

## Are Plastics suitable for Packaging Food

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are not a harmless type of material has been experimentally confirmed over about 50 yrs ago. The various toxic chemicals that are added to plastics or present in the plastic itself are commonly and generally referred to as “plasticizers”. When food is packed in these plastic containers plasticizers leach into food with time. This leaching process is activated by temperature, oil and alcohol. In addition when food placed in plastic containers is cooked in microwave ovens, when plastic vessels are washed with detergent type soaps, when they are exposed to sunlight or when crushed or scraped, the plasticizers get mixed into food. (It has been found that from “PET” bottles alone 19 dangerous chemicals have been found to leach out.) Among these following chemicals have a greater effect on human health.

### Phthalate

Phthalate is used to soften and make the plastic flexible. Phthalate is a carcinogen. It has a strong

Modern changes in food technology and food consumption habits have made our lives more comfortable. However, recent research is in the process of proving that by being attracted to comforts and modernization, and not taking certain factors into consideration there is the possibility of subjecting our health to grave risks. It should be recognized that consumption of healthy food and food safety depends not only on what we eat but also on how food is packaged, prepared, stored, and on the utensils and equipment used in the preparation of food. It is beneficial for all consumers to be aware of the possible injurious effects on public health of the commonly used polythene shopping bags and food packaging in plastics.

### How are plastics injurious to health?

The primary origin of plastics is petroleum. Plastics are categorized into many types based on their composition. (The code number is indicated on the bottom of plastic containers)

01: PET/PETE – Polyethylene Terephthalate (code number #1) used in the production of bottles for water and soft drinks.

- 02: HDPE : High density polyethylene (#2) Plastic chairs, various goods, containers
  - 03: PVC – Polyvinyl Chloride (#3) PVC pipes, packaging for certain foods
  - 04: LDPE – Low density polyethylene (#4) Types of plastic cans, toys
  - 05: PP – Polypropylene (#5) – Shopping bags, lunch sheets etc.
  - 06: PS – Polystyrene (#6) Rigitorm, lunch boxes etc.
  - 07: Polycarbonate plastic (#7) – Very strong plastic equipment and containers.
- Out of these the internationally recommended (as less dangerous plastics) for packaging foods use the types HDPE - #2, LDPE - #4 and PP - #5. The fact that plastics



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effect in bringing about hormonal changes and is a powerful endocrine disrupter. It has been discovered that phthalate has damaging effects even in very small concentrations. In an experiment conducted by the Environmental Health section of the Harvard University it has been confirmed that in the urine of males with sub fertility, phthalate constituents are high and the DNA in their sperms was mutated (The reason for infertility is the mutation of DNA)

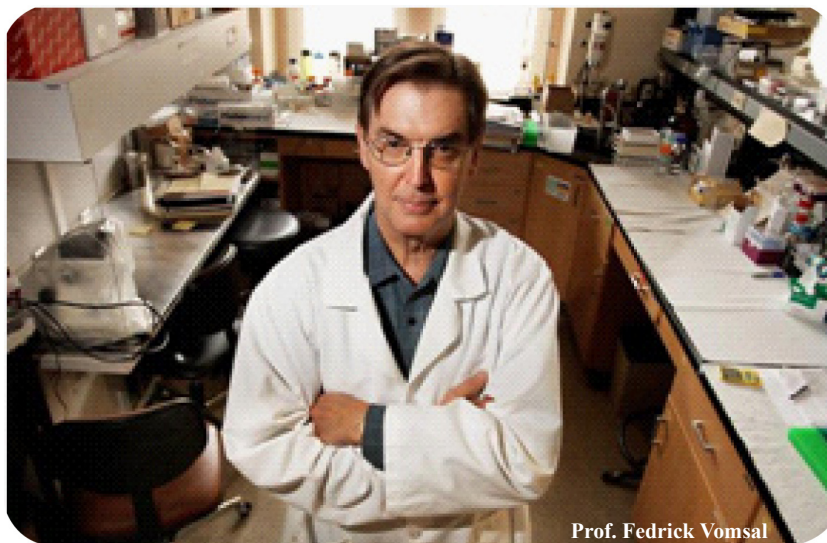
According to studies carried out by Professor Shana Swann of the Section an Obstetrics, Gynaecology and Reproduction at the Rochester, Medical University, mothers who had excessive amount of phthalate in their

