Evasion of Excise Duties in India: Study of Plastics

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Preface

The National Institute of Public Finance and Policy is an autonomous, non-profit organisation whose major functions are to carry out research, do consultancy work and undertake training, in the area of public finance and policy.

The present study on the Evasion of Excise Duty on Plastics is the second part of a larger study on the evasion of excise relating to a selected number of commodities, entrusted to the Institute by the Central Board of Excise and Customs, Government of India. The first part relating to Evasion of Excise Duty on Copper was completed and submitted to the Government in 1982.

The present study was carried out by Dr Narain Sinha who also prepared the initial draft. The study as well as the draft report have been revised by Dr A. Bagchi and Mr B. L. Sud.

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Revenue Significance of Plastics

PLASTICS were brought under excise duty for the first time in 1961 with the incorporation of item 15A in the Central Excise Tariff Schedule. At first, the coverage of the item was somewhat limited and was applicable to certain specified plastic materials and products, namely: (i) moulding powders, granules and flakes; and (ii) polyethylene films, lay flat tubings and PVC sheets. The duty was leviable at the rate of 20 per cent *ad valorem*. The description of the tariff head was expanded later and the rate of duty was raised from time to time. Currently, the tariff head is broken up under four sub-heads and extends not only to plastics materials and articles made of such material but also to polyurethane foams and articles manufactured therefrom. Cellophane and polyester films which were for some time taxed separately are now included under plastics for purposes of excise duty. The basic tariff rates are 50 per cent *ad valorem* on resins and articles coming under the first two sub-heads of tariff item 15A and 75 per cent *ad valorem* on polyurethane foam and articles thereof taxable under sub-items 15A(3) and 15A(4), respectively. The effective rates of basic duty vary from 10 per cent *ad valorem* to 75 per cent *ad valorem*. In addition, there is a special excise duty at the rate of 5 per cent of the effective basic rate.

The revenue from plastics at first was not very significant and fetched barely Rs 1 crore in 1961-62 forming less than 0.3 per cent of the total Central excise revenue. With the growth of the plastics industry in the country and increasing use of plastic products for a variety of purposes, the revenue from plastics has increased and for the year 1982-83, stood at Rs 142 crore, out of a total Central excise revenue of Rs 8302 crore, forming about 1.7 per cent of the excise revenue. According to the budget estimates for the year 1983-84, the revenue from plastics is expected to be around Rs 169 crore out of a total Central excise revenue of Rs 10,050 crore (vide Table 1.1). Although the contribution of plastics to excise revenue has usually not exceeded 2 per cent except in one or two years, plastics come within the first 13 articles in terms of revenue, in the list of commodities included in the Central Excise Tariff Schedule.

Although there has been a fairly rapid growth of revenue from plastics, in fact, the growth has been faster than that of Central excise revenue as a whole, there is a feeling that evasion is widespread in plastics partly because of the complex rate structure and partly due to the structure of the industry with a large number of units manufacturing plastics material and products all over the country. It was, therefore, desired by the CBEC that some attempt may be made to investigate the extent of evasion of excise duty on plastics and suggest ways of minimising the revenue loss. The present report is the outcome of the study undertaken by the NIPFP at the instance of the CBEC.

Before proceeding to consider the possible scope of evasion and assessing the quantative dimensions of the possible revenue loss, it is necessary to examine briefly the nature of the product coming under the description of "Plastics" and the structure of the industry.

Plastics Industry

Plastics are acknowledgedly the wonder product of the twentieth century. In the course of a few decades plastics have come to occupy a very important place in man's life and compete with traditional items like steel, cement, aluminium

TABLE 1.1

Revenue Significance of Plastics (Tariff Item 15A) (1961-62 to 1983-84)

