenient tools and methods for consumers to promote the development of the recycling work and guarantee to the largest extent that those discarded packages will not cause environmental pollution. Also in Japan, a kind of packaging is designed to hold all kinds of edible oil. After the oil is used up, the packaging can be pressed to reduce volume so that it will have the effect of convenient recycling. According to the changes of the designing methods and the aesthetics standards, other countries are adopting different reform methods.

The Developing Tend of Food Packing.
(1) It is adaptable to microwave products and electromagnet products.
(2) It is easy to be opened and eat. In nowadays people do not have too much time for cooking so fast food has become their first choice, which raises higher demand for food packing: more convenient, more practical and more personal.
(3) The content of high-tech in food-packing should be improved to make feas to recycle reused repeated.
Part 3: The Developing Trend of Chinese Green Food Packaging Industry

3.1 The Connotation and Classification of Green Food Packaging

3.1.1 The Connotation of Green Food Packaging

We can define the connotation of food packaging from the following five aspects: first, it is a reduction of packaging. That is to say, the packaging materials should be reduced on the basis of satisfying the functions of protection, convenience and sales. Second, the packaging should be easy to reuse or easy to recycle. The goal of reusing the packaging can be achieved by reproduction, burning to make use of thermal energy and fertilizing to change the soil condition, etc. Third, the discard packaging should be degradable to improve the quality of the soil. Now “Reduce, Reuse, Recycle and Degradable” are generally recognized as the 3RID principles to develop green packaging. Fourth, packaging materials should be harmless and nonpoisonous to human beings and living things. The poisonous elements, pathogenic bacteria and heavy metals shouldn’t be included in the packaging materials. Or this content should be controlled under relevant standards. To sum up, green food packaging means the whole process of packaging including raw materials collection, materials machining, products manufacture and usage, waste recycling and the final dispose, should be harmless to human beings and the environment.

3.1.2 The Classification of Green Food Packaging

Green Food Packaging can be classified into a grade and AA grade. The green packaging of a grade means the appropriate packaging that the discarded wastes can be recycled or degradable and the amount of the poisonous substances is under the stated limits. The green packaging of AA grade means the appropriate packaging that the discarded wastes can be recycled or degradable; the products in the whole life cycle are harmless to human beings and environment, and the amount of the poisonous substances are under the stated limits. The above-mentioned grades that mainly concern about the problems of packaging waste disposal had been considered in the past, are being discussed at present and will be solved in the future.

3.2 The Present Situation of Green Food Packaging

In 1990, Chinese enterprises began to develop green food and green food packaging industry. Now 16 years passed. Green food production and management system have been set up and promoted rapidly. In addition, great achievements have been made in the research of green food packaging materials. At present, it is developing rapidly.

Due to the reasons that the exported goods must adopt green food packaging, the springing up of domestic environmental protection and government support, Chinese green food packaging industry is developing rapidly. More and more packaging materials for the purpose of environmental protection are adopted; the market share is increasing; there are more and more high-tech packaging materials; some of the products have reached the advanced international level and sold well on the international market. However, compared with the developed countries, Chinese packaging industry is backward and the developing speed is relatively slow.

3.2.1 The Problem Existed in Green Food Packaging

Vague concept of green packaging, in the eyes of many people, green packaging is often misunderstood for afforesting of the packaging products. They mistakenly treat the packaging made of degraded materials as green packaging regardless of whether the production of packaging products will cause environmental pollution and resource waste or whether the packaging products can be reused or not, for example, they classify paper packaging as a green packaging and the plastic packaging is the antithesis of green packaging. They even thought toxic polyethylene is poisonous and should be replaced by plastics etc. For example; they classify paper packaging as green packaging. Plastic packaging is the antithesis of green packaging. They even thought toxic polyethylene that we should be instead paper of plastics. In fact, we should consider the environmental impact from the entire life cycle of paper packaging. However it is sound to be promoted if the plastic Pickering’s reduction and the resources come true. Plastic packaging materials process advantages that can not be replaced by other packaging industries. It will result in greater pollution if we take a ban on plastic. Our forest resources are limited; the pollution caused by producing paper is difficult to control, so it is neither realistic nor environmental
protection to replace plastics for paper.
The imbalance of the development, first, different enterprises has different time to start the green packaging. The first enterprise to introduce the green packaging are export-oriented enterprises, who know the green packaging earlier and are affected by the impact of the packaging rapidly. And the domestic-market –oriented enterprise are really in poor response to the green packaging. Second, the development of green packaging is slow, because the economy is uneven in different regions. In the developed area the green packaging is developing fast and it does not get enough attentions and propaganda in the poor developed middle and western regions. In processing the waste packaging, the laws and policies are different which lead to the packaging pollution transfer to the underdeveloped areas.

