
Healthy Packaging



Table of Contents

	Page
The History of Packaging	1
Food as a Marketing Opportunity	1
The Definition of Food	2
The Food-Disease Link	2
Genetic Context	3
The Natural Package	3
Processing Degrades Nutrition Values	3
Optimal Nutrition as a Goal	4
Special Nutrition-First Wysong Features	5
Wysong Nutri-Paks™	6
Environmental Packaging	8
The Fallacy of “Biodegradable” Paper	9
Glass, Metal, Plastic	11
Environmental Features of Nutri Paks™	14
Nutri-Paks™ vs. Others	15
Reusing Nutri-Paks	15

Figures

	Page
1. Did Medicine Vanquish Infectious Disease?	1
2. A Nutritional Syllogism	2
3. Pancreatic Size	3
4. Time and Adaptation	3
5. Genetic Expectations	4
6. The Destruction of Nutrient Protection	5
7. What We Imagine Is Not What We Get	5
8. Whole Wheat vs. Fortified Flours	6
9. Whole Rice vs. Brewer’s Rice	6
10. The Dangerous Middle	7
11. Processed Goop	7
12. Processing Approaches	8
13. Typical Advertising Claims	9
14. Nutri-Paks™ vs. Other Packaging	9
15. The Nutritional Importance of Packaging	10
16. The Nutri-Pak™ System	10
17. Plastic Packaging vs. Other Landfill Waste	11
18. Biodegradability?	11
19. The Natural Cycle	12
20. The Unnatural Cycle	12
21. Origins	13
22. Energy Consumption of Packaging Materials	13
23. Nutri-Paks™ Weigh Less	14
24. Nutri-Paks™ Have Less Volume	14
25. Nutri-Paks™ Make Less Waste	15

The History of Packaging

As society has moved from small family-centered farms to an industrialized urban world economy, the distribution of food has changed remarkably. By and large, the family farm provided all food needs right out the back door. Foods were harvested and consumed, or stored in root cellars; dried, smoked, or canned; or bermed with insulating straw and left right in the garden, permitting harvesting all winter long.

The change from an agronomy-centered to an industry-centered world has resulted in specialization. The majority of people now perform work in occupations unrelated to food production. Unlike any other creature on Earth, humans are dependent upon others to provide food. Even the modern farmer is as dependent upon outside foods sources as is the city dweller. Food is now produced far distant from most consumers. What we now eat travels an average of 1200 miles before reaching our tables. This changes the scale

of the problem of food production and distribution significantly.

Although farming may not be a direct part of everyone's life, modern-day food processing, preservation and packaging is. We purchase tantalizing packages with the implicit belief, or at least hope, that what we are buying is wholesome and safe. Marketing by manufacturers and packagers would have us believe that modern processed and packaged foods are as good as, if not superior to, those available straight from the garden. Many scientists and even governmental regulatory agencies argue that the modern food fare is the best and that we are fortunate to be benefiting from yet another marvel of modern technology.

Indeed, food distribution, preservation and packaging may be responsible for further improving our health and wellness today than all medical interventions combined. Even the great plagues that have decimated human populations

throughout history, such as typhus, polio, diphtheria, whooping cough, tuberculosis, pneumonia, influenza, measles, and scarlet fever, were vanquished not because of the introduction of vaccinations, chemotherapeutics, or other medical interventions but because of improved hygiene and food distribution.

Food as a Marketing Opportunity

As food delivery has moved from farm self-supply to massive worldwide distribution, packaging and preservation have gained pre-eminent importance. Food was once easily identifiable. An apple looked like an apple and a steak a steak. But now to create shelf life, packages obscure contents. What we buy are words and graphics on labels. We must trust that the contents are wholesome and health-enhancing.

However, profit has a way of compromising such trust. First off, real, whole, natural, highly nutritious

DID MEDICINE VANQUISH INFECTIOUS DISEASE?

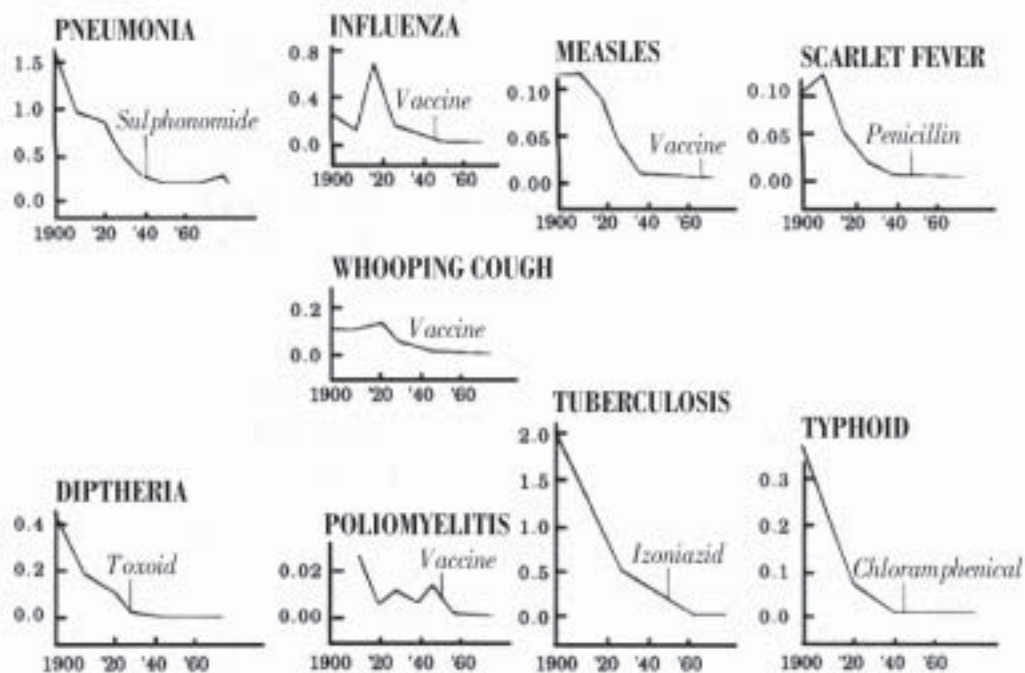


Figure 1. The fall in the standardized death rate (per 1,000 population) for nine common infectious diseases in relation to specific measures, for the United States. 1900-1973. Notice that the majority of the decline in these diseases occurred before the introduction of the medical measures often accredited with their eradication.

foods are expensive and perishable. Processors, faced with this dilemma, create what they call “value-added” packaged products. Thus an apple crisp is a value-added version of an apple. Cajun vacuum-packed beef jerky is a value-added version of a steak. Portion packing, shelf-life, color, flavor, and texture are all modeled by the wizardry of food processing to create higher profit margins than are possible with basic food commodities. The value added is primarily value (profit) to the producers. The fractionating, processing, packaging and additives significantly decrease the value (nutrition) for the consumer.

Packaging is a critical element in the preservation of nutritional value. Unfortunately, it is primarily used as commercial dressing in the competitive race for consumer dollars. Although producers must address product degradation through the use of preservatives and antioxidants or specialized processing, little more attention is paid to inherent quality. Sales are the goal. If air could be fabricated into an irresistible treat and dusted with some synthetic vitamins, it would be glamorously packaged and seductively advertised as the ultimate low-fat, zero-calorie health food. The ingredients would cost nothing, the packaging and marketing everything. So be it if profit is to be had.

That which cannot be perceived by the consumer is ignored since it does not affect sales and profitability.

Nevertheless, attention to nutritional detail, whether or not perceived by taste, smell or color, must receive priority if health is to be achieved.

Definition of Food

Significant evidence and our own common sense tell us that the best foods are those that come directly from nature. Life has adapted to such food through millennia, eons before the Industrial Age with its roller mills, dehydrators, expellers, extruders, roasters, and freeze dryers. If the goal is optimal nutrition, natural foods must therefore be the beginning point.

Simply because something can be eaten and tastes good and may even sustain life for a period of time does not make it food in the healthful, nutritional sense. Important in any definition of food should be the living, whole, natural characteristic. However, dictionary or conventional nutritional definitions completely omit these features. Food is, arguably, *living*, not simply fractions of living substance. Vitamins A and C as singular substances do not exist within tissue. All such compounds are interrelated with many others within the milieu of living foods. Additionally, living foods contain enzymes proven to help in the digestion of the food itself, thus sparing the body some of the burden of secreting enzymes for digestion. Animals and humans fed dead, devitalized, processed foods will increase pancreatic size due to the load of having

to perform excessive digestion. Increased organ size is understood by pathologists to presage disease.

If foods must be processed (which is necessary for some in order to be properly digested) and transported, processing should be designed to enhance nutritional value. Then, once produced, preserving the natural nutritional character of the product is critical. It does little good to prepare the best of nutritional meals only to have the nutrient value of the food spoiled on the way to the table. This assumes we understand that food’s primary purpose is nutrition – not entertainment.

The Food-Disease Link

Most degenerative diseases are directly related to environmental and nutritional causes. Such diseases include the greatest killers and maimers of our time: heart disease, stroke, hypertension, obesity, adult-onset diabetes, cancer, Alzheimer’s disease, arthritis, autoimmune diseases, and others. Designing foods on a nutrition-first basis, with attention to all perceived and unperceived qualities which affect nutritional value is, therefore, an extremely worthwhile endeavor. It has more potential for improving health and preventing disease and suffering than all medical interventions combined. It should, therefore, be approached with principles and a commitment to ideals that reflect the serious responsibility that it is.