Year	Revenue from excise duties (Rs Lakh)		Column (2) as percentage of column (3)
	Plastics including cellophane and polyester films	All commodities	
(1)	(2)	(3)	(4)
1961-62	142	48931	0.29
1962-63	196	59883	0.33
1963-64	307	72958	0.42
1964-65	621	80151	0.77
1965-66	659	89792	0.73
1966-67	721	103377	0.70
1967-68	1172	114825	1.02
1968-69	1347	132067	1.02
1969-70	2001	152431	1.31
1970-71	2581	175855	1.47
1971-72	3022	206110	1.47
1972-73	3589	232425	1.54
1973-74	4108	260213	1.58
1974-75	7911	323053	2.45
1975-76	7757	384478	2.02
1976-77	6830	422145	1.62
1977-78	6815	444751	1.53
1978-79	9464	534195	1.77
1979-80	11309	601109	1.88
1980-81	12773	650002	1.97
1981-82	14346	742074	1.93
1982-83 (RE)	14215*	830190	1.71
1983-84 (BE)	16800	1005042	1.67

Note : *Provisional

Sources : 1. For column (2) Directorate of Statistics and Intelligence, *Statistical Year Book*, Central Excise, relevant issues.

2. For column (3), *Explanatory Memorandum on the Budget of the Central Government.*

and wood as a basic input of a wide range of industrial products. In fact, plastics have proved to be more versatile than most of the traditional inputs of industrial products because

of their property of light weight, dimensional stability and easy processability to form any desired shape, and the low energy requirement for conversion into different products. Another advantage of plastics is that processing can be performed in small units, providing opportunities for self-employment and industrialisation at low capital cost.

As of 1979 there were 523 factories manufacturing plastic material and products registered with the Central Excise authorities. In 1981-82 the number was 477. Of these 115 or nearly one-fourth came under the jurisdiction of Bombay Collectorates, accounting for about two-fifths of total revenue (Table 1.2).

Revenue collected per factory during the years 1978-79 and 1981-82 is given in columns 10 and 11 of Table 1.2. The collection per factory seems to be high at centres where plastic materials (as distinguished from plastic products) are manufactured.

Structure of the Plastics Industry

Broadly, the plastics industry may be grouped under three broad sectors:

i. plastics raw material manufacturers;

ii. plastics processors; and

iii. plastics users, i.e., manufacturers of articles of plastics.

Manufacturers of plastics raw materials use several chemicals. These raw materials are used to manufacture various types of plastic materials, finished and semifinished. The semi-finished articles are those from which the finished articles and components for industry and everyday use are produced. Processors of semi-finished plastics materials comprise moulders, laminators, fabricators, and others. These people manufacture largely articles such as sheets, films, etc., which are used in the manufacture of various kinds of final products.

Plastics raw materials may be classified into two groups: (i) thermosets and (ii) thermoplastics. Thermosetting materials, when heated, undergo a chemical change and become hardened and further heating produces no further change. In this

TABLE 1.2

Distribution of Factories and Revenue Collected Under T.I. 15A

Sl. No.	Collectorate	Excise revenue (Rs '000)					Number of factories as on		Revenue per factory (Rs'000)	
		1976-77	1977-78	1978-79	1980-81	1981-82	March 1979	March 1982	Column (5) ÷ Column (8)	Column 7 ÷ Column 9
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
1.	Allahabad	1235	1924	2549	—	—	7	4	364	—
2.	Bombay (1 + 11)	371408	342255	438421	491095	523085	104	115	4216	4549
3.	West Bengal and Calcutta	46251	47747	50174	50181	43158	81	74	619	583
4.	Delhi	4164	4558	8441	31288	30011	34	27	248	1112
5.	Madras	29069	31405	37959	50061	62307	23	24	1650	2596
6.	Shillong	8619	8653	9292	7599	4628	19	23	489	201
7.	Baroda	44407	47700	166859	405223	485975	95	72	1756	6750
8.	Hyderabad	37833	35008	40019	58139	71870	12	18	3335	3993
9.	Mysore	12759	13187	13138	12062	12900	19	18	691	717
10.	Pune	21534	25127	48387	24984	28452	58	22	834	1293

TABLE 1.2 Contd.

