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## **Are Plastic Grocery Bags Sacking the Environment?**

**Abstract:** *This paper is oriented on analysis impacts of plastic bags on environment. In this paper is analyzed did plastic bags are so harmful, and what are the main ingredients of it. One part of this paper is oriented on effects of plastic bags and management of their usage. There is also made comparative analysis between impacts of plastic and paper bags on environment.*

**Keywords:** *environment, plastic, paper, recycle, waste*

### **1. INTRODUCTION**

The "paper or plastic" conundrum that vexed earnest shoppers throughout the 1980s and 90s is largely moot today all over the world. Most grocery store baggers are not bothered about it anymore. They drop the bananas in one plastic bag as they reach for another to hold the six-pack of soda. The pasta sauce and noodles will get one too, as will the dish soap. The development of economies is producing more goods and needs more packaging material. Also the upcoming 'Malls' are responsible for new 'Mall-Culture' that uses up increasing number of plastic and paper bags.

It is estimated that somewhere between 500 billion and one trillion plastic bags are consumed throughout the world each year. In 1977, supermarkets began to offer plastic grocery bags as an alternative to paper bags. By 1996, four out of every five-grocery bags used were plastic. There is a growing international movement to ban or discourage the use of plastic bags because of their environmental effects. Countries from Ireland to Australia are cracking down on the bags and action has already begun in many countries.

The ubiquitous plastic shopping bag, so handy for everything from toting groceries to disposing of doggie do, may be a victim of its own success. It is important to find out whether the plastic bags are really as harmful as they are said to be. The chaos that Mumbai faces every year during monsoon (also the chaos of July 26, 2005) is said to be partially due to plastic bags. They clog the drains and the city almost drowns

in water. Our government has tried to ban plastic bags but so far nothing of that sort has happened. Many blame the government for not implementing the decision.

Critics of the bags say they use up natural resources, consume energy to manufacture, create litter, choke marine life and add to landfill waste. It's necessary to find out the truth and know whether the plastic bag is so harmful. For this we must know about the product.

### **2. PRODUCTION OF PLASTIC BAGS**

The term "plastics" encompasses organic materials, such as the elements carbon (C), hydrogen (H), nitrogen (N), chlorine (Cl) and sulfur (S), which has properties similar to those naturally grown in organic materials such as wood, horn and rosin. Plastics are polymers. The simplest definition of a polymer is something made of many units. Think of a polymer as a chain. Each link of the chain is the "-mer" or basic unit that is usually made of carbon, hydrogen, oxygen and/or silicon.

Plastic bags are made from ethylene, a gas that is produced as a by-product of oil, gas and coal production. Ethylene is made into polymers (chains of ethylene molecules) called polyethylene. This substance, also known as polyethylene or polythene, is made into pellets, which are used by plastic manufacturers to produce a range of items, including plastic bags.

There are two types of plastic shopping bags - the lighter, filmy bags you get from supermarkets and other food outlets, and the heavier bags you get from other retail outlets, like clothing stores. HDPE or high density polyethylene bags are stiff, thin and not transparent or opaque. HDPE (Ethylene polymer with densities ranging from 0.941 to 0.965 grams per cubic centimetre) is normally used in grocery or t-shirt bags. LDPE (0.916 to 0.925 grams per cubic centimetre) or low density polyethylene bags are thick and soft and can be transparent and glossy in appearance. LDPE is used in shopping bags usually with attached handles. Unlike HDPE, LDPE cannot be recycled

While plastic bags may not be the most high tech application of plastics technology, it is certainly one of the most prevalent. According to 'Clean Up Australia', Australians use in excess of 6 billion plastic bags per year. If tied together these bags would form a chain that is long enough to go around the world 37 times. More than half of these bags (3.6 billion) are made from HDPE.

### 3. GREAT MOMENTS IN PLASTIC BAG HISTORY

Imagine a world without plastic shopping bags. It could be the future. First introduced in the 1970s, plastic bags now account for four out of every five bags handed out at the grocery store. When one looks at it as a product, it is an unbelievable success story.

1957: The first baggies and sandwich bags on a roll are introduced.

1958: Poly dry cleaning bags compete with traditional brown paper.

1966: Plastic bag use in bread packaging takes over 25 to 30 percent of the market.

1966: Plastic produce bags on a roll are introduced in grocery stores.

1969: The New York City Sanitation Department's "New York City Experiment" demonstrates that plastic refuse bag curbside pickup is cleaner, safer and quieter than metal trash can pick-up. Beginning a shift to plastic can liners among consumers.

1974/75: Retailing giants such as Sears, J.C. Penney, Montgomery Ward, Jordan Marsh, Allied, Federated and Hills make the switch to plastic merchandise bags.