Packaging is not only critical to preserve nutritional value but also to prevent the formation of various toxins that can induce or contribute to disease. Packaging is also increasingly an environmental concern, since a tremendous amount of the waste produced in our modern society is contributed by packaging materials.

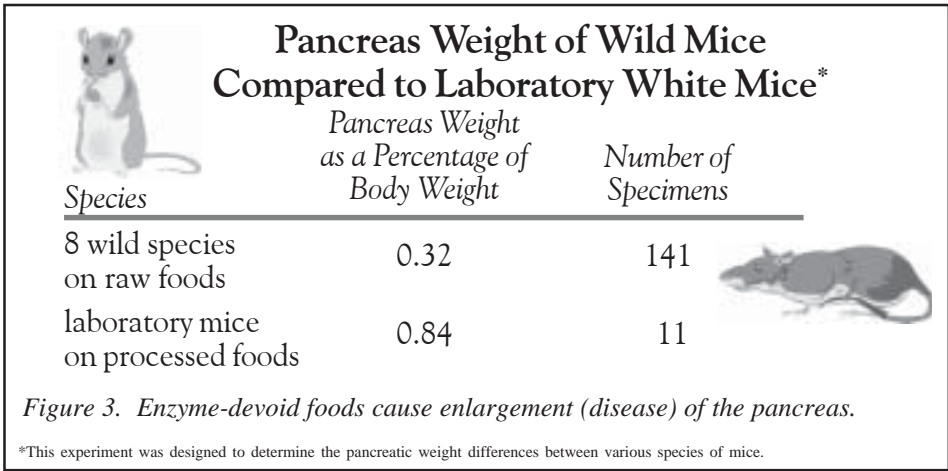
Genetic Context

Foods as found in nature, be they plant or animal, are stable and healthy. The natural diet for organisms is whole, raw, natural foods.

A NUTRITIONAL SYLLOGISM:

1. Food comes from nature.
2. Life comes from nature.
3. Things equal to the same things are equal to each other ∴ natural life requires natural food.

Figure 2. Because food in its original sense is natural, and life itself is natural, a loose syllogism exists which argues that life requires natural food.



We have become isolated from the true sources of our foods and have come to believe that all foods must be processed in some way. To eat raw things is viewed as uncivilized, unhealthy, and even repugnant. Nevertheless, for the vast majority of time that life has existed on the planet – a period that diminishes to insignificance the length of the modern era – life has consumed fresh, whole, raw foods. Humans ate fruits, berries, nuts, sprouts, vegetables and raw meats. Carnivores ate raw prey and a limited amount of raw vegetation. This is what life has adapted to; this is what our genetic program expects that we and our companion animals will consume.

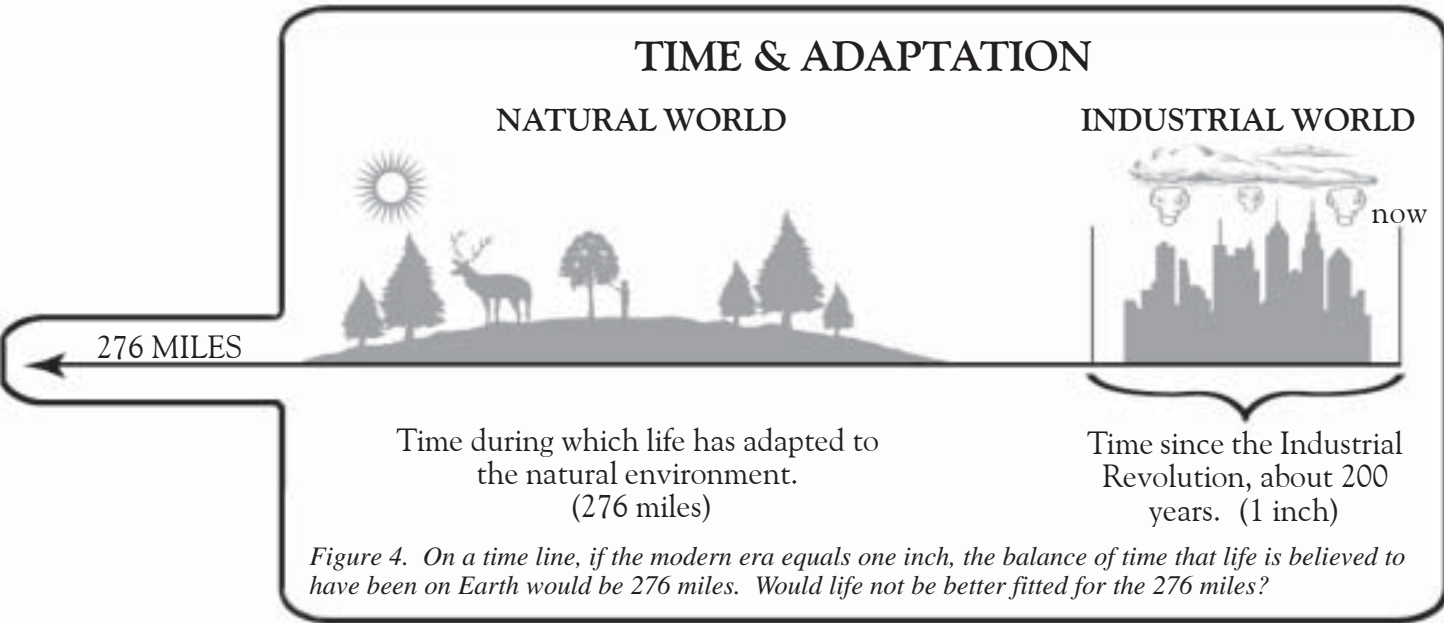
The Natural Package

Eaten immediately in the raw, natural state, foods need no preservation. They contain within them the elements necessary to preserve their fragile nutritional character. These elements include antioxidant enzyme systems, certain vitamins and minerals, intact cell and organelle membranes, and many other characteristics for which we have only an incomplete understanding. When eaten fresh, raw, and whole, foods are at their maximum nutritional value and are consumed in their very best package, that is, within their natural biological skin.

Processing Degrades Nutrition Values

Once natural foods are harvested, then milled, heated, rendered, baked, dehydrated, and so forth, the natural protective features are lost and the raw, fragile food components are exposed to the elements. Notice, for example, what happens when fruit is sliced and the inner flesh is exposed to the elements. Freshly squeezed orange juice is reported to lose nearly 100% of its vitamin C in 12 hours. Whole grains, on the other hand, have been known to maintain their integrity and even be capable of sprouting after thousands of years, as evidenced by unearthing seeds from Egyptian excavations. Yet as grains are milled to remove their outer bran layers, then ground to a fine powder, then subjected to solvent extraction to remove their oils, components degrade.

Food processors are in a constant battle to prevent product spoilage. The baking industry fractionates the white wheat endosperm flour away from the bran and the germ of the whole grain because when the bran and germ are left with the flour, spoilage and insect infestation occur. However, with the removal of bran



GENETIC EXPECTATIONS



↑
Genomes Expect This



↓
But Get This



Figure 5. We are in a genetic time warp. Our genes are in one place and we're in another.

and germ, sacrifices are made: 86% of vitamin E is lost, along with 80% of vitamin B₃, 77% of vitamin B₁, 75% of iron, 71% of vitamin B₆, and 60% of the calcium, to name only a few of the losses.

As consumers, we are easily deceived due to our disengagement from the sources of our food. We are attracted to processed foods by a barrage of marketing; we buy products for reasons totally unrelated to nutrition and have implicit faith that foods are wholesome products from quaint bucolic farm settings.

Similarly to wheat processing, when rice bran is removed to produce a white, more stable, more quickly cooked rice, 75% of vitamin B₁ (thiamin) is lost. Milling rice in this fashion has resulted in tens of thousands of deaths from the nutritional disease, beriberi. The solution by processors, then, is to add back synthetic forms of nutrients to the fractionated parts. This is called "fortification." Such "fortification" implies that this fractionated, synthetically vitamin-dusted product is now superior to the real thing, when in fact, many other nutrients have been lost. Milled rice is far from "fortified," it is nullified when compared to whole, natural real food.

We are oblivious to the manipulation of food that occurs not only in the modern industrial farm, but also between it and the final packaged product. Processed products are infused with various synthetic chemicals to help preserve them. Such chemicals not part of the biological experience all must be highly suspect and assumed to be unsafe until proven otherwise. In fact, increasing evidence is showing that many synthetic preservatives are potentially harmful. Thus, fractionating foods into their nutrient-stripped components and then "fortifying" them and embalming them with synthetic chemicals does not solve the problem of providing optimal nutrition.

It has become an important goal of processing to remove any element that may threaten shelf life. This is done through increasingly rigorous processing methods, fractionating the food into further and further pieces, until what is left is a lifeless, odorless, tasteless, colorless, refined white substance that even insects and microbes are loathe to attack. The resulting amorphous substrate, which has almost limitless shelf life, serves as a base to which dyes, flavorings and artificial odors can be attached to produce limitless new products.

Aside from the nutrient losses resulting from processing to increase shelf life, processing itself creates a whole new array of non-nutrient-chemical degradation and combination products, which not only further diminish nutrient value, but also may result in the formation of toxins.