Lack of the funds, technology and the personnel, due to the impact of advanced technical and the enterprise size constrains, the cost of the green packaging products is higher than the traditional packaging products, that the green packaging products in competition with the traditional packaging products does not process price advantage. This directly leads to the inferior position of the green packaging products in the market competition and discourages confidence of the development of the green packaging business seriously.

Third, inadequate Green Consumption. Whether the packaging will follow the route of sustainable green packaging road will depend on the adjustment and orientation of the market. However, the development of green consumption in China is relatively late and people have not formed the consumption habit. The white pollution is everywhere and the green packaging is underdeveloped in the towns and cities throughout China. At present, the production of green table wares is about 60 billion, 80% of them is exported mainly to Japan, the U.S.A and Singapore, etc. Another 20% will be sold to railway and airway transportation in the domestic market. It is difficult to popularize it in fast food business. Due to the excessive demand of export and the inadequate consumption in the domestic market, many green packing enterprises are only concerned about the oversea market and ignore the home market.

Fourth is the low recycling rate of the packaging. Take Liyue for example, even if the company is accelerating recycling rate of the Liyue bao in the world wide, the target of the recovery rate in 2008 will only be increased to 20%.

Fifth is the pollution of the water. The water pollution caused by the excessive use of water in the process of paper product has caused environmental pollution.

Sixth is the speeding-up of desertification. The most significant packaging materials is the green paper, which destroyed the forest resources constantly, which has bad effect on environment the desertification is accelerating, and the living environment is in deterioration.

Recently, the development of foreign food packaging containers shows several characteristic as following:
Microwave packaging containers have been a hot spot of packaging production. Such food packaging container can be divided into two categories: one is the container, which has single acquirements, does not affect the normal heating process of food; another is the container which can adjust food-heating to produce the sallow surface and find food or the container wall can prevent certain microwave from heating food excessively.

The most popular food packaging is the kind of dual pallet packaging that can be used both on microwave ovens and general electric or gas stove. After cooking it can be put on the dinner table for eating without exchanging another plate.

3.2.2 The Present Situation of Green Food Packaging
Based on the above discussion, I realize Chinese green food packaging is facing following situation that the laws of Chinese food packaging are lagged behind, the local protectionism is rampant. The alternative product is not promptly, the reproduction funds are not forthcoming, the consumer market is immature, the cost of green food packaging is high, and the products quality is unstable. This is a big challenge for government and the domestic enterprise. Facing these problems and the trend of the international food packaging, the government and enterprises are actively solving it and put forward new programs to response to them.
Part 4: The Strategies to Develop Chinese Green Food Packaging

Among many green foods from food, vegetable, and fruits to beverages, snacks and other deep-processing food, only the minority of them use degradable packaging material and preservation to carry on “green packaging”, which is not only a health problem, but also make the packaging of domestic green food fail to accord with the standard and can not enter the international market. The “Norms” that will soon be issued does not allow the use of Foam polystyrene, Pu and others of the same kind for plastic products; Metal packaging, glass products should not use paint materials and steeled materials which will do harm to human and environment. The out packaging should have clear explanations for the material used, reuse and recycling and signs of green food. Ink used for out-packaging printing and labels should be non-toxic adhesives and has no direct contact with food. It is understood that there are strict requirements for human health safety from the procurement of raw materials to production processes, including whether the discarded packaging is safe or not on environment.

If one aspect can not meet the standard, the products will not be allowed to put into production. Developing green packaging is not merely to reduce “White Pollution”. In essence, it is vital to improve people’ life, maintain human health and promote ecological balance as well. Therefore, government, along with publics, should try to promote the development of green packaging from the following aspects:

First, we should encourage green consumption and create a good market atmosphere for green packaging. As consumers who produces packaging wastes directly, we should set up the sense of value and sense of consumption harmonious with the environment, choose the life and consuming style helpful to environmental protection voluntarily so as to promote green food packaging. While shopping, instead of concerning the quality and delicate packaging, consumers should pay more attention to whether the goods are in accordance with the requirements of environmental protection and whether there is a green identification on the package. Only in this way, can manufacturers be pressed to adopt green packaging actively, to carry out green marketing, to cater consumers’ psychology and to promote the sales of commodity. Meanwhile, we should increase education efforts to instruct publics to participate in the green consumption campaign actively through the function of the Medias.