1973: The first commercial system for manufacturing plastic grocery bags becomes operational

1977: The plastic grocery bag is introduced to the supermarket industry as an alternative to paper sacks.

1982: Kroger and Safeway start to replace traditional craft sacks with polyethylene "t-shirt" bags.

1990: The first blue bag-recycling program begins with curbside collection.

1990: Consumer plastic bag recycling begins through a supermarket collection-site network.

1992: Nearly half of U.S. supermarkets have recycling available for plastic bags.

1996: Four of five grocery bags used are plastic.

1996 Onwards: Over 80% of all bags used are plastic. Plastic is multipurpose and therefore is seen almost everywhere. Whether we are aware of it or not, plastics play an important part in our life. Plastics' versatility allow it to be used in everything from car parts to doll parts, from soft drink bottles to the refrigerators they are stored in. From the car we drive to work in to the television we watch when we get home, plastics help make our life easier and better.

2002: Ireland introduces the worlds first consumer paid plastic bag tax

### 4. WHY ARE THESE BAGS USED?

Plastic bags are so cheap to produce, sturdy, plentiful, easy to carry and store that they have captured at least 80 percent of the grocery and convenience store market since they were introduced a quarter century ago, according to the Arlington, Virginia-based American Plastics Council.

### 5. THE EFFECTS OF PLASTIC BAGS

As a result, the totes are everywhere. They sit balled up and stuffed into the one that hangs from the pantry door. They line bathroom trash bins. They carry clothes to the gym. They clutter landfills. They flap from trees. They float in the breeze. They clog roadside drains. They drift on the high seas. They fill sea turtle bellies. Once let loose into

the environment, plastic bags can cause considerable harm, blocking drains and suffocating wildlife mistaking the bag for food.

The success of the plastic bag has meant a dramatic increase in the amount of sacks found floating in the oceans where they choke, strangle, and starve wildlife and raft alien species around the world, according to David Barnes, a marine scientist with the British

Antarctic Survey in Cambridge, England, who studies the impact of marine debris. Barnes said that plastic bags have gone "from being rare in the late 80s and early 90s to being almost everywhere from Spitsbergen 78° North [latitude] to Falklands 51° South [latitude], but I'll bet they'll be washing up in Antarctica within the decade."

Vincent Cobb, an entrepreneur in Chicago, Illinois, has launched a Web site <http://Reusablebags.com> to educate the public about what he terms the "true costs" associated with the spread of "free" bags. (He sells reusable bags as a viable solution.) According to his calculations based from data released by the United States Environmental Protection

Agency in 2001 on U.S. plastic bag, sack, and wrap consumption, somewhere between 500 billion and a trillion plastic bags are consumed worldwide each year. Of those, millions end up in the litter stream outside of landfills - estimates range from less than one to three percent of the bags.

Like candy wrappers, chewing gum, cigarette butts, and thousands of other pieces of junk, millions of the plastic bags end up as litter. Once in the environment, it takes months to hundreds of years for plastic bags to breakdown. As they decompose, tiny toxic bits seep into soils, lakes, rivers, and the oceans.

At the end of 2002, it was estimated that Australians were using approximately 6.9 billion plastic carry bags a year. Plastic bags are Australia's highest volume 'add-on' packaging designed as a single use or disposable product and are not necessarily essential to product integrity. Approximately 53% of plastic bags are distributed from supermarket outlets, while 47% come from other retail outlets such as fast food shops, liquor stores, and general merchandising.



*Australians use around 6 billion plastic bags per year, 3.3 billion of which are supermarket plastic bags.*



*Plastic Bags on the Thames foreshore.  
Photo by Thames21  
(www.thames21.org.uk).*

High consumption rates of plastic bags have led to increased inappropriate disposal of bags. Plastic bag litter can negatively impact on the community's perception of and use of public areas. It can also seriously harm or kill wildlife and domestic animals. The plastic bags that are not put in the waste basket end up as litter. Litter is a huge burden on society. Approximately 2% of all litter items are plastic bags, which are particularly prone to becoming litter due to

their low weight and ability to 'balloon' and travel in wind. One of the key concerns is litter. In China, plastic bags blowing around the streets are called "white pollution." In South Africa, the bags are so prominent in the countryside that they have won the derisive title of "national flower."

Plastic bag litter can be accidental – arising during management of an intended disposal site (whether a bin or landfill) - or may be due to intentional littering behaviour.