Optimal Nutrition as a Goal

Unfortunately, much modern food marketing has become an issue of how to produce the most volume of food, have it maintain indefinite shelf life, and create proprietary or patentable products that have mass-market appeal and high profitability. Nutrition, other than that which is mandated to prevent overt nutritional

PROCESSING DESTRUCTION OF NUTRIENT PROTECTION

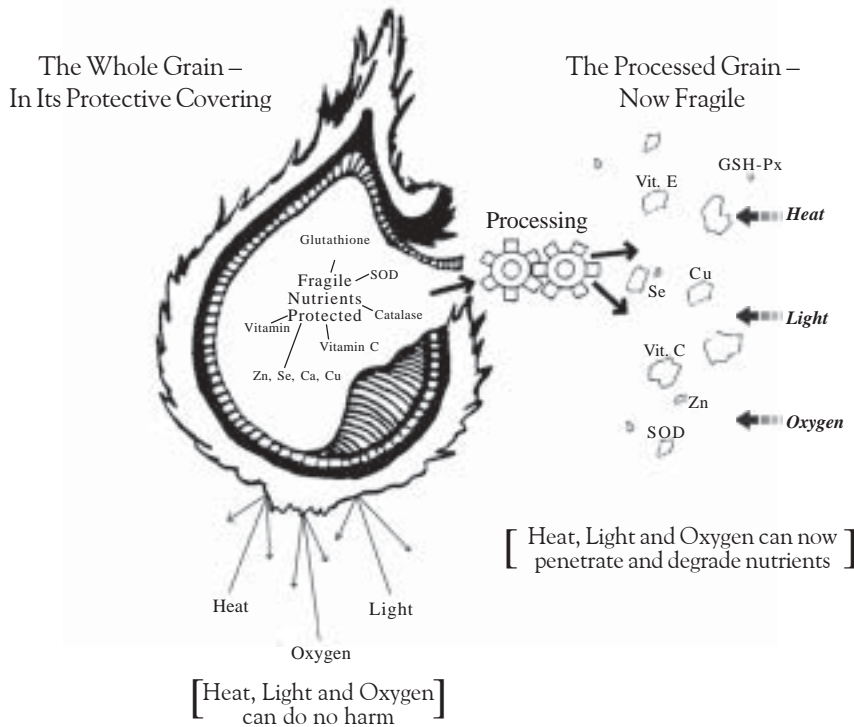


Figure 6. Within whole plants, nutrients are protected by a variety of natural antioxidants and other protectants. Once food is processed and fractionated, these protective elements are lost, exposing the fragile nutrients to degradation.

are capable of harvesting daily meals in this way, and fewer still wish to turn their pets loose into what nature there remains, to enable them to seek natural prey animals. Packaged food products are here to stay.

Special Nutrition-First Features

Just because the ideal cannot be achieved is no reason to not press towards its mark. Wysong has incorporated many unique features into the basic food design of Wysong animal diets to attempt to achieve the nutritional ideal. These include the use of whole ingredients or nutrient-dense fractions, special strains of grains that have superior amino acid profiles, legumes that are more easily digested, organically-grown ingredients where possible, natural antioxidants (see Wysong Oxherphol™ Technical Brochure), active enzymes, and friendly digestive microbial cultures. In addition, Wysong employs careful processing to try to preserve the most nutritional value possible, fresh batching rather than mass production

disease, such as fortifying white rice with vitamin B₁, is by and large not addressed. Primary concern in the marketplace lies in the protection of profits and market share and not in the more important protection of optimal nutrition.

The true challenge to modern food processing is to create, beginning in the farmer's field, nutrient-dense, chemical-free foods, which are usually highly perishable, and also to protect the nutritional character of these foods until they are delivered to the table. The more perishable a product is, the more nutritious it is. Therefore, one should eat food that spoils rapidly but do so before it does.

Any processed food, regardless of the best of efforts, is a compromise and surely will fall short of the nutritional value of foods which could be obtained directly from nature. But few

WHAT WE IMAGINE IS NOT WHAT WE GET



Figure 7. We imagine that the processed pet food we buy reflects the wholesome, nutritious foods found in a farmer's field. However, we overlook the incredible manipulation, alteration and destruction of nutrients between the two ends.

WHOLE WHEAT vs. FORTIFIED FLOURS

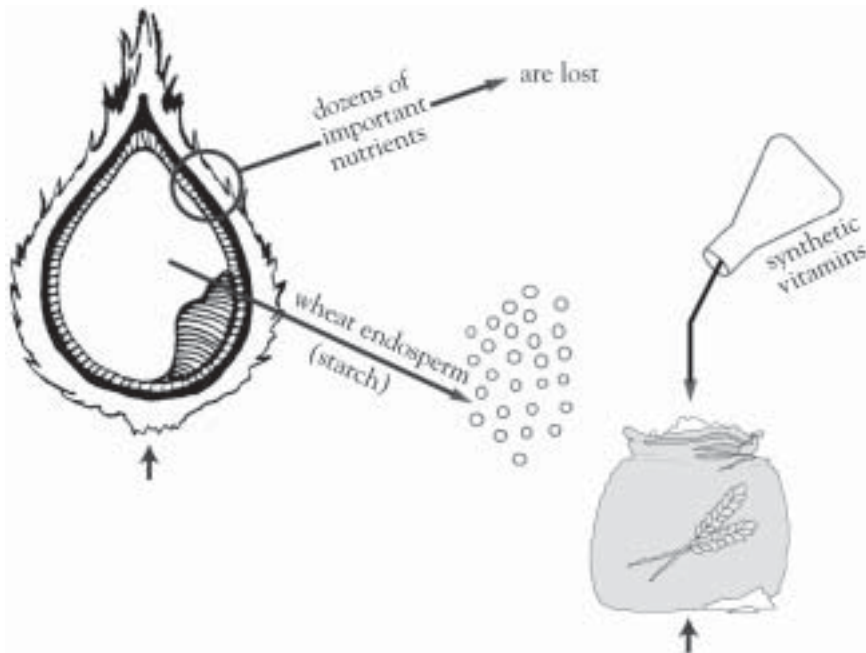


Figure 8. Within whole wheat are many minerals, vitamins, enzymes, proteins, fats, and carbohydrates important for healthful nutrition. When wheat is fractionated, and then “fortified” or “enriched,” this high nutritional quality is lost.

and warehousing, the incorporation of fragile vitamins into the product post-processing so they are not destroyed or altered, and a unique packaging system designed to protect these fragile nutritional characteristics.

It is often important that the various ingredients be processed in different ways to protect or enhance their nutritional value. For example, in the production of dry dog and cat food, raw grains require an entirely different processing method (to gelatinize and make their starches available for digestion as well as to inactivate certain anti-nutritional factors) than is needed for meats. It is not required that meats be cooked but that they be free of disease-causing organisms. The production of most dry dog and cat food is done on a batch system with little regard for the fragile character of nutrients or the interactions that can occur between food ingredients when put under high-shear, pressure, and heat through modern extruders. Mixing pre-rendered dry meats, grains and synthetic vitamins and minerals together and then shaping them through an extruder at 300+° F and a pressure of 500 pounds per square inch does not properly address the nutritional character of the final product; it only addresses quantity of production, sterility and shelf life.

WHOLE RICE vs. BREWER'S RICE

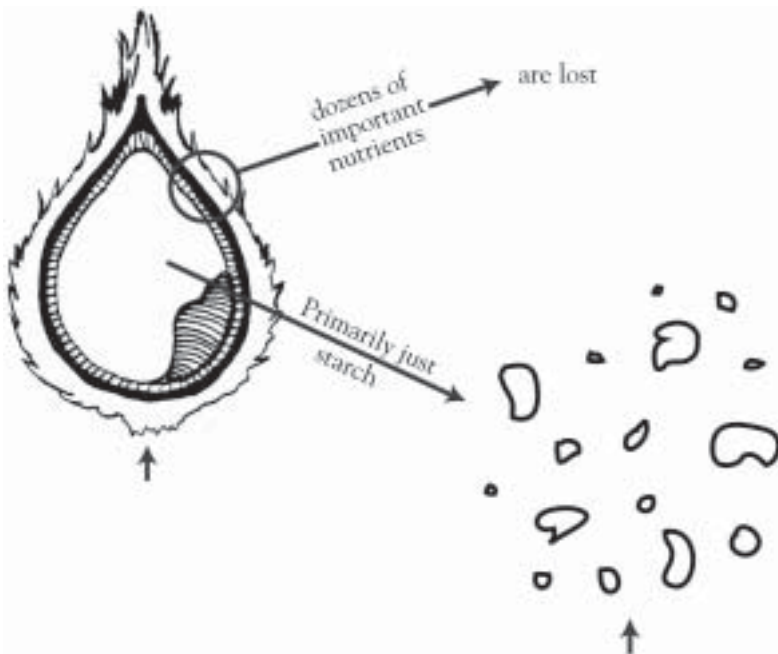


Figure 9. Whole rice is highly nutritious. Once its components are fractionated and fed separately, imbalanced nutrition occurs, setting the stage for disease.

Wysong Nutri-Paks™

If a food has high nutritional value it must, by definition, be perishable. Active vitamins, essential fatty acids, amino acids, carbohydrates, and minerals are all subject to degradation during storage, particularly if also exposed to heat, light and oxygen.