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
11.	Nagpur	772	287	297	972	1013	3	8	99	127
12.	Patna	1002	1022	1597	1752	2692	3	4	532	673
13.	Jaipur	31234	36832	46814	50407	29314	2	4	23407	7329
14.	Cochin	2768	3116	3839	4116	6150	16	10	240	615
15.	Kanpur	4571	6913	6996	2538	2409	13	5	538	482
16.	Chandigarh	17239	17945	14752	1817	4327	3	6	4917	721
17.	Goa	52	59	145	211	279	1	4	145	70
18.	Guntur	13960	16860	18913	19429	45858	6	6	3152	7643
19.	Ahmedabad	5457	5817	7720	12394	13198	10	11	772	1200
20.	Madurai	7394	14487	—	—	—	1	1	—	—
21.	Bhubaneshwar	29	—	13	—	—	1	1	13	—
22.	Indore	—	1393	658	1297	1552	12	11	55	141
23.	Meerut	—	—	—	9356	11168	—	9	—	1241
Total/Average		661787	662295	916983	1234921	1380346	523	477	117557	2931

Note: Does not include figures for cellophane and polyester films.

Source: Directorate of Statistics and Intelligence, *Statistical Year Book*, Central Excise, relevant issues.

sense the reaction is permanent. Thermoplastic materials, on the other hand, soften when heated but become solid on cooling and the physical change can be repeated. Because of this property, thermoplastics can be recycled.

Nevertheless, one advantage which thermosets have over thermoplastics is in their stability under pressure and high temperatures. Because of their stability, the thermosets cannot be recycled. Most of their applications therefore are in the industrial field. Generally, the thermoset materials are manufactured either in the small or the medium sector by methods like condensation and polymerisation by the application of heat and pressure.

Plastics materials can be manufactured in a variety of forms, such as solid or liquid resins, moulding and extrusion materials, coating and impregnating resins, emulsions, and among others, sheets, rods, tubes, films, foils, and profile shapes. The basis of each form is the synthetic resin or polymer, but according to the requirement, some fillers, plasticisers, stabilisers, pigments and other chemicals are also added to yield the final plastics materials in a suitable condition for use in producing finished plastics articles. Mostly, the concerns involved in manufacture of these materials are large companies having expensive plants with a large capital investment.

The following are the most important plastics raw materials:

i. Thermosetting materials:
   - Phenol-formaldehyde
   - Amino-plastics
   - Urea-formaldehyde
   - Melamine-formaldehyde
   - Alkyds

ii. Thermoplastics materials:
   - Polyethylene
   - Polyvinyl chloride
   - Polystyrene
   - Polymethylmethacrylate
   - Cellulose acetate
   - Cellulose nitrate

a. **Thermosets.** Most of the thermosets are products of either condensation or polycondensation or polyaddition. The principal items in this group are phenoplastics, aminoplast, alkyds, polyallyl esters and other unsaturated polyesters, epoxide resins and silicones. These resins are mainly used in the preparation of varnishes and paints. Some of them are used as surface coatings or impregnants, adhesives, moulding and casting resins. But a large part of the production is supplied to the fabricating or moulding trade in the form of moulding powders. These are made by incorporating with the resin, while it is still in a fusible state, various materials, some of which assist the moulding process and others which are intended to give certain specific properties to the moulded articles. The principal use of moulding powders is in the production of electrical insulation parts. This rather unspectacular use constitutes by far the largest general application of these materials.

The important resins and moulding powders coming under the "thermoset" category are phenol resins (moulding powder), melamine formaldehyde, urea formaldehyde, alkyd resins and terpene phenolic resins. These resins are used in the manufacture of laminated boards, rods and tubes by a modified moulding technique. Briefly, the technique consists of impregnating sheets of paper on cloth with the resin. The standard technique is to stack a number of treated sheets together like a pack of cards and subject the pack to heat and pressure until the resin is cured and the layers are bonded together. The layers of paper or cloth play the part of fillers imparting great mechnical strength to the product. Various methods of impregnating are available.

b. **Thermoplastics.** Unlike the thermosets, the thermoplastics undergo no chemical change during the moulding process. They merely soften and in some cases melt when heated and become rigid again on cooling. They do not require any fillers. However, in some cases a suitable plasticiser is incorporated. It acts as a kind of internal lubricant and improves the flow during moulding. It also adds toughness to the material, decreasing the brittleness and, if added

in sufficient quantity, increases the flexibility particularly in materials like polyvinylchloride.