Plastic shopping bags have a surprisingly significant environmental impact for something so seemingly innocuous. As well as being an eyesore (next time you are outside, have a look around - you'll be amazed at the number of plastic bags littering our streets and waterways), plastic shopping bags kill large numbers of wildlife each year. One of the most dramatic impacts is on marine life. Plastic bags kill about 100,000 whales, seals, turtles and other marine animals each year worldwide;

according to Planet Ark, an international environmental group. In the water, plastic bags can be mistaken for jellyfish. This makes plastic bag pollution in marine environments particularly dangerous, as birds, whales, seals and turtles ingest the bags and then die from intestinal blockages. Disturbingly, it is claimed that plastic bags are the most common man-made item seen by sailors at sea. The bags were the fifth most common item of debris found on beaches.



*Operation to remove plastic from gut of a green turtle*



*Green turtle gut contents including blue plastic bag and red balloon.*



*Freedom for one rehabilitated turtle - how long will it survive?*

*Images courtesy Taronga Zoo*

The biggest problem with plastic bags is that they do not readily break down in the environment, with estimates for the time it takes them to decompose ranging from 20 to 1000 years. One of the disquieting facts stemming from this is that plastic bags can become serial killers.

Once an animal that had ingested a plastic bag dies, it decays at a much faster rate than the bag. Once the animal has decomposed, the bag is released back into the environment more or less intact, ready to be eaten by another misguided organism. The incredibly slow rate of decay of plastic bags also means that each bag we use compounds the problem, because the bags simply accumulate

Plastic bags also clog drains and waterways, threatening not only natural environments but also urban ones. In fact, plastic bags in drains were identified as major factors in the severe flooding in Bangladesh in 1988 and 1998. This has resulted in a ban on plastic bags being imposed there early in 2002

On top of the significant environmental costs, widespread use of plastic bags is also costly in terms of dollars and cents. Apart from the price of the bags themselves, which is four to six cents each, a great deal of money goes into collecting the bags (i.e.

cleaning up!) once they've been discarded. And that is the dark side of the plastic.

## 6. CRACKING DOWN

Some countries are cracking down on the use of plastic bags. Here's a look at the issue:

- Countries that have banned or taken action to discourage the use of plastic bags include Australia, Bangladesh, Ireland, Italy, South Africa and Taiwan. Mumbai (formerly Bombay), India, also has banned the bags.
- Australians were using nearly 7 billion bags a year, and nearly 1.2 billion bags a year were being passed out free in Ireland before government restrictions, according to government estimates.
- Plastic industry trade associations were unable to provide estimates of plastic bag use in the United States. However, based on studies of plastic bag use in other nations, the environmental group 'Californians Against Waste' estimates Americans use 84 billion plastic bags annually.

- The first plastic sandwich bags were introduced in 1957. Department stores started using plastic bags in the late 1970s and supermarket chains introduced the bags in the early 1980s.
- Overall, the U.S. plastics and related industries employed about 2.2 million U.S. workers and contributed nearly \$400 million to the economy in 2002, according to The Society of the Plastics Industry.

In Australia, about 90 percent of retailers have signed up with the government's voluntary program to reduce plastic bag use. A law that went into effect last year in Taiwan requires restaurants, supermarkets and convenience stores to charge customers for plastic bags and utensils. It has resulted in a 69 percent drop in use of plastic products, according to news reports.

In September 2006, more than 354,000 bags -- most of them plastic -- were collected during an international cleanup of coastal areas in the United States and 100 other countries, according to the Ocean Conservancy.

On 23 December 2002, the Environment Protection and Heritage Council, Australia, agreed to a package of measures to reduce the environmental impact of plastic bags and asked that specific proposals be developed for national action, including ways of reducing the impact of plastic bags as litter. The Guidelines for Plastic Bag Litter Management have been developed as a small part of the overall response to the plastic bag litter issues.

## 7. MANAGEMENT OF PLASTIC BAG USAGE

With this number of plastic bags in circulation, it is of little surprise that plastic bags are a significant pollutant. On 'Clean Up Australia Day' in 2002 nearly half a million plastic bags were collected.

Different countries have adopted a range of approaches to discourage the use of plastic bags in an attempt to cut down on the number of bags finding their way into the environment. In South Africa for instance,

where an estimated eight billion plastic bags are used annually, the government has implemented new regulations that will see only thicker, more durable plastic bags produced. As well as making them more suitable for reuse, it is hoped that the extra cost associated with their production and supply will prevent retailers giving the higher quality bags away, making their use a more expensive option for consumers.

### Refuse a plastic bag

The environmental issues associated with plastic shopping bags have featured in the news in the last couple of years. This has made people aware of the menace created by plastic bags and many have started to refuse the plastic bags in grocery shops and stores. This is more like depending on moral suasion of people for which environment conscious people or government can keep appealing.