How many people would eat meats if they had been stored in a paper bag for three to six months? How many would eat their salad dressings, or their cereals stored similarly? Yet modern dry food packaging for animal foods is traditionally paper packaging or paper with thin clay or wax veneers.

THE DANGEROUS MIDDLE

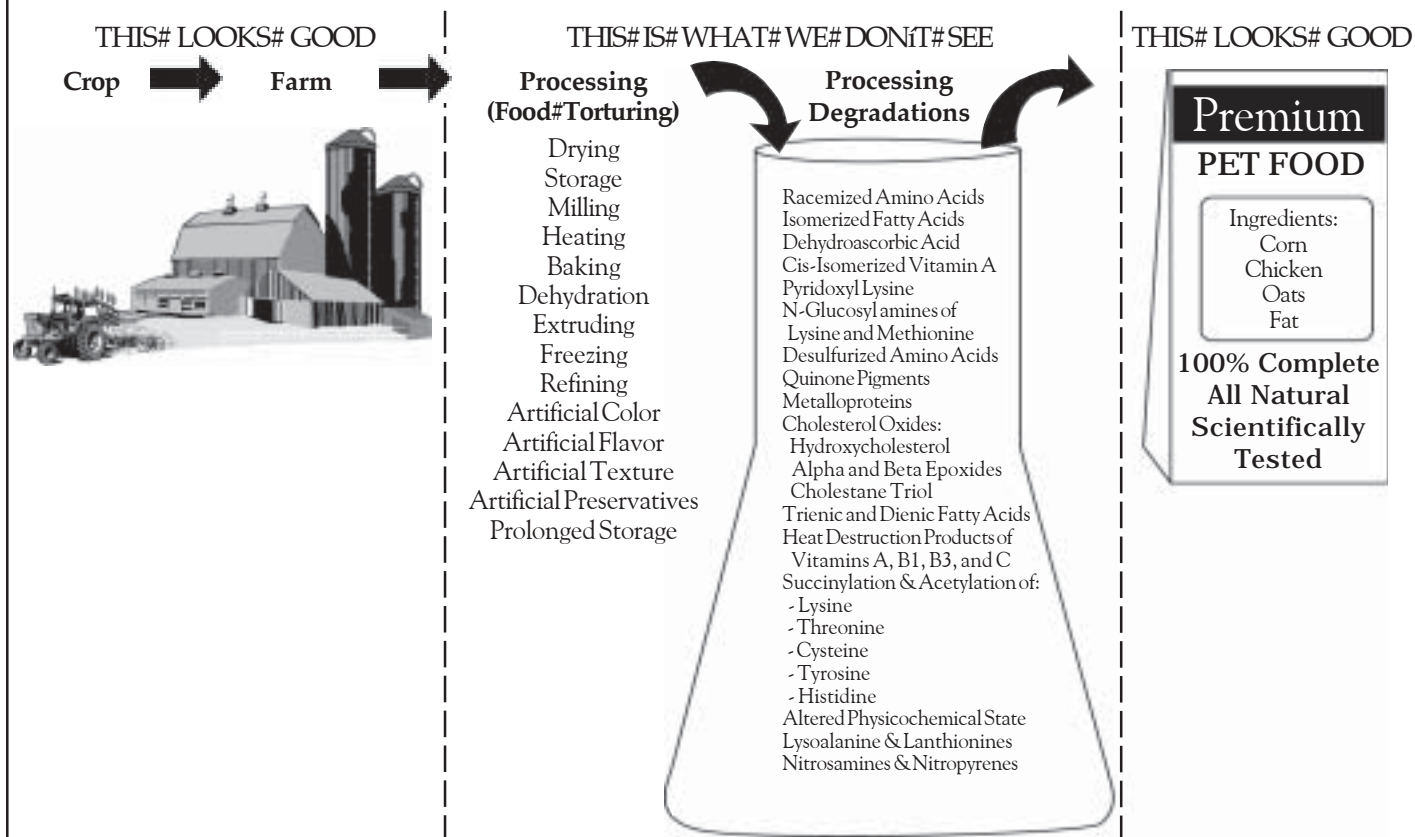


Figure 10. What happens to foods between the farmers' fields and the end packaged product is by and large ignored by both the processing industry and the consumer. Fractionated, embalmed, cosmetically-enhanced food fractions serve as a base for virtually all modern commercial food products.

Furthermore, some manufacturers guarantee the shelf life of such products six months, a year, or even more. How could any of the fragile nutritional ingredients that they advertise to be in the bag still remain after such a lengthy "guaranteed" shelf life?

It is for these reasons that Wysong has developed the Nutri-Pak packaging system. The individual Nutri-Pak is a pouch made of a special laminate consisting of inert, nontoxic materials. Before the bag is filled, oxygen is removed and replaced with an inert atmosphere, devoid of oxygen. After filling, the pouch is sealed, creating the closest thing to a perfect package presently possible. The Nutri-Pak system serves as a barrier to light and oxygen. Its internal inert atmosphere prevents the oxygen degradation of

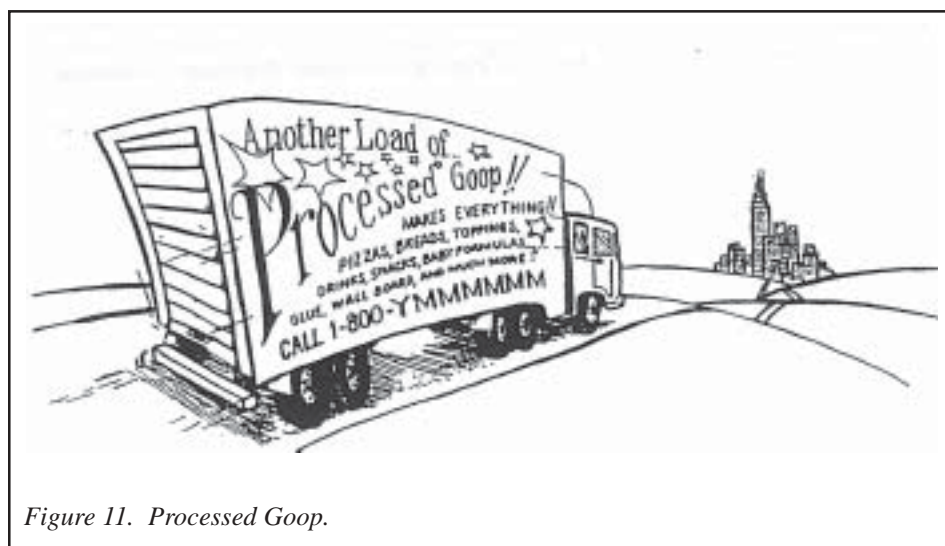


Figure 11. Processed Goop.

fragile essential fatty acids, vitamins, minerals, and other nutritional elements. The unique package also functions to prevent light from catalyzing these reactions (since the presence of light can speed fatty acid degradation a thousand-fold) and

inhibits the growth of bacteria, molds and pests.

Individual Nutri-Pak pouches are then cartoned in 20- or 40-pound boxes, thus permitting portion-pack feeding. This means that only a small

four- or eight-pound bag need be opened at a time, so that no more product than necessary need be exposed to the elements at any time. Additionally, a Nutri-Clip™ is available to close the Nutri-Paks once opened, to create a barrier to the atmosphere as tight as the original heat-seal bond. Compare this with opening a 40- or 50-pound bag of food that is already not a barrier to oxygen or light, is totally subject to the elements once opened, and is used over the course of several weeks.

Environmental Packaging

In our increasingly synthetic and over-consuming world, packaging has become a focal point of environmental concern. Of the 163 million tons of garbage thrown out per year, about one third of it is packaging. Considering that landfills are closing due to reaching full capacity at an alarming rate, packaging indeed should be a concern.

Although environmental concerns are of great importance, sometimes enthusiasm for doing good can be misdirected when not properly founded in facts or logic. It is important to understand that environmental concerns are fundamentally health concerns. For example, if a choice is made in packaging because of supposed bio-degradability, which somehow results in increasing the likelihood for families or companion animals to contract a serious disease such as cancer, then the choice was a bad one.

As discussed previously, food has great potential for both improving and destroying health. If proper, wholesome, highly nutritious foods are not eaten on a regular basis, health consequences can result. Placing a food containing fragile nutrients in a paper bag to be stored on shelves for weeks or months because paper is supposedly Earth-friendly and biodegradable is not only

based on misinformation, but is at cross purposes with the real objective of food and environmentalism – health. If highly nutritious foods are placed within packages that not only do not protect the fragile nutrients, but which may even permit the formation of toxins due to exposure to air and other nutrient-degrading elements, then all has been for naught.

Therefore, packaging design must give priority to protecting nutritional value. Then, after this has been achieved, every effort should be made to design the package so that it creates the least volume of waste possible, is nontoxic and inert, and is reusable or recyclable.

