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Thank you for listening to me. My name is Brian Davis. I am a retired Mechanical Design Engineer specialising in materials handling systems such as assembly lines, baggage handling in airports, postal sorting systems and mineral handling systems. I have degrees in mathematics and material sciences and feel confident to claim being somewhat knowledgeable in how plastics cause problems. I have also lived in Moss Vale for the past 28 years

I will bring to you today a bit of history of plastics, what they are and their uses.

Just after WW2 there were only three plastics in popular use; Perspex (for use as aircraft windscreens), Nylon (a product developed by DuPont's and a form of polyurethane There was no need for a book to list their respective properties etc details were available from the product makers, however by 1960's because of the profusion of plastics an â€œencyclopaediaâ€ was produced listing one form plastic on each page. The book was about 1cm thick. The last time I looked the encyclopaedia had become 2 volumes each about 3cm (or more) thick and still only one type of plastic per side of paper. Plastic was and still is a very fast growing industry

Types of plastics have increased in numbers as designers/engineers have demanded special characteristics. There are two main types of plastics thermoplastics (which melt or burn when heated) and thermoset plastics (only destroyed by chemical, not heat). Thermoplastics are produced by taking a monomer and converting it into long â€œstringsâ€ by using various other chemicals (ie carbon, nitrogen and others). These chemicals on their own are nothing to worry about but when they are released into the atmosphere during crushing, slashing, abrasion and reheating they can become either microfibers of the original or separate and unite to produce something different (one simple reaction is for the carbon and oxygen to unite to create Carbon Dioxide (CO2 isn't that the stuff we are trying to get rid of?)! Modern plastics, with unknown chemicals added to provide certain properties, can produce goodness know what! As a simple old example:- Styrene (a volatile, colourless, sweet smelling liquid produced from mineral oil) is used as a basis in a number of plastics including â€œPerspexâ€ and its cousins. It's what causes Perspex to turn yellow and craze after time). It works something like asbestos, leave it alone and it's only a small problem BUT squash/crush, abrade or set fire to it and it becomes deadly. Polystyrene is used in aircraft structure between the inner and outer skins of the main body for insulation purposes. If an aircraft catches fire the occupants soon start to choke on the micro fibres from the styrene given off into the air. They initially die from the fibres clogging of the throat, not the fire.

Here in the Wingecarrabee Council, as in many other council regions we are given three garbage bins, one red (for household waste) one green (for green waste) and one yellow for paper, glass, metal cans and some plastics (the items that maintain their shape). I believe some councils have blue bins especially for plastics, but can you trust the public, I believe not. Thin plastics are to be placed in the red bin for land fill. Thin plastics are difficult to sort, treat and process and have limited secondary use (would you like your fresh fruit wrapped up in pre-used gladwrap). Plastics that hold their shape whether moulded or in sheet form, are often referred to as â€œhardâ€ plastics. These I believe (I hope) to be the sorts of plastics that are destined to be processed at Plasrefine, many of which contain polystyrenes. BUT there is no way of knowing which ones. How the sorting of the plastics in the system proposed by Guthrie, Haskins and Davey (GHD) works we do not know. It is another one of their black boxes or perhaps it is â€œsecret GHD businessâ€ but we are assured it will be â€œbest practiceâ€. If the process of recycling plastics was as simple as drawing little â€œblack boxesâ€ on a sheet of paper there would be plastic processing plants attached to garbage tips everywhere, but there isn't. Why

would councils be sending off this so called useless, valueless plastics to centres around the state when they could turn it into a usable product and make a dollar? Simple, because the process is not simple and it is dangerous. It is complicated, dangerous and certainly health threatening.

I have restricted this presentation to just one type of plastic. To look into more such as polypropylene, polyethylene, polyurethane, and polywantsabisquit (the worst of them all). Basic nylon and its cousins such as nylon six, nylon six six and nylon six ten. Then there are the harder plastics such as acrylic (which also has many cousins such as UV stabilised and others) and bullet proof Lexan. To take all this to its ultimate conclusion, I think I would be eligible for a PhD.

I commend companies that try to cure us of this scourge of modern times but don't experiment in people's back yards where the outcomes could be disastrous. If Plasrefine wants to â€œexperimentâ€ with recycling plastics they should be â€œencouragedâ€ to undertake such actions away from being close to residential areas and find an acceptable site in a suitable heavy industrial area or kilometres away from residential areas.

Many of the world experts, particularly the makers of the raw basic materials, are being harangued on a daily basis to find a way/a process to make plastic recyclable and renewable. To my knowledge nothing as simple as a single line of â€œblack boxesâ€ is the answer. There are usually power hungry crushing, chopping, abrading machines interconnected with conveyors and other specially designed units (black boxes which I know nothing about, I'm not a chemist) to break down and modify the pre-used plastic. There is usually a chimney stack belching out unknown unwanted gases. I hope I have managed to demonstrate that even at this stage when the process is still only in squares on a piece of paper that there are too many unknowns before this project is given the green light and especially not in the area currently proposed.

Due to a limit of time and space, I trust my simplified account of the history and development of the plastics industry has shown that, at this stage there still in no known simple way to handle this product to make it recyclable.

Thank you