### Levy a tax

The use of plastic bags is being discouraged in many countries such as Singapore and Taiwan, while the tax imposed on the use of plastic shopping bags in Ireland has resulted in the use of plastic shopping bags being reduced by 90% in just six months. Prior to the 15-euro cent per bag tax, it was estimated that 1.2 million plastic shopping bags were being handed out in Ireland per year. The money raised from the tax will be used to fund environmental initiatives.

Denmark also instituted a tax on bags; however, Denmark did it differently than Ireland. In 1994 Denmark put a tax of 22 DKK per kilo of plastic bags. This tax is included in the price charged to retailers and has cut plastic bag usage by 66%. Since, unlike Ireland, the tax was not levied on consumers it did not change consumer behaviour by as much as the Irish tax. The Danish market has collected around 170 million DKK so far and has used that money to fund many environmental projects. We'll have to wait and see if any of these measures will be adopted in many other countries to address the problem there. In Australia, in September 2002 federal Independent MP Peter Andren and Greens Senator Bob Brown introduced private

member's bills into parliament that would put a 25 cent levy on plastic shopping bags, and direct the funds raised to an education program publicising the environmental costs of plastic bags in Australia.

This bill was not passed, with the Minister for the Environment and Heritage Dr David Kemp preferring to explore voluntary options for plastic bag control, before imposing another tax on the Australian public.

"Every time we use a new plastic bag they go and get more petroleum from the Middle East and bring it over in tankers," said Stephanie Barger, executive director of Earth Resource Foundation in Costa Mesa, California. "We are extracting and destroying the Earth to use a plastic bag for 10 minutes."

The foundation is calling for a 25-cent tax on plastic bags in California. A bill that would have imposed a 3-cent tax on plastic shopping bags and cups was sidelined in the California Legislature 2 years ago after heavy opposition from the retail and plastics industries.

The tax proposals are loosely modeled on Ireland's "PlasTax," a levy of about 20 cents that retail customers have had to pay for each plastic bag since March 2002. The use of plastic bags in Ireland dropped more than 90 percent following imposition of the tax, and the government has raised millions of dollars for recycling programs. Similar legislation was introduced in Scotland and is being discussed for the rest of the United Kingdom.

### **Recycle, Reuse, Reduce**

Menace of plastic bags is not only an environmental strain but also an economic one. Collecting plastic bags from our drains is only part of the cost. We need to reuse and recycle these bags.

When a tax is imposed people tend to reuse the bags. In a few shops in India, and I have noticed that in Mulhouse, France too; one has to pay to get a new bag at grocery stores. Therefore, people tend to carry their own old bags.

The plastics industry took a "proactive stance" by working with retailers to encourage greater recycling, rather than "putting on taxes to address the problem," said

Donna Dempsey, executive director of the Film and Bag Federation, a trade association for the plastic bag industry.

Recycling your plastic shopping bags is one of the most obvious courses of action, however only 10% of Australian households take their plastic bags to a central collection point for recycling. This could be due to the fact that HDPE bags cannot be put out for collection with other household recyclables, and there is no separate kerbside collection for them, as the volume does not support the cost.

Instead, bags must be taken to central recycling collection points, such as supermarkets, where there are special bins to collect the bags. Even at these central collection points there is a risk that the bags may end up unsuitable for recycling due to a range of contaminants such as LDPE bags, ink, food, even supermarket dockets if they are left in the bags.

Prior to recycling, of course, the aim should be to reuse your bags. According to the Australian Bureau of Statistics, less than 1% of plastic bags used in Australia are reused, however 82.6% of Australian households say that they reuse plastic bags. This list of possible uses for plastic shopping bags is almost as long as the lifespan of the bag itself!

If you don't want to take your bags back to the supermarket to use again next time you buy your groceries, there are multitudes of ways you can use them around the house, limited only by your imagination.

In less developed countries many people do not have toilets. Plastic bags fill this need. The plastic bags are even more beneficial in that when sealed they prevent others from being contaminated and as such help prevent disease. Plastic bags are used in other ways as well. They are used by many to seal their roofs from leakage.

Some tribes' people in Africa have actually found interesting ways of utilizing plastic bags to make money. They roam the country side picking up littered plastic bags and then weave them into baskets, bowls, and hats for sale in the market.

So popular have the bags become that one group of 132 South African ladies use about 30,000 found bags a month to weave items out of. These ladies make their living out of making and selling the bags and even donate

10% of their profits to a women literacy project which has already taught 41 different women to read.

One thing they should not be used for is lining garbage bins. It doesn't matter if you

put them straight in your bin as waste or put your other garbage in them, the plastic bags will still end up in landfill, and potentially at large in the environment.



Refugees from Ethiopia help keep the environment clean by using their weaving skills in a most unique way - creating useful household items, like these baskets, from used plastic bags.