Consider that in our primitive natural setting everything was reusable or recyclable. Before the advent of the Industrial Age, synthetic materials, and our consumption beyond actual need, all things used or eaten were recycled within the



PROCESSING APPROACHES		
PROCESS	HIGHQUALITY NUTRITIONAL APPROACH	HIGHPRODUCTION PROFITEERING APPROACH
1. Ingredient Storage	<ul style="list-style-type: none"> • Leave whole • Natural pest control • Oxygen excluded 	<ul style="list-style-type: none"> • Preprocessed food fractions • Pesticides • Exposed to air
2. Grinding	<ul style="list-style-type: none"> • Low heat • Immediate use 	<ul style="list-style-type: none"> • High heat/speed • Storage
3. Extrusion	<ul style="list-style-type: none"> • Careful control of heat, pressure and moisture 	<ul style="list-style-type: none"> • High production
4. Ingredient Addition	<ul style="list-style-type: none"> • Those not requiring cooking are added after heat e.g. nutritional oils, vitamins, probiotics, enzymes 	<ul style="list-style-type: none"> • All mixed • All cooked
5. Meats and Veggies	<ul style="list-style-type: none"> • Fresh/coextruded 	<ul style="list-style-type: none"> • Rendered • Precooked • Pre-dried
6. Fats and Oils	<ul style="list-style-type: none"> • Minimally processed • Minimally stored • Natural antioxidants • Nitrogen microbubble purging of oxygen 	<ul style="list-style-type: none"> • Aggressively processed • Extended storage • Synthetic preservatives • Oxygen left in
7. Packaging	<ul style="list-style-type: none"> • Oxygen removed • Light barrier package • Nitrogen, CO₂ flushed 	<ul style="list-style-type: none"> • Permeable bags exposed to oxygen and light
8. Storage and Transportation	<ul style="list-style-type: none"> • Fresh batch, fast delivery 	<ul style="list-style-type: none"> • Warehousing
9. Innovation	<ul style="list-style-type: none"> • Continuing research and improvements to optimize nutrition and retain natural value. • Leadership toward what is best, not following market whims. 	<ul style="list-style-type: none"> • Research directed at consumer appeal, cosmetics, marketing, promotion of “100% complete” myth

Figure 12. The processing of foods can be approached so that either high production and profitability is enhanced or nutritional value is enhanced. The end product cannot be better than the motivation of the producer.

immediate environment. Foods eaten in the wild passed through the body to fertilize the growth of new foods. Leaves fell from trees to replenish the ground from which the roots derived nutrients. Vegetation and animals died, replenishing the ground. It was a beautiful, self-sustaining, simple, yet intricately complex system. In essence, life was fueled through the rays of the sun, and grew and reproduced using the elements of the ground, water, and air. Life began and death followed, by and large in the same place.

In the Industrial Age, however, the ability to harvest natural resources moved these resources from their place of origin for use elsewhere. It also facilitated their consumption at an exceptionally rapid and ever growing pace. This sets the stage for the imbalance of the natural ecological systems. A forest where trees grow and die in place essentially has an endless future. However, move gigantic forest harvesting machinery in to level acres of land in a day, leaving the land denuded, and move the harvest off to be distributed elsewhere in the world, and unique new problems arise. The forest loses the nutrients from the trees, which would have replenished the soil if the trees had simply died and fallen in place. The land is now subject to erosion, which can further deplete nutrients. Habitat is destroyed. Ecological balances are disrupted as consumption and burning of paper and other organic materials causes the escalation of greenhouse gases with possible disruption of global climates. The use of fossil fuels to catalyze these gigantic harvests further disrupts balances.

TYPICAL ADVERTISING CLAIMS

“Our pet food is 100% complete and balanced, meets nutrient requirements of AAFCO, and has passed feeding trials. Contains nutritious vitamins, essential fat, minerals, fresh meats, dairy products and grains. Packaged in an Earth-friendly paper bag, needs no refrigeration, and is guaranteed to be fresh for one year.”

Figure 13. Advertisements such as this deceive the consumer into believing that fresh, wholesome, natural foods can be properly preserved in a paper bag.

NUTRI-PAK™ VS. OTHER PACKAGING

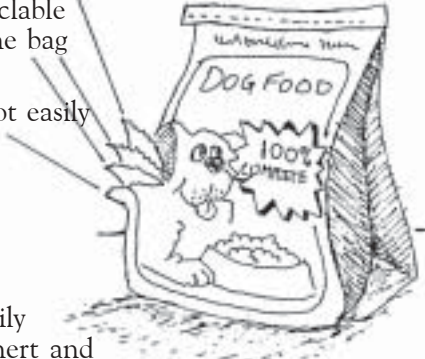
<p>PROTECTS NUTRIENTS</p> <p>Plastic not recyclable because of glue in the bag</p> <p>Kraft paper not recyclable because of glue in the bag</p> <p>Clay coated paper not easily recyclable</p> <p>Nutri-Paks™ not easily recyclable, but are inert and use less landfill space</p>	<p>DOES NOT PROTECT NUTRIENTS WELL</p> 
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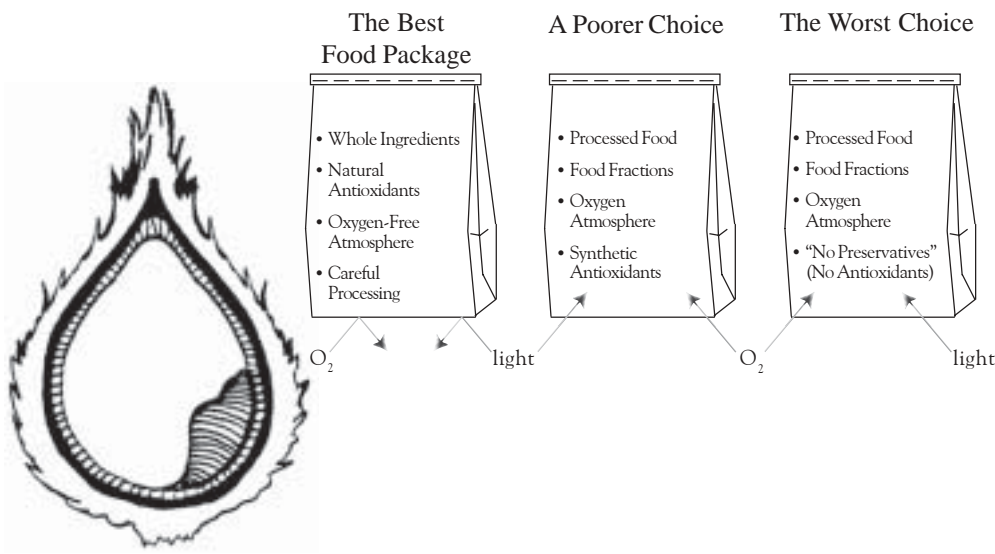
Figure 14. The Wysong Nutri-Pak is the first nutrition-first packaging designed to protect nutritional value.

The human capability of incredible consumption through the use of stored fossil fuels and machinery lies at the root of all of our present-day environmental concerns. With this fundamental understanding, solutions to packaging problems can be sought.

The Fallacy of “Biodegradable” Paper

“Biodegradable” has become a misused, overused and misunderstood term. Most biodegradable packaging is made from wood products. Trees are felled in staggering numbers to create paper packaging,

THE NUTRITIONAL IMPORTANCE OF PACKAGING



Whole Grain

Figure 15. Second to the best package of all (the natural food product as found in the field), the Nutri-Pak design addresses critical factors, such as the exclusion of oxygen and light from the packaging.

which, after use, is put in a garbage pail and dumped into a landfill to remain entombed there indefinitely. Landfills are now designed to encase their contents and shed water so that the potential toxins within the landfill do not leach into the water table. However, if the contents do not become moistened and exposed to oxygen, they won't degrade. Landfills not only shed water but also shield the contents from oxygen and light and are essentially devoid of the necessary bacteria to degrade the cellulose within the plant and paper materials. Forty-year-old newspapers taken from landfills are still readable, and food found in the same landfills remains intact. Even if the contents did degrade, it is of no use to the environment for paper-turned-