urine have given birth to children with very little space between the reproductive system and the anus and also their reproductive organs were very small in size and their testicles were positioned in an irregular manner. A group of scientists working in the United States at the centre investigating the factors adversely affecting the human reproductive system has stated that in comparison with adults, phthalate has greater effects on small children, and it may contribute specially to weaken the reproductive capability of boys.

### **Bisphenol A/BPA**

This is a building block of thick plastics and is responsible for

the transparency and strength of plastics, and also important in its ability to resist vibrations and shock. Plastics with BPA is used in the manufacture of various items such as vessels used in the kitchen, items used in the storage of food, plastic cups (travel mugs), water bottles, bottles for storing mineral drinks, the thin film covering the inner face of food storing tins (tinned food), plastic products for



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infants, bottles for infants, mobile phones, sun glasses and compact discs. Bisphenol A exhibits characteristics similar to that of the human hormone oestrogen. Xenoestrogen is a synthetic oestrogenic compound. Research has proven that it affects the endocrine system and the reproductive system. Also it is 100 times stronger than the natural hormone oestrogen.

Entry of BPA into the body may cause many health problems such as infertility, prostate cancer, breast cancer, early puberty in female children, obesity and type 2 diabetes. Therefore Professor Federicle Wamsal has pointed out that exposure especially of pregnant mothers, infants and

youth is dangerous.

### **Acetaldehyde and other types of aldehydes**

These are colourless and possess a characteristic fruity smell. These chemicals may cause cancers and many other health problems.

These may be present in greater concentrations in cool drinks and sweetened drinks and in bottles

which have been subjected to temperatures of about 600 C.

### **Antimony**

Antimony is added during the process of plastic (PET) manufacture. Recent research carried out by William Shotyk – a famous German scientist, has discovered that Antimony which is

a heavy metal with harmful effects is present in the drinking water stored in plastic bottles. Research has also found that in foods packed or stored in “PET” bottles the concentration of Antimony increases considerably after the expiry of 3 months, and relative to the time period. (This research calls to attention to reconsider the expiry period of 2 years specified for water and cool drinks stored in plastic bottles.)

### **Dealing with packaging of food in plastics**

- In European countries the use of plastics with Phthalates and Bisphenol A in infant products, toys and food packaging has been prohibited or subjected to rigid

limitations (Example Canadian Department of Health Phthalate Regulation, Canada Gazette 2009. June 20 [accessed 14 November 2009]).

- In America in the state of San Francisco the use of “PET” plastic bottles has been completely prohibited.
- The Government of India has legal provisions to prevent the use of plastic packaging with phthalate in packing pharmaceuticals.

### The Standards for plastic food packaging in Sri Lanka

- It is satisfying that a reasonable step has been taken to control to some extent the use of food packaging materials which are injurious to health. In this regard, by 2010 instructions issued by the Ministry of Health on each food package, requires the printing of the following statement. “To be used for food”, or the relevant symbol. In addition, it should also indicate any special conditions that should be followed when using them, including the name and address or registered trademark of the manufacturer. Instructions also include that recycled plastic should not be used in packaging.
- Medical specialist Dr. Waruna Gunathilake of the National Toxic Information Centre Sri Lanka has stated that experiments have shown that the risk of developing many health problems including cancers and dangerous respiratory problems are at a high level, due to the packaging of food in wrappings and containers manufactured using various types of plastics. These include even the teats and soothers for infants. However many school children, teachers as well as health workers

carry drinking water in re used PET bottles due to being ignorant of the adverse effects of plastics. Many house wives use the immersion heaters to heat water and make tea in the plastic vessels of low quality having the above mentioned toxic substances. Most food items such as “bites” “mixture” murukku, wade and pattices are deep fried in oil brought in PET bottles and polythene shopping bags. Presently many people in Sri Lanka use grocery bags for carrying coconut oil. Steaming hot rice and the koththu are wrapped in “lunch sheets”. Curries are supplied in “grocery bags”. One can imagine