Thermoplastics are generally the products of polymerisation and copolymerisation. Polymerisation products are obtained by the union of several simple molecules of the same chemical constitution (known as monomers) with multiple carbon-carbon bonds. Similarly, copolymerisation products are obtained from simple molecules of different chemical constitution. Most of the thermoplastic resins can be processed by any of the processing techniques such as extrusion, calendering, injection moulding, thermoforming, and casting film. Extrusion is a major technique of the plastics industry, especially for the continuous production of pipes, sheetings and films, wire covering for insulation, etc. This process can be used also for making thick sheets. Calendering is convenient for flexible PVC sheets, plain or embossed and can be used for the purpose of laminating a sheet to fabric or to another plastic sheet (to make tiles).

Generally, the thermoplastic resins consist of cellulose derivatives, addition polymers and condensation polymers. The most important cellulose derivatives are the esters like cellulose-nitrate, cellulose-acetate etc., and the ethers like ether-cellulose. The common characteristic of these materials is that they are all based on naturally recurring chain of monomers. Raw materials for these are materials like wood pulp and light cotton linters. The cellulose derivatives especially cellulose-nitrate can be extruded to form plain sheets, whereas cellulose-acetate or triacetate is used to coat films. These films are mostly used for packaging.

Addition polymers are the most important class of materials among the thermoplastics. Polyethylene, which constitutes the principal member of addition polymer group, is made in two principal qualities, *viz.*, low-density and high-density. In terms of the rigidity characteristics and surface property, high-density polyethylene (HDPE) is comparable with polystyrene (PS) which is another form of thermoplastics. The low-density polyethylene (LDPE) is principally used in the form of film for bags and other packaging purposes. The thickness of such films ranges from 0.006mm to 0.12mm.

Another member of the group of addition polymers is polypropylene (PP) made by polymerisation of propylene. It is considered stronger and more rigid than polyethylene. Though quite light, polypropylene is prone to oxidation unless appropriate stabilisers are added. The pp films are used in packaging and fabrics. It also can be made in thickness down to 0.005mm.

Polyvinylchloride (PVC) is mainly processed in a highly plasticised form with varying degrees of flexibility by processes like calendering, extrusion and mouding. Like polyethylene, two varieties of PVC are available—rigid and flexible—with entirely different characteristics. Extrusion, calendering and moulding of rigid PVC is possible only with additions of stabilisers. When copolymerised with vinyl-acetate, it is suitable for making records.

The derivatives of acrylic acid are called acrylics. These are cast as sheets. Another important member of this group is styrene—a water-white resin, ideal as an injection material. Films extruded from this material can be vacuum-formed to be used in packaging.

Lastly, the condensation polymers consist mainly of engineering plastics like nylon, and polycarbonates. The extruded films of nylon are used in packaging and can be easily laminated with polyethylene. Polycarbonates can be injection-moulded, blow-moulded and extruded. Polyamides are availble as film, laminating resins, adhesives and moulded compounds.

In Chart 1, we present a flow-chart showing how some of the principal plastics polymers are derived from the basic feedstocks.

Growth of Plastics Raw Materials in India

a. *Production of Plastics.* At present (as of April 1, 1982) total installed capacity of plastics raw materials in India is about 2,97,590 metric tonnes per annum (MTA). In this the share of thermosets is about 6.5 per cent. Out of the total capacity of 19,340 MTA for the thermoset industry, hardly 42 per cent is being used. Currentl ɣ, the the moplastics industry