THE NUTRI-PAK™ SYSTEM

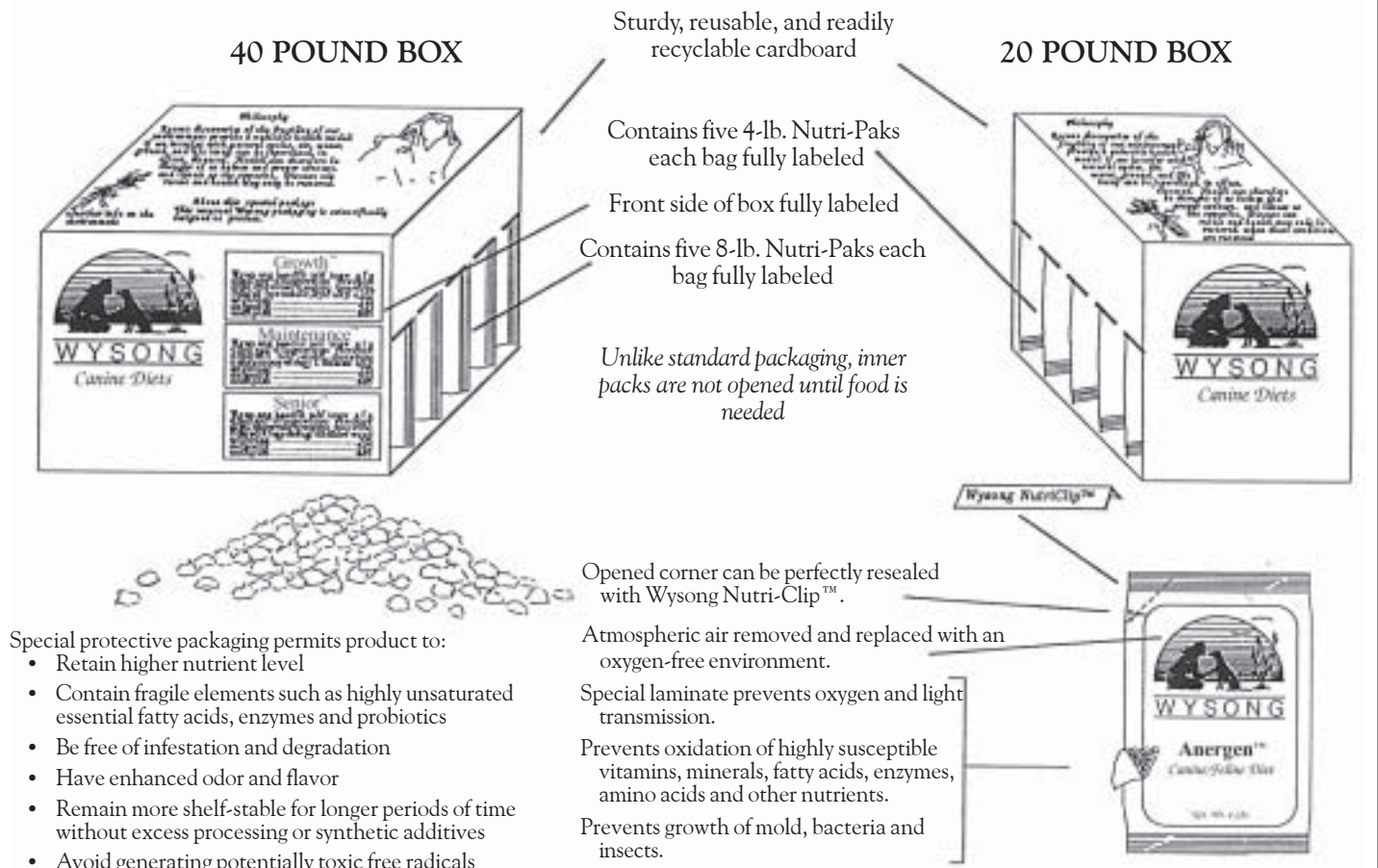
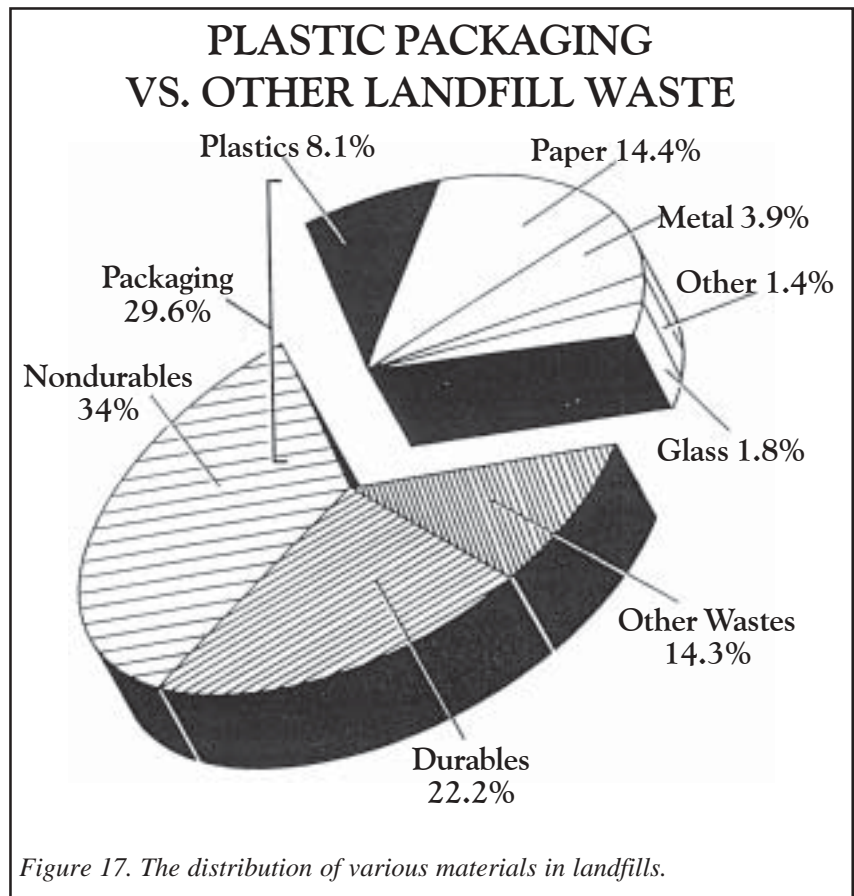


Figure 16. The Nutri-Pak system is the most technologically advanced method for preserving nutritional value in animal foods.

fertilizer to lie nestled between an old tire, a broken sink and a wounded Ninja Turtle doll for the next century, or for it to create greenhouse-effect enhancing methane gas or toxic leachate.

Biodegradable packaging would be of value if the packaging itself were somehow directly composted to replenish the resources from which it was made. Paper products put into landfills are thus not “biodegradable” in a meaningful sense, since they do not in any way replenish the resource from which they were derived – trees. Additionally, since the world is being deforested at an alarming rate – almost 300 acres per minute in the rain forests alone – decreasing the destruction of trees may be much more important than using a product that is made of paper and is potentially biodegradable but is not given the opportunity to do so. (It should be noted that, although most paper is supplied through modern industrialized tree farms, efforts are still being made to log virgin forests for their wood resources.)

There are two factors to consider. One is that the production of paper is not innocuous; a variety of toxins such as dioxins are released from some mills resulting in serious water and wildlife damage. Most paper is virgin, unrecycled paper. Its production can pollute waterways and contribute to acid rain. Virgin forests are lost to high intensity factory farming. Such “farms” are heavy users of pesticides and nonrenewable fossil fuel fertilizers, and leave behind predominantly sterile habitats. Another consideration is that “biodegradable” products actually encourage consumption of disposables, the opposite of what needs to occur, which is less consumption. It is a deception to be com-

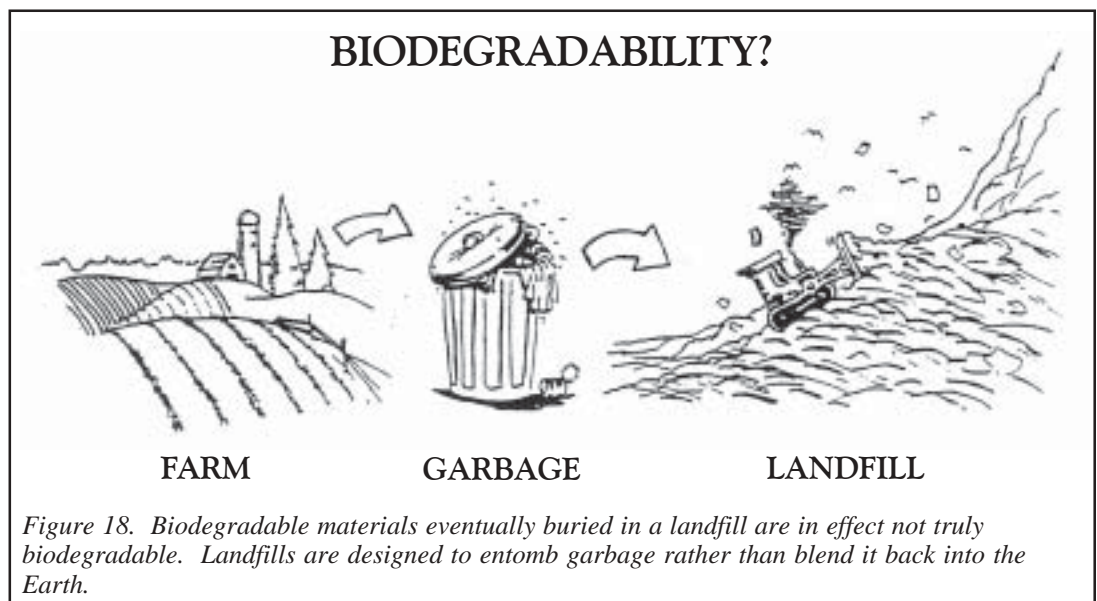


forted by the notion that filling garbage trucks with “biodegradable” packaging helps the Earth.