Given the costs and inconvenience associated with recycling, and the fact that reuse only delays the plastic entering the environment, the most sensible option is to cut down on the number of plastic bags that you use, or stop using them altogether.

It is estimated that it takes the average Australian family four shopping trips to accumulate 60 plastic shopping bags. If everyone accepted one less plastic bag every time they went shopping, the number of bags used would be reduced substantially.

The Australian Government's National Packaging Covenant (the Covenant) Action Plan 2008-2010 has been approved by the Hon Peter Garrett AM MP, Minister for the Environment, Heritage and the Arts. The Covenant is a voluntary initiative by Government and industry with the key objective being to reduce the environmental impacts of consumer packaging and office paper in Australia. Responsibility for delivery of the Covenant is shared between all sectors of the packaging supply chain, consumers, collectors, reprocessors and all levels of government.

Laurie Kusek, a spokeswoman for the American Plastics Council, said the industry works with its U.S. retail customers to encourage recycling of plastic bags, which are in high demand from companies such as 'Trex' in Winchester, Virginia, for use in building materials.

## 8. THE RECYCLING PROCESS

These are the steps in a successful recycling program. When necessary, alternatives can be discussed to maximize efficiency and reduce costs.

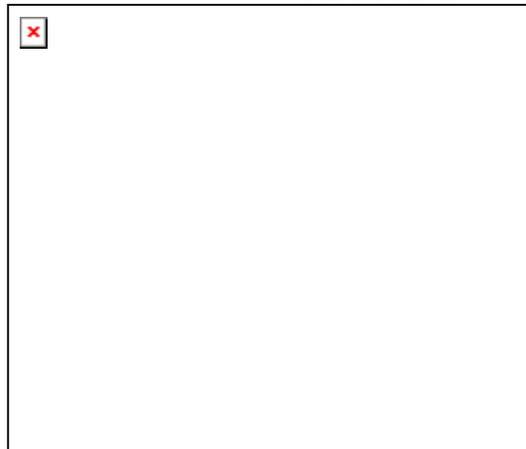
- Consumers carry out their purchases in plastic bags coded with 2 (HDPE high-density polyethylene film) and 4 (LDPE/LLDPE low density or linear-low density polyethylene film).
- Consumers remove trash, food or register receipts at home and return their clean and dry used bags to the recycling bin at the store (or reuse them to carry the shopped goods back home).
- At the store recycling site, recycled plastic bags and stretch wrap from delivered items are sorted, baled and stored in a trailer or out-of-way rack in the warehouse.
- When a full load of polyethylene film is collected (approximately 40 to 50 bales or 35,000 to 40,000 pounds), it is loaded onto the recycler's truck or delivered to the recycling facility where it is processed.
- At the recycling and manufacturing plant, the bales are broken down and the polyethylene film is sorted and passed through a metal detector. It is

then ground into plastic "fluff" to be heated and mixed with waste wood and formed into wood-polymer lumber.

- Wood-polymer lumber is used to build public boardwalks, playgrounds, marina docks, nature trails, and even home and restaurant decks.
- Using recycled plastic bags for building materials, like Trex, diverts millions of pounds of plastic bags from landfills each year. This year Trex plans to buy 80 million pounds of reclaimed plastic film - that's equal to 5.6 billion plastic grocery bags!

### 9. PLASTIC OR PAPER

The Film and Bag Federation, a trade group within the Society of the Plastics Industry based in Washington, D.C., said the right choice between paper and plastic bags is clearly plastic. Plastic bags are much more resource efficient. This is mainly because it takes 1/8 of the material to make a plastic bag as it does to make a paper bag. Compared to paper grocery bags, plastic grocery bags consume 40 percent less energy, generate 80 percent less solid waste, produce 70 percent fewer atmospheric emissions, and release up to 94 percent fewer waterborne wastes, according to the federation.



The economic advantage of plastic bags over paper bags has become too significant for storeowners to ignore. It costs very little for a standard plastic grocery sack as compared to a paper bag.

Paper bags also come from trees while plastic do not. This means that the more paper bags are consumed the more trees are being cut down. Cutting down forests is a huge resource cost. Once the bags are made they still need to be transported to their final destination. They are transported on ships and trucks. Because plastic bags are much thinner and lighter than paper bags, it would take seven 45 foot trucks to transport the same amount of paper bags as one 45 foot truck of plastic bags.

This is a large comparable savings on fuel, congestion and smog caused by the shipping of the bags.