Second, the government should support the development of green packaging in policy and fund. As a newly developed industry, green packaging industry just springs up in China. Many products have not formed the production in the large scale yet. The amount and quality have not met the consumers’ demand of green consumption; In addition, the brand effect has not formed yet. At present, the relevant departments of government should adjust economic structure, actively promote enterprises’ merging and re-structuring, promote rational resource allocation, realize green packaging production in a large scale, increase the developing efforts from structure and total amount, therefore, to meet the constant market need of green consumption. Government should provide more policy privileges in project examining and approval, market admission, revenue and loans etc to encourage the development of green packaging production.

Third, we should develop and popularize the green packaging materials actively. Speeding up technology innovation, researching new packaging materials, new technology and new products is the key to develop green packaging. From the choice of packaging materials, we should try to avoid excessive packaging; we should adopt the packaging materials that can be recycled; the materials must be harmless to the environment; we should popularize various substitutes such as paper and the degradable plastics. We should invest to develop plant packaging materials. In addition, we should try to use mono packaging materials and avoid adopting the binding method which will result in recycling and separating difficulties.

Fourth, we should strengthen the recycling of packaging materials and realize the ecological circulation of the discarded wastes by means of legislation and economy, etc. It is stipulated clearly in the German law that: since July 1st, 1995, the recycling rate of the packaging materials such as glass, tinplate, aluminum, cardboard and plastics etc. must be amount to 80%. It is
stipulated in Britain that at the beginning of 21st century, 60% of the packaging materials for industrial goods and 35% of the daily necessities must be recycled.

Directing against the commonly existed problem of excessive biennium in food packaging, China formulates “the General Code of Greed Food Packaging”, which will come into effect this year. According to this code, “The sign on the cardboard box must adopt aqueous dissolved printing ink.” It is also stipulated that the surface of the food packaging is not allowed to coat wax or oil; the printing ink used to print the outer package or the binder used to glue labels should be nonpoisonous. From the above mentioned stipulations, we can see that Chinese government has begun to strengthen the standard of food packaging by means of legislation.

While Chinese government is formulating relevant legislations to enhance the supervision of the recycling of the discarded packaging wastes, the government should carry out the policy of taxing on the wastes. That means the government will charge fees according to the amount of the wastes; publics can pour the discarded packaging into the recycling box free of charge. Meanwhile, the discarded wastes that have had a bad effect on environment should be charged of packaging tax.

Experts point out: in the future 10 years, “green food” will lead the food consumption market in the world. The green food packaging will have an absolute important role in the production of green food and its consumption. It is an evitable choice for Chinese packaging industry to develop green packaging actively in facing WTO in the new century. In addition, it is also an important basis for Chinese food line to develop rapidly. We are looking forward to the bright future that green food packaging will become the leading part of the packaging industry.

**Part 5: Conclusion**

Based on the present situation of Chinese food packaging, we realized that with the development of economy and improvement of people standards, people are no longer only satisfied with the requirement for food quantity and quality. Instead, they put forward the requirement for food safety, which is often ignored by publics. The direct and basic factors that limit the food safety are the problem of food packaging. Only by adopting new environmental green materials as the materials food packaging, can we realize the purpose of food. Since green food packaging is still at the starting stage in china there are many shortcomings from manufacturing to recycling. However, as the new type of packaging, with time passing by, compared with the traditional packaging, the advantages of green food packaging will be more and more obvious. Therefore, green food packaging will be the inevitable trend of food packaging development.

**Acknowledgements:**

From December 2002 to now I have been reading the papers in the field of green food packaging to collect relevant information. In this April, I started my writing job on this paper. After four times revision, this paper is finally finished.

In this process my instructors Yu Junqiu and HaoJianjun have given me a lot of instruction and help. I benefit a lot from the two teachers stringent attitude in academic research, patience and their warm-heartedness Meanwhile, I also want to avail myself of this opportunity to thank each teacher’s nurture and education of the foreign trade and foreign language department. In addition, I want to express thanks to my classmates who have offered me help and care; and thanks my alma mater--Inner Mongolia finance and economics college which provides the good learning environment for me, causes me to harvest in four years study life.

At last, I want to make a deep bow to my dear teachers and my college, please accept my sincere thanks.

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