Glass, Metal, Plastic

Plastics are not an environmental evil merely because they are synthetic. For those who view paper as a natural product preferable over plastic, it is important to keep in mind that plastic is natural in the same

sense. Plastic can be produced from fossil fuels, which are the natural products of the decomposition of living materials from the geologic past. It is also possible to produce plastic from present-day vegetable-based products. In addition, plastic produces 70% less airborne pollutants and 50 times less waterborne waste in its production than paper. Primarily inert, nonliving substances are



THE NATURAL CYCLE

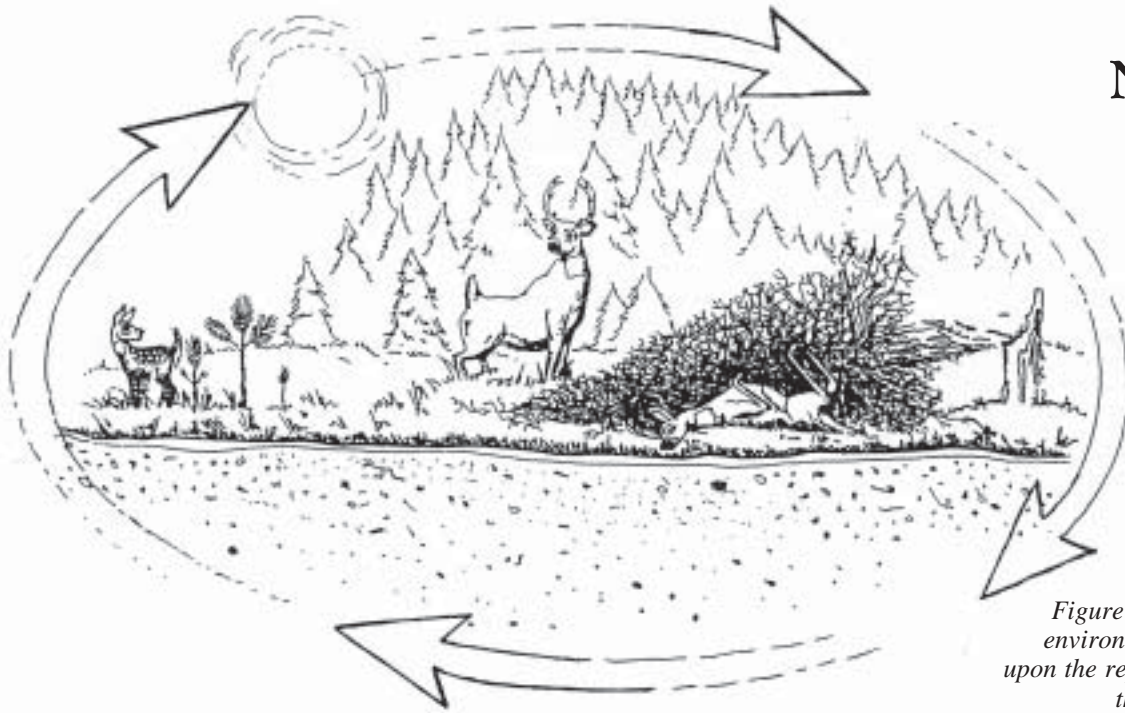
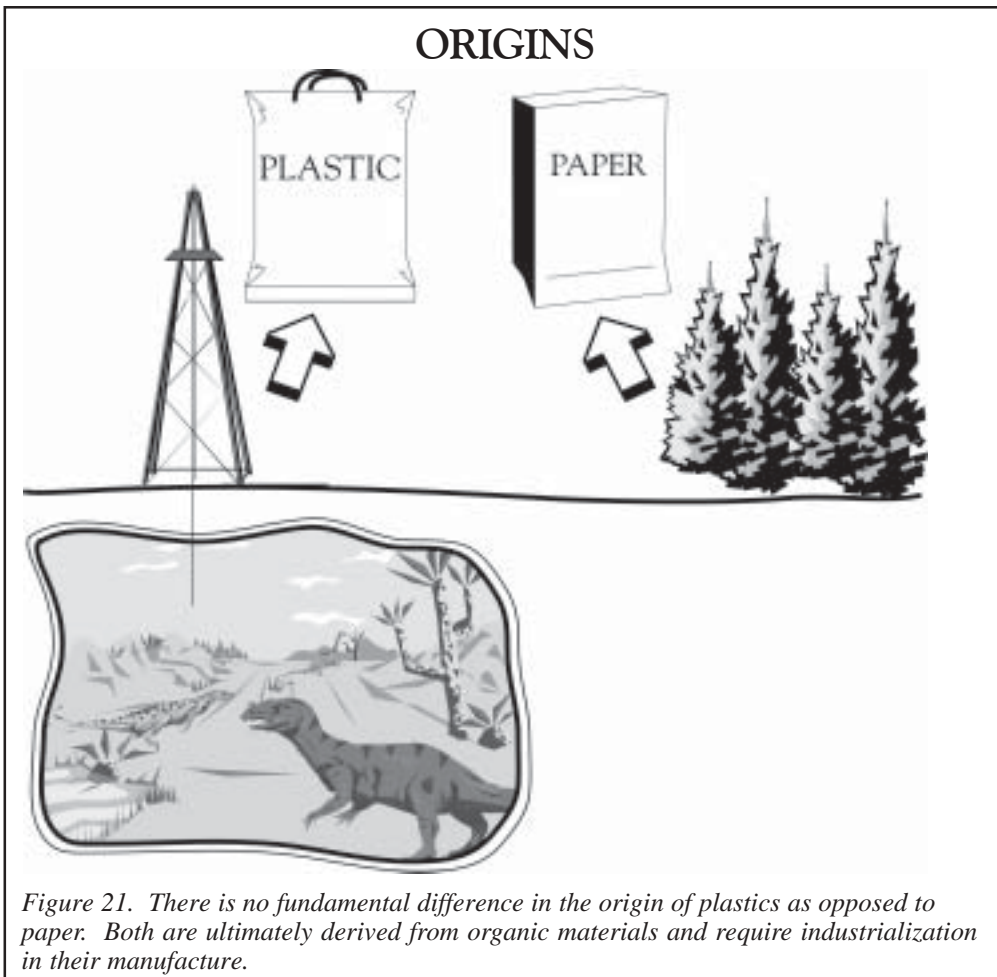


Figure 19. Biodegradability and environmental sustenance depend upon the replenishment of the land by the very things grown on it.

THE UNNATURAL CYCLE



Figure 20. Natural cycles have been ignored and the Earth has been treated simply as a resource. Materials are harvested from it with impunity, the land is not properly replenished, and the resources go on a one-way street to be turned into landfills. Biodegradability is only of importance if the material biodegrading is replenishing the resource from which it was taken. Putting biodegradable materials in landfills does not address essential environmental issues.



lined with “biodegradable” wax require over 36% more energy to produce than polystyrene foam cups.

Environmental issues are complex and cannot be resolved with a single, drastic measure such as buying only “biodegradable” materials. While not usually biodegradable, glass, metal, and plastic are frequently reusable due to their durable nature. These products are made from nonliving resources and are becoming more and more recyclable and stable in landfills. In fact, some scientists predict that plastic will ultimately be viewed as the most environmentally sound of all materials.

From this it becomes clear that environmental packaging issues are not easily answered. Paper products, glass, metals, plastics, and other synthetics all have their merits. For food, the best packaging material is that which protects nutritional value (the number one priority) and, secondarily, creates the least negative environmental impact.

Figure 21. There is no fundamental difference in the origin of plastics as opposed to paper. Both are ultimately derived from organic materials and require industrialization in their manufacture.

used predominately in its manufacture. This results in no destruction of living greenery. Plastics are quite durable and often can be reused, thus not requiring constant replenishment.

A comparison of the energy required to produce and recycle both

plastic and paper indicates that, when recycling is practiced, plastic is clearly the more Earth-friendly, energy-efficient packaging material. When liners are added to the paper to make it water-resistant, the difference in energy required is even greater. For example, paper cups

ENERGY CONSUMPTION OF PACKAGING MATERIALS

<u>BTUs/lb.</u>	<u>Paper</u>	<u>Glass</u>	<u>Steel</u>	<u>Aluminum</u>	<u>Plastic</u>
* BTUs required to make originally	20,000	8,700	22,800	120,000	35,950
BTUs required to recycle into new container	11,500	6,525	15,960	19,100	1,000
BTUs recovered by burning	8,500	0	0	0	17,875

*According to the 1989 Plastics Recycling Directory, it takes 2511 BTUs to produce a paper grocery bag and only 594 BTUs to produce a plastic one.

Figure 22. A comparison of the energy required in the production of packaging materials.

Environmental Features of Wysong Nutri-Paks™

The Nutri-Pak packaging design uses paper, plastics and metals. The most important feature of this packaging is its unique ability to preserve the fragile nutritional character of food. Following are some of the environmentally sound features of the Nutri-Pak:

1. The cardboard box used to hold the Nutri-Paks is reusable and readily recyclable.

2. The weight of the Nutri-Pak packaging on a per-weight-of-food basis is less than that for standard animal food packaging made of multi-wall paper. This reduces the amount of fuel used for transportation.