Plastic materials and products play an

important part in cutting -edge technologies used in the space program, in bulletproof vests and prosthetic limbs, as well as in a myriad of everyday products. Disposal is the final stage in a product's life cycle, and the beginning of the waste management process. Despite the fact that plastics are used in everything from medical products to beverage containers, plastics constitute a mere 9.4% by weight of all waste generated in the United States. There are only two options when a consumer disposes of a plastic product: 1) proper plastic disposal that results in it being placed in a landfill or 2) improper disposal, otherwise known as littering. Plastic bag litter has become such an environmental nuisance and eyesore that Ireland, Taiwan, South Africa, Australia, India and Bangladesh have heavily taxed the totes or banned their use outright. Several other regions,

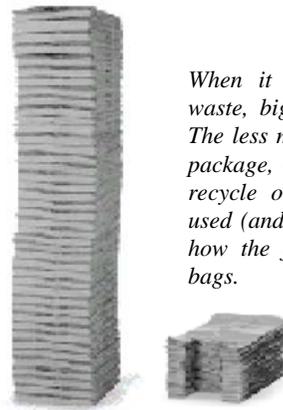
including England and some U.S. cities, are considering similar actions. Tony Lowes, director of Friends of the Irish Environment in County Cork, said the 15-cent (about 20 cents U.S.) tax on plastic bags introduced there in March 2002 has "been an extraordinary success." According to him, just about everyone in Ireland carries around a reusable bag and the plastic bags that once blighted the verdant Irish countryside are now merely an occasional eyesore. Cobb believes a similar tax in the U.S. would have a similar effect on reducing consumption

The American Plastics Council is wary of such a tax in the U.S. They say it would cost tens of thousands of jobs and result in an increase in energy consumption, pollution, landfill space, and grocery prices as

store owners increase reliance on more expensive paper bags as an alternative.

Many believe that the Irish tax of about U.S. 20 cents per bag is too high, but that a tax of 3 to 5 cents could have a positive impact on reducing plastic bag consumption by changing people's behavior. Having bags charged has some merits because it gets them used more responsibly. For example, instead of a bagger using six bags to package a person's dinner, the bagger might use just two.

As for Cobb, he hopes people will begin to realize that paper and plastic bags both come at great cost to the environment and instead of scratching their head when asked which type they prefer, they'll pull a tightly packed reusable bag from their pocket.



*When it comes to reducing solid waste, bigger definitely isn't better. The less material you use to make a package, the less waste you have to recycle or dispose of after you've used (and reused) it. Take a look at how the facts stack up for plastic bags.*

- The smaller volume of plastic bags can help conserve landfill space. Nothing degrades fast enough to extend the useful lives of modern U.S. landfills...not paper, not plastics, nothing,... according to Dr. William Rathje of the University of Arizona Garbage project.
- 30% percent less material is used to produce today's plastic bag than the bags made just five years ago
- Compared to paper grocery bags:
  - Consume 40 percent less energy
  - Generate 80% less solid waste
  - Produce 70% fewer

- atmospheric emissions
- Release up to 94% fewer waterborne wastes

**10. PAPER OR PLASTICS: REUSE**

Every time you reuse a plastic bag you double the environmental savings: you save the bag you reused from going to a landfill, and you save a new one from needing to be used.

Here are some common reuses for plastic bags (and I am sure every reader can add many more to the list)

### **Around the Hous**

- Use the plastic grocery sacks as wastebasket liners in bedroom, office and bath.
- A dozen bags rolled up tight fit into a small ziplock bag, freeing up lots of space in kitchen drawers.
- Protect water and gas valves in the monsoon/wintertime.
- Take grocery and retail sacks back to the store for reuse while shopping.
- Plastic bags keep dust away when storing off-season shoes.
- Take them to the food bank where they can be used to give needy people their food.
- Sort all of my craft supplies in plastic grocery sacks.
- Use plastic sacks to cushion breakable items when moving them in boxes.
- Store outgrown clothing to pass down to the next child in plastic bags.

### **For the Holidays**

- Make Christmas wreaths with them.
- Make Diwali (a festival of lights in India) lanterns from them or use for any kind of decoration during festivals.
- Keep crispy eatables in them to avoid them get soggy.
- Store umbrellas / raincoats / leftover crackers.
- Hide presents from the kids.
- Protect gifts from rain and snow during holiday trips and visits.
- To keep needles from your Christmas tree off the carpet, take the tree apart with pruning clippers and put the pieces into a plastic bag.
- Put a sandwich bag on your hands when handling the tree trunk to keep off pine tar.

### **In the Workshop or Garage**

- It's the best way to store a paintbrush full of oil-base paint at the end of the day to use it again the next day without having to use a solvent to

store it overnight. Just wrap the brush in the bag and put it in the refrigerator until the next morning.

- Slip them under the car to catch those last few drops of oil after an oil change.
- Keep leftover paint fresh by pouring it into a heavyweight, sealable plastic bag. Squeeze out the air and seal the bag. Put the bag in the original paint can and tap the lid closed.
- To clamp irregular shapes, hold them together with a sand-filled plastic bag.

