Non-recyclable plastic waste causing serious threats on environmental degradation

Urban civilization is witnessed a substantial growth in the consumption of plastics and increasing volume of plastic waste day by day. The plastic waste is now considered as environmental hazard due to the "throw away culture". Plastic waste when mixed with the biodegradable solid waste, blocks the biodegradation process. On the other hand common people are not even aware of its recycling potentiality except the rag pickers.

As per the study conducted by ENVIRON, it is come to know that non-recyclable plastics are creating serious environmental threats including clogging of drains and flash flood, soil degradation and developing waste land as these are not even collected by the rag pickers.

ENVIRON have conducted a study on plastic waste and classified plastic waste as recyclable plastic and non-recyclable plastic on the basis of recycling potentiality which are identified and listed systematically along with the reason of non-recyclability.

As per the study of ENVIRON, all the multilayered and laminated plastics are non-recyclable whereas all the single component of plastic like PET (Polyethylene Terephthalate), HDPE (High-Density Polyethylene), PVC (Polyvinyl Chloride), LDPE (Low-Density Polyethylene), PP (Polypropylene), PS (Polystyrene) etc. are recyclable.

Non-recyclable plastic (NRP) are all the multi layered plastic 'pouch pack' and plastic package used for potato chips, tea, coffee, biscuits, snakes, spices, noodles, chocolate, 'pan masala', shampoo, detergent, lubricants, fruit juice and others made of 'metalized PET', Polyester and PE; medicine blister strip made of PE and Aluminium foil; various plastic laminated on paper packs made of Paper, PET or PE; all the plastic laminated cover page of books, magazine and souvenir etc. laminated on paper through PET or PE; battery cases combination of plastic and paper; tooth paste tube and tooth brush, medicine tube, cosmetics tube, pen, comb etc. made of mixed PVC, Polyester, PET and others; aseptic packaging or all type of square boxes used for packaging of liquid substances like milk, vegetable oil, fruit juice and soft drink made up from complex layers of plastic, metal and paper etc.

Recyclable plastic (RP) are the plastic carry bags' made of LDPE, HDPE, PP; 'plastic glasses' used for tea, coffee, water, ice cream etc. made of PS; 'plastic bottles' used for drinking water, cold drinks, fruit juice, medicine, cosmetics, shampoo and detergent, injectable saline, edible oil, automobile lubricants, mosquito repellent etc. made of PET or PVC; various single layered plastic 'pouch-pack' used for vegetable oil, salt, milk made of PE, PET, PP; PVC shoe; plastic sheet used for RCC construction and other damaged plastic sheet, plastic thread, damaged plastic pipes, damaged plastic bucket and mug, disposable syringe for injection and other plastic waste made of Polyester, PE, PET, PVC,PS, PP etc.

Only similar type of plastic can be molded for recycling and mixing of small amount of other type of plastic can ruin the entire melting processes. For example in the case of recycling procedure,

presence of small amount of PP may hamper the recycling of PET. Non-recyclable plastics are often multilayered and therefore, cannot be melted for recycling purposes. On the other hand laminated plastics can be recycled only after the de-laminating process which is costly and not economically viable.

There are three reasons behind the commercial use of non-recyclable multilayered and metalized plastic 'pouch pack' and plastic 'package': 1. it gives strength; 2. it enhances food grade quality and 3. it enhances attraction of the product. Whereas, as per the study it is revealed that enhancement of food grade quality inside the multilayered and metalized coated plastic is not authentic as the inner layer where the food remains are always usually LDPE which is used for sealing purposes.

Presently there are four types of plastic waste recycling procedures: 1. Primary recycling - processing of a waste plastics into a product with characteristics similar to those of original product; 2. Secondary recycling - processing of waste plastics into materials that have characteristics different from those of original plastics product; 3. Tertiary recycling - the production of basic chemicals and fuels like diesel from waste plastics and 4. Quaternary recycling – involves the recovery of the energy content from all types of plastic waste by burning through incinerator. First two processes are popular in India and Tertiary recycling processes are just starting and quaternary recycling process is not practiced in India. Whereas, quaternary recycling is popular in most of the developed country and thereby for them differentiation of recyclable and non-recyclable plastics are not so important but creating the great threat of releasing POPs (persistent organic pollutants).

ENVIRON study reveals that at the present scenario out of the total generated plastic waste, 60% plastics are recyclable whereas 40% are non-recyclable plastics.

Fig.1 Recyclable plastics



Fig.2 Non-recyclable plastics

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