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the extent of undesirable effects on our health through the use of plastic and polythene to store salt (substituted for the humble Lunu pol katta or coconut shell) bite packet, ice packets, lime pickle, water, various fruit and other drinks, as plates, to drink tea in, and many more.

### How can the plastic risk be minimized

The following advice can be suggested for the benefit of those who are concerned about their health and the health of their family by preventing the problems that may arise by using plastic and polythene food packaging.

- Limit as far as possible the use of food and drink packed in plastics and polythene. Try to see the extent to which plastic vessels without a code number, a trade mark or any, standard or any are used in your household to store food.
- Do not use acidic, hot, as well as food containing alcohol stored in plastic vessels. (These conditions enhances the leaching of toxic chemicals in plastics).
- Filter the water stored in plastic containers using a Reverse Osmosis water Purification Filter before drinking, or using for cooking. (The cost of one of these filters with lowest capacity is about Rs: 40000/=)
- If you are using a plastic water tank for strong water check whether the tank is manufactured out of material approved for use in food storage. Also never keep such plastic tanks so that they are exposed to sun light.
- Do not use plastic infant bottles, soothers teats and other infant products.
- Do not use plastic vessels for cooking in microwave ovens.
- Do not use shopping bags and grocery bags to carry cooked food, sugar, tea leaf, coconut oil, meat, fish and other food substances. (During the manufacturing process talcum powder is used to prevent the bags from sticking to each other. The frequent entry of



talc into the body causes many health problems. Also the harmful dyes that are used to colour the shopping bags may get leached into the food).

- Pay attention to the use of alternate vessels made of stainless steel and pyrex to carry rice instead of using “lunch sheets”
- Do not reuse over and over again the PET bottles for carrying drinking water. Use glass bottles or stainless steel bottles for the purpose.
- If it is essential for you to use plastic bottles use bottles made of a food grade plastic type but not made out of PET plastic.
- Do not purchase water stored in plastic bottles and kept exposed to sun light. (The harmful chemicals in plastic leach). The leaching of harmful chemicals in plastic increases 55 fold at higher temperatures.
- Discard the old, damaged plastic vessels.
- Take extra care when using plastic ware for women in reproductive stage, pregnant mothers, infants and children.
- Do not inhale the smoke produced when plastics and

polythene are burnt, as extremely harmful chemicals such as Dioxins and Furans are released from them during burning. Many housewives in this country use “shopping bags” even to light the hearth.

- Avoid purchasing tinned food as far as possible. It is very likely that with time the film of B.P.A applied on the inner face of the vessel to prevent the metal Tin (Sn) reacting with the food in the vessel (tin container), will dissolve and leach into the food.
- Include more foods containing folic acid and fresh vegetables and fruits to your meal (examples, leguminous pulses, fresh dark green vegetables, fruits, eggs). It has been found that these foods reduce the harm caused to the developing embryo, and also reduce the B.P.A concentration in the blood.
- Use traditional, alternative food packaging materials vessels such as reed bags cloth bags, clay, glass, pyrex and rust resistant steel, and porcelain vessels.
- Drink king coconut water which is more beneficial to health and has more nutritive value, instead of purchasing bottled drinking water

and cooled bottled drinks. When travelling a long distance take your drinking water in a suitable bottle.

Our bodies have a remarkable ability to act against various toxic substances and infections, and has the capacity to protect itself from many toxic substances. However, there will reach a point when artificial toxic substances enter the body over a prolonged period and get stored, and the body will not be able to withstand them anymore. So it is extremely important to take the necessary precautions to protect ourselves rather than be sorry about negligence.



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