### **Out and About**

- Keep clothes dry on canoeing trips.
- Use them to keep your clothes dry during the travel in rainy season.
- Line your backpack or bicycle pack with them.
- When packing for travel, use plastic bags to put shoes/slippers in.
- Give them to thrift stores or garage sales for their reuse.
- Use as garbage tray in cars.
- Containers for plants to be transplanted
- Turn the big ones into ponchos.
- While planting a cactus put plastic bags on hands.

### **For Students**

- Use as trash bags in dorm rooms /your rooms
- Use plastic grocery bags to store our aluminium cans for recycling. They are handy because they can be hung on the door handles.
- To carry lunch box
- To keep small toys etc in one place (chess pawns)
- Put a plastic bag on a stadium seat at a band competition when it is raining.

### **For Kids**

- Use them to make a kite or another type of craft.
- They make a great suitcase when you are spending the night with a friend

- Use them to hold items when in the process of collecting something, like shells on the beach, stones on the banks of river or in mountains, stamps.....

Once home, consumers can reuse their plastic bags for a variety of household needs

### **11. UNDERSTANDING PLASTIC FILM: ITS USES, BENEFITS AND WASTE MANAGEMENT OPTIONS**

Plastic bags are the most efficient bagging option for both convenience and the environment. Thanks to advances in resin, today's plastic bags have reduced their use of material by 30 percent in just five years, without decreasing strength.

Plastic bags can be recycled at thousands of locations nationwide. You can usually recycle plastic grocery and merchandise sacks, newspaper delivery sleeves, dry cleaning bags and self-serve produce bags. Recycled plastic bags are made into products such as industrial trashcan liners, wood-polymer lumber, drainpipes, plastic envelopes and even new plastic bags.

Today, more plastic bags and stretch wrap are finding their way into decking material that is unsurpassed for its durability. Made of about half recycled plastic and half waste wood, wood-polymer lumber is proving that it does not decay or crack, resists damage from termites and ants, and requires no protective sealants. Plastic materials and products play an important part in cutting -edge technologies used in the space program, in bulletproof vests and prosthetic limbs, as well as in a myriad of everyday products.

When it comes to plastics and conserving resources, recycling is only part of the story. Conserving the resources means using less raw materials and energy throughout a product's entire life, from its development and manufacture to its use, possible reuse or recovery (including recycling) and disposal. Plastics' unique characteristics - lightweight, durability, and formability - enable the material to conserve more resources during a product's life when compared to other materials.

In fact, despite the fact that plastic plays a role in almost every facet of our lives, its production accounts for only four percent of the United States' waste management process. Despite the fact that plastics are used in everything from medical products to beverage containers, plastics constitute a mere 9.4% by weight of all waste generated in the United States. There are only two options when a consumer disposes of a plastic product: 1) proper plastic disposal that results in it being placed in a landfill or 2) improper disposal, otherwise known as littering. In addition, since there appears to be a growing interest in recycling film, there is a need to discuss the pros and cons of recovering it for recycling States' energy consumption.

Another way to conserve resources is to recover the energy value of plastic packaging items after their useful life has ended. Plastics are a great source of fuel for waste-to-energy plants. When plastics are processed in modern energy recovery facilities, they help other waste burn completely, producing cleaner emissions and less ash disposal. Burning plastic can help supply an abundant amount of energy for electricity, while reducing the cost of municipal waste disposal & conserving landfill space.

In today's competitive marketplace, manufacturers of products and packages are under increasing pressure to satisfy varied and often conflicting demands, such as lowering costs, improving performance and enhancing environmental attributes. Within this arena, the material that a manufacturer chooses to use in its products and packages can affect its ability to remain competitive.

Plastic film, in many instances, has allowed manufacturers to meet varied marketplace demands by enabling them to do more with less. Unfortunately, information on this broad category of materials is lacking. The American Plastics Council (APC) hopes to meet this need by providing technical experts and lay persons with a better understanding of what film is, how it is used, how it contributes to resource conservation and how it can help manufacturers respond to the changing marketplace.

Consumers seem agreeable to giving up the bags, said Claire Wilton, senior waste

campaigner at Greenpeace, UK.

"There certainly hasn't been an angry uprising of shoppers (in Ireland) saying we want our bags for free," Wilton said. "I think a lot of people recognize they are wasteful. That's why they try to save them to use again, although they often forget to bring them with them when they shop."

Here it is essential to mention that we must understand the advantages of using plastic, e. g. Plastic lumber, made with recycled plastic, holds nails and screws better than wood, is virtually maintenance free and lasts for 50 years! For every seven trucks needed to deliver paper grocery bags to the store - only one truck is needed to carry the same number of plastic grocery bags!