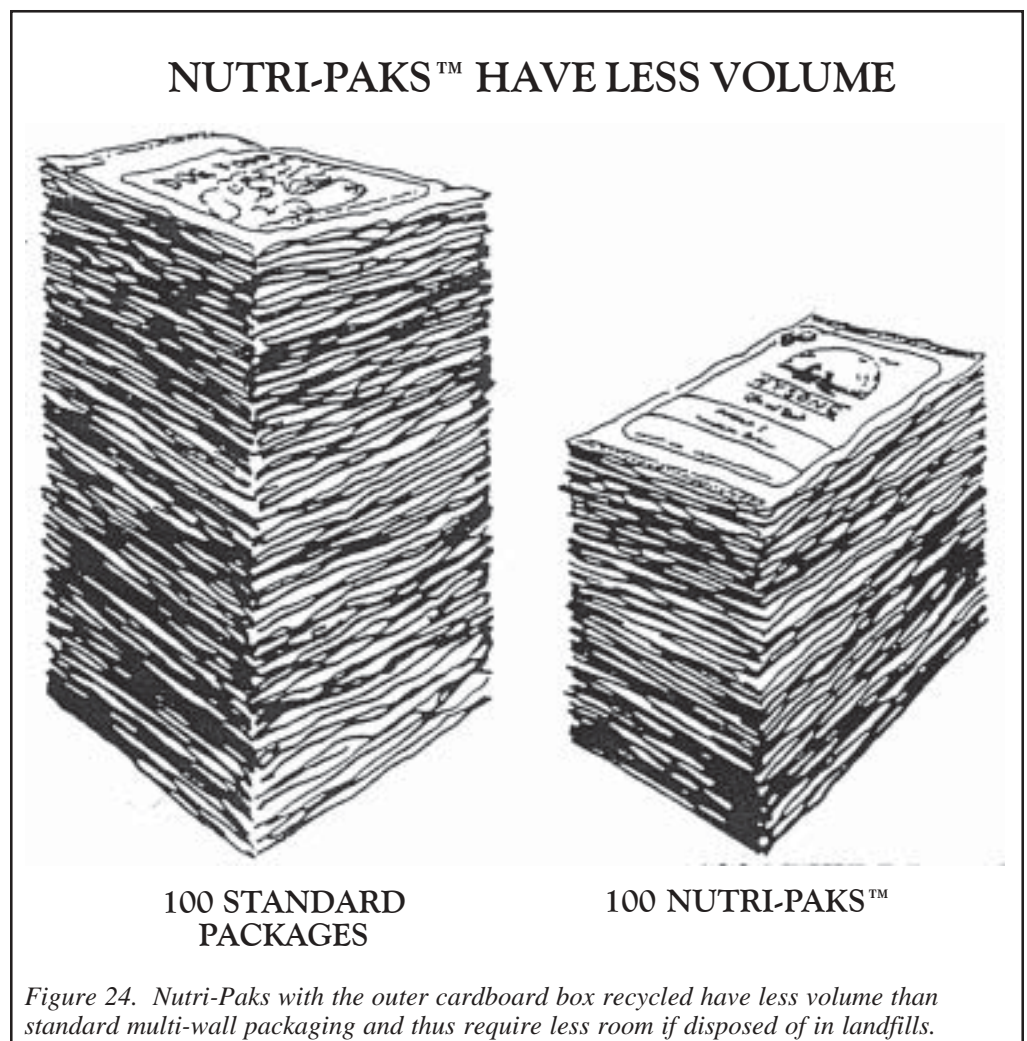
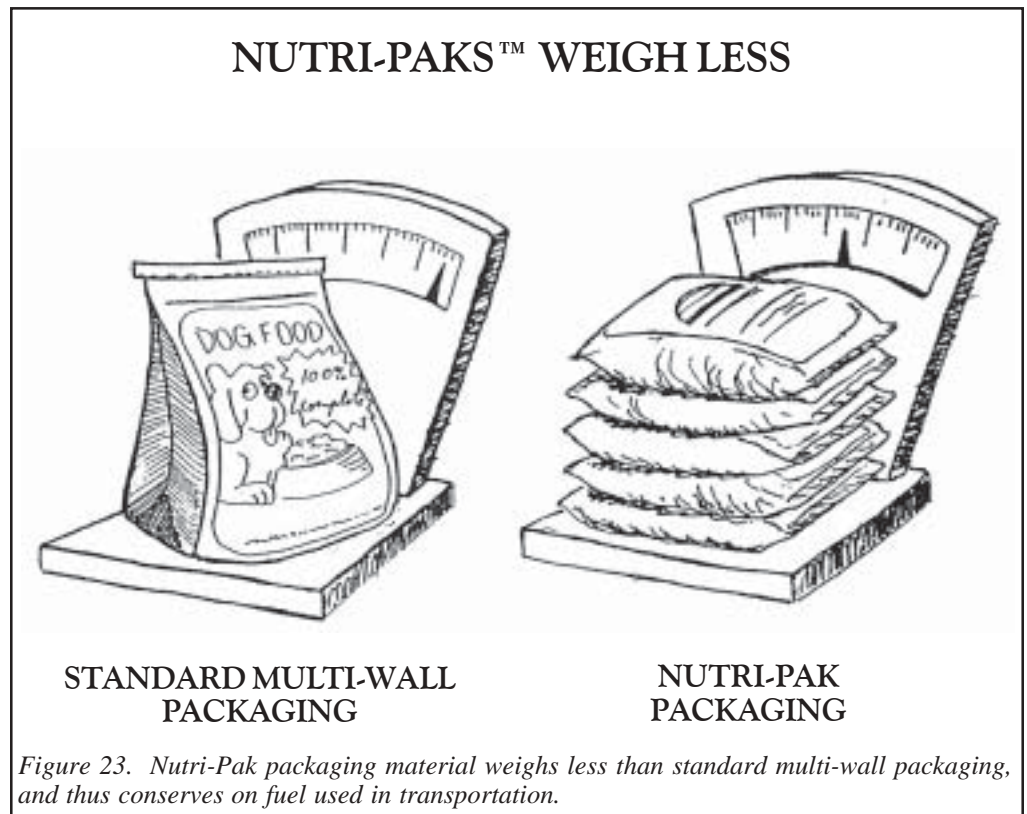
3. If packaging is to be discarded, the primary consideration has to be one of volume, not type or weight of materials. Landfills fill because of volume, not because of weight. For example, a packaging change in diaper multi-packs from a cardboard box to a plastic bag resulted in 50% less volume of waste produced. In the same way, the decreased volume of the Nutri-Pak packaging, and the reusability of the cardboard box, contribute less to the landfill crisis.

4. The flexible pouch design conforms more easily in landfills and contains fewer air spaces than more rigid, less flexible multi-walled packaging.

5. The unique laminate used in the Nutri-Pak contains inert, nontoxic materials that will not contaminate ground water, nor produce airborne pollutants.

Nutri-Pak™ Versus Others

All materials are recyclable if the technology to recycle them can be properly established. Currently, plastics that



NUTRI-PAKS™ MAKE LESS WASTE

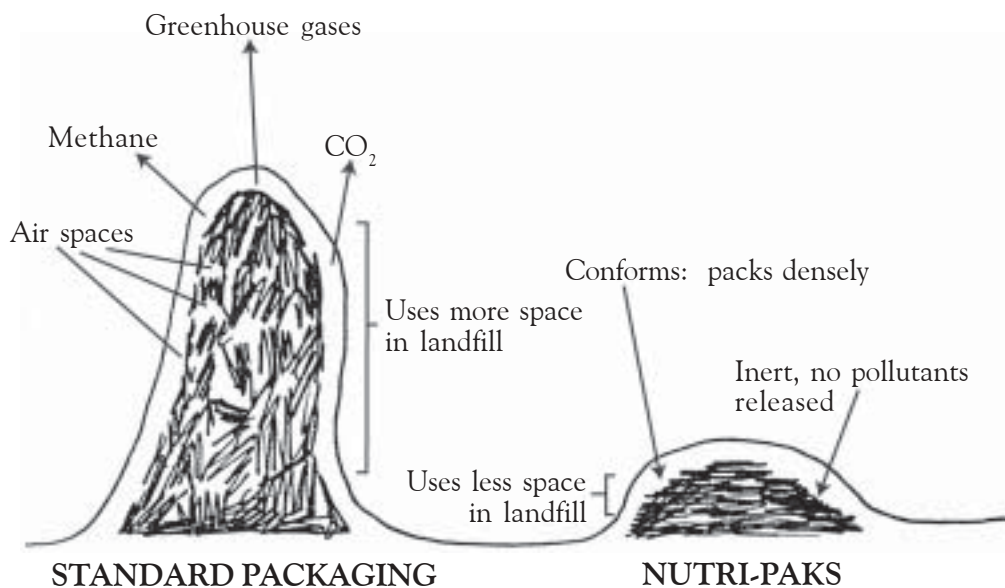


Figure 25. Nutri-Pak's inert, flexible design makes it more suitable both from an environmental and from a landfill standpoint.

Further Reading

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are not directly recycled into other plastics are being recycled into building and insulating materials, fencing, picnic tables, and so forth. This technology is rapidly advancing and the day approaches when virtually everything will be recyclable.

Although at this point the special laminate used in the Nutri-Pak does not have recycling centers, its nutrition and health advantages, and the fact that it is inert, weighs less and takes up less landfill space, make it far superior to standard multi-wall animal food packaging. It is important to keep in mind that most multi-wall animal food packaging containing special oil-barrier plastics or other non-paper materials on the inner liners are not recycled even though some portions of the bag may be made of paper. Thus they suffer from all of the disadvantages of both paper and plastic packaging. Most importantly, however, they do not protect fragile, health-giving nutrients, the primary function of nutritious food packaging.

Reusing Wysong Nutri-Paks™

Since Wysong packaging is designed health-first, some of the materials used in packaging are not readily recyclable. But some innovative Wysong customers have found creative ways to reuse Nutri-Paks around the home and yard, including:

- Wash and reuse the foil bags for food storage. The bags are sturdy and will save on purchasing plastic baggies and cling-wraps.
- Cut the foil bags open along the side, and lay them flat in your yard to inhibit weed growth; cover with mulch. They make an excellent weed barrier and will save on manual weeding, or using costly and harmful chemical weed-killers.
- The foil bags make great freezer bags when sealed tightly. This saves on purchasing expensive plastic freezer bags.
- Cut them open and lay them loosely over your existing house/garage insulation. You will gain extra insulative benefit, helping to keep your energy costs down.

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