

CHAPTER I

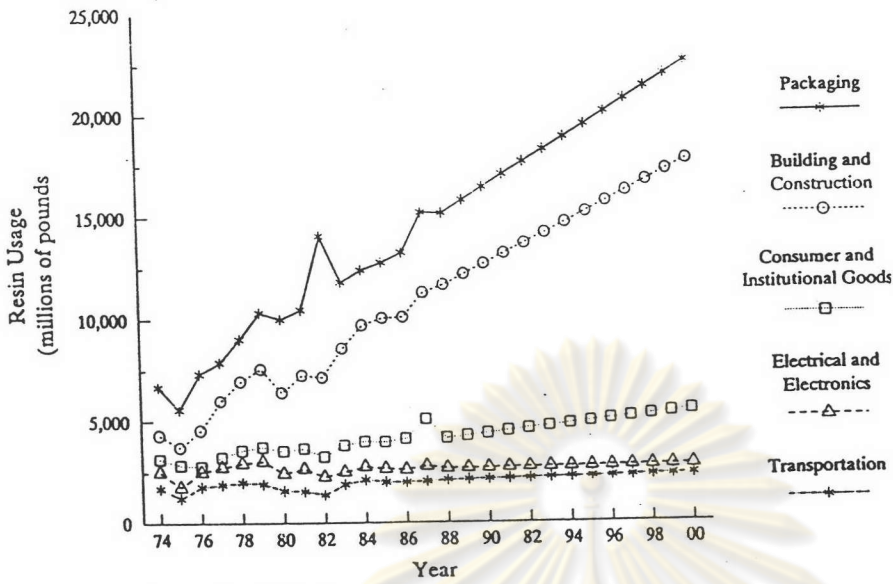


INTRODUCTION

Statement of Problem

The advantage of plastics is very intensive such as durable, flexible, tough, corrosion resistance and long-live leads to increased usage. As a result, there is a rapid growth in plastic's area application, especially in packaging. Figure 1.1[1] illustrates the historical use of plastics in several major product areas during the years 1974 to 1987 and project for these product areas through the year 2000. Resin usage in packaging, is by far greater than the other usages. Figure 1.2 and Table 1.1 show the historical use of plastics by packaging type. Most of these consumer plastics, which after use are referred to as post-consumer plastics are recycled. Plastics are recieved from recycling process as pellet form that are called recycled resins or recycled plastics. They are fabricated into various plastic products. Consequently, these plastic products are abundant in local market such as bowls, basins, baskets, containers, and etc.,

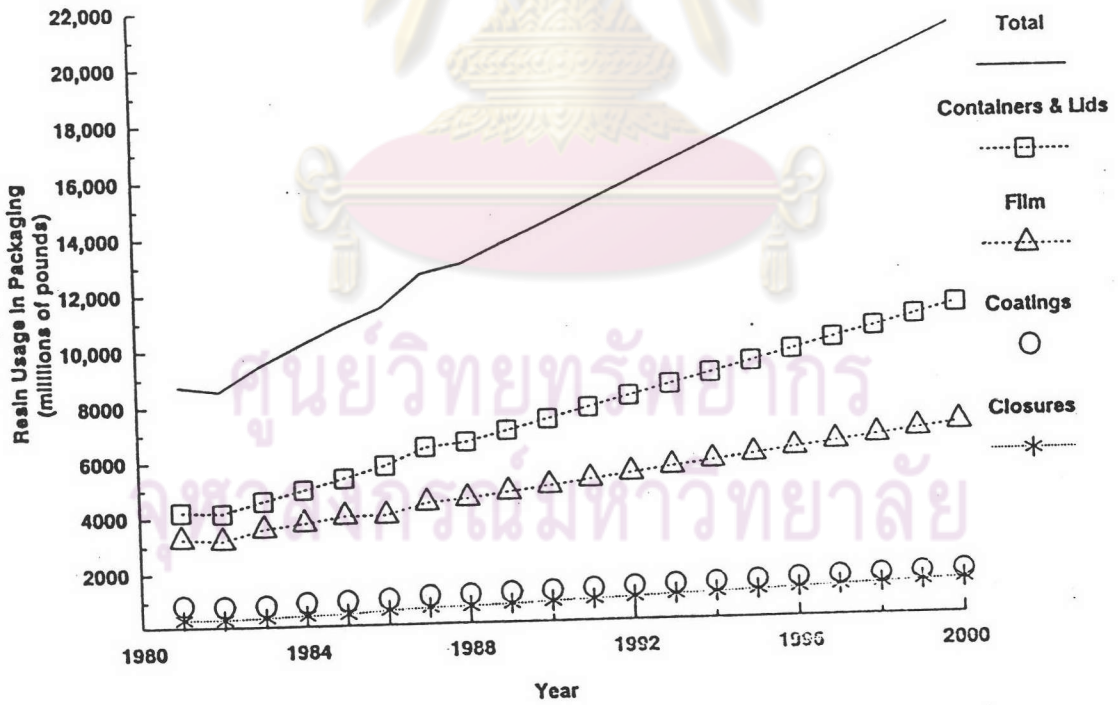
As post-consumer plastics are collected from various sources and locations, they are most likely subjected to contaminants. These contaminants, especially toxic contaminants will finally end up in goods made from recycled resins. This event has bothered consumers who use them. Therefore, it is advantageous to know the type as well as quantity of toxic contaminant which may limit the use of recycled resin.



Note: Projected Values are from 1988 and onwards.
Excludes the use of polyurethane

(Curlee, T.R., and Das, S.)

Figure 1.1 Resin usage by product type.



Note: Projected Values are from 1988 and onwards

(Curlee, T.R., and Das, S.)

Figure 1.2 Resin usage in packaging application.

Table 1.1 Historical and projected use of plastics in selected product categories in packaging.

YEAR	CLOSURES	COATINGS	CONTAINERS & LIDS	FILM	TOTAL
1981	373	889	4214	3257	8733
1982	364	847	4159	3159	8559
1983	417	860	4580	3585	9442
1984	472	955	4965	3764	10156
1985	503	988	5355	4000	10846
1986	612	1035	5801	4004	11452
1987	676	1114	6433	4426	12649
1988*	701	1130	6595	4548	12974
1989	754	1172	6977	4746	13650
1990	808	1214	7360	4945	14326
1991	861	1256	7743	5143	15003
1992	914	1298	8126	5341	15679
1993	967	1340	8508	5540	16355
1994	1021	1382	8891	5738	17032
1995	1074	1424	9274	5936	17708
1996	1127	1466	9656	6134	18384
1997	1180	1509	10039	6333	19061
1998	1234	1551	10422	6531	19737
1999	1287	1593	10805	6729	20414
2000	1340	1635	11187	6928	21090

Note: *Starting year for projections

(Curlee, T.R., and Das, S.)

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย

Purpose of the Research

Is it safe to use plastic products made from recycled resins ?. This question has been asked by people who wonder if there are toxic contaminants in the recycled resin. Thus, to answer this question, this research work is carried out.

The purpose of this research is to determine quantitatively toxic contaminants in recycled pellets or resins.

Scope of the Research

This research will focus on post-consumer plastics of the following types: polyethylene, polypropylene, and polystyrene. Contaminants in recycled plastics to be analyzed are lead, cadmium, mercury, and styrene monomer.

ศูนย์วิทยทรัพยากร
จุฬาลงกรณ์มหาวิทยาลัย