Today, over 12,000 communities provide recycling services to 184 million people. The number of plastics recycling businesses has nearly tripled over the past several years, with more than 1,700 businesses handling and reclaiming post-consumer plastics.

From computers and cell phones to televisions and microwaves, durable, lightweight and affordable plastics have helped revolutionize the electronics we rely on every day. Plastics deliver a range of performance benefits no other material can match. Their unique combination of performance properties inspires both innovative new products and the more efficient use of resources.

Plastics enable many of our favorite electronics to do more with less. For instance, plastics are essential to advances in weight reduction and miniaturization in many electronic products, so less material is used in production. In addition, plastics can be engineered to meet very specific performance requirements, often resulting in greater energy efficiency over the course of a product's life.

For more than a decade, APC has been helping promote sound plastics recycling and recovery from electronic equipment and products. They sponsor research and development projects, publish new information and support technology transfer initiatives. Their knowledge base has grown significantly in recent years and as the quest for answers continues. They are committed to working with stakeholders throughout the plastics, electronics supply and stakeholder groups to advance the responsible and cost-effective recycling of

plastics from electronic equipment and products. Through leveraging strategic partnerships APC has assisted in developing state-of-the-art technologies for recycling plastic. This same technology is now breaking ground in China as one of the largest operations of its kind.

## 12. ALTERNATIVES

There is a range of alternatives to plastic bags. Some retailers save the cardboard cartons that stock is packaged in, so customers can use them to pack their groceries. Others may offer paper bags. Some major supermarket chains have string or calico bags available for sale at a very small price. These bags can be kept in the car and used again and again. The advantage of calico bags is that they are stronger than the plastic bags, and also much easier to carry. In India these are being in use for generations. The new generation was so overwhelmed by the plastic world that it has only forgotten the old environment friendly cloth bag. It takes a little thought to get used to bringing your own bags, but it is an easy habit to fall into and it is such a relief not to have to pack the groceries away, and then find room to pack away the plastic bags as well!

There are of course situations where you can't beat a plastic shopping bag, such as when buying meat or "messy" items. Thankfully, technology is catching up with the need for a replacement for polythene bags. It was recently reported that supermarkets in Australia would introduce biodegradable bags made from tapioca starch in April 2003. These bags will look and feel like polythene bags but will decompose in three months.

But it is important to understand that plastic grocery bags are some of the most reused items around the house. Many, many bags are reused as book and lunch bags as kids head off to school, as trashcan liners, and to pickup dog's droppings off the lawn. So next time you go shopping, hold your head up proudly as you reuse or refuse a plastic bag. You may not be in a rubber dinghy chasing a whaling boat or pursuing ivory poachers, but you have made a contribution to the future of the planet.

Actually plastic bags are becoming a victim of their success. We the world should

support the development of biodegradable plastic bags. And this is really very important for all of us to understand and know that the plastic has an advantage over paper.

### 13.CONCLUSION

The answer to the "paper or plastic?" dilemma is: **Neither**. They're roughly equal in pros and cons. While convenient addictions, they both gobble up natural resources and cause significant pollution. May be plastic is a little less harmful than paper. Although the development will increase the packing material and with growing population of the world the waste and the litter is going to increase, we all have to be more careful about exploiting available resources.

With all due respect to Kermit the Frog, it's easy being green. Although we may be overwhelmed by the environmental catastrophes that seem to occur around us with alarming regularity, there is a simple way each and every person can make a difference. It doesn't involve travelling the world to clean up oil spills or standing in the path of bulldozers to prevent land clearing. It actually involves shopping.

"Every piece of litter has a human

face behind it. If they are harm to the environment in terms of visual blight, then people need to stop littering," said Rob Krebs, a spokesman for the American Plastics Council. The new hopes rise too when one reads some research in the new direction to make plastic more useful. "The Record" (May 22, 2008) newspaper, based out of Ontario, reports that a 11<sup>th</sup> grade student in Ottawa named Daniel Burd, through work on his science project, discovered that plastic bags can actually be at least partially biodegraded in a matter of months, when exposed to bacteria under the right conditions. The newspaper had given the details of the experiment too. ([this article](#)). If this experiment comes to real use then plastic will be friendlier for us.

And we must not forget the tradition of using cloth bags, which are reusable, washable and durable, pollution free and therefore environment friendly!! In fact that should be our gift to the other people in the world that will remind them of their own tradition. The solution to bag litter is to change people, not the product.

In the meantime, the best thing we can do for the environment is simply reuse, or better yet, refuse a plastic bag when we go shopping. Easy!

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