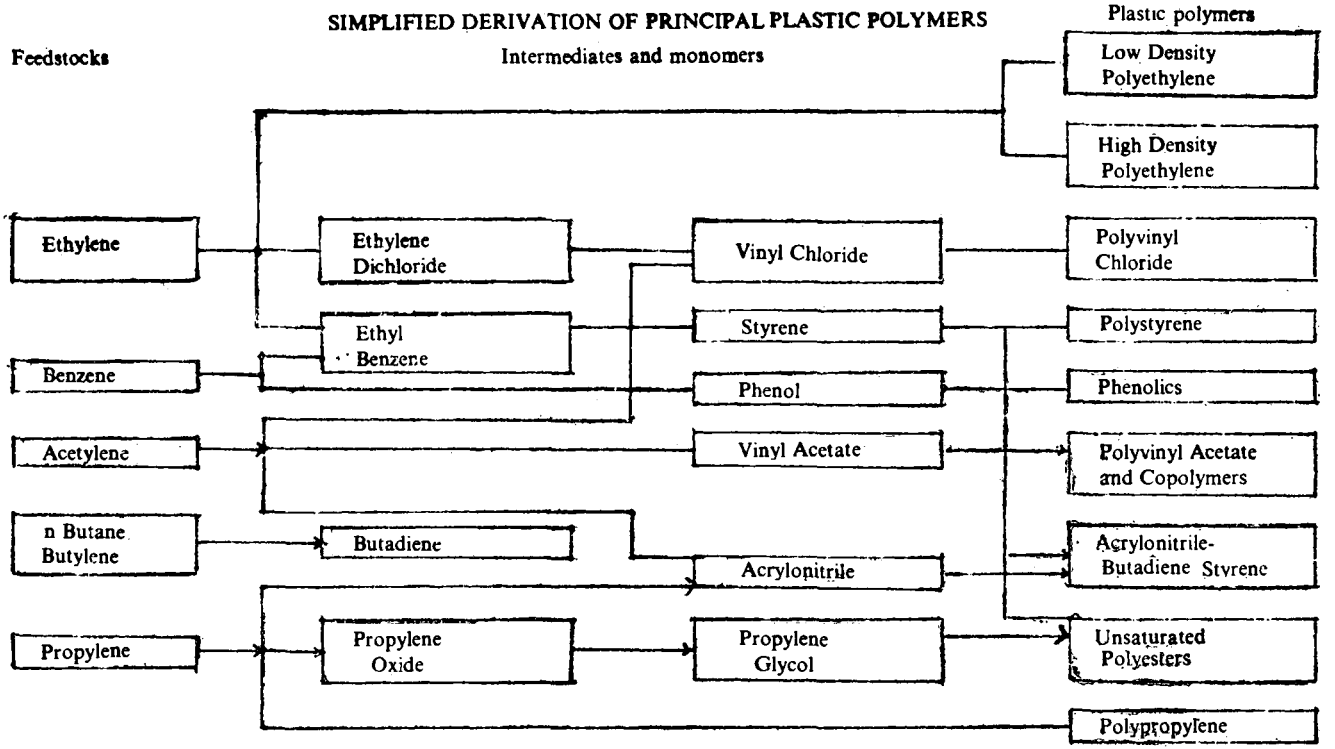
has a production capacity of 2,78,250 MTA. Its share in the total production capacity of plastics comes to about 94 per cent. A similar situation prevails in actual production of plastics raw materials. In Table 1.3 we present the production of major plastics raw materials in the country during 1970-71 to 1982-83. The share of thermoset resins in the total production of plastics was about 6 per cent in 1970-71 which declined to 4.4 per cent by 1978-79. It has further decreased since then and in 1982-83 it was just 3.6 per cent. On the other hand, the importance of thermoplastics has been on the rise during this period. This is to be expected in view of the fact that thermoplastics can be recycled and find their use in many ways.

An examination of growth rates of production of various types of plastics raw materials reveals interesting trends. Among the thermosets, melamine formaldehyde has grown fast as compared to other resins. But its share in total production being the least, it has had a negligible impact on the overall growth of thermoset resins. Similarly, among the thermoplastics the growth of low-density polyethylene (LDPE) has been the most impressive. It is followed by HDPE and PS resins.

b. *Consumption of plastics.* Data on actual consumption of plastics in India are not available. If imports of plastics raw material are added to their production and exports are substracted we arrive at their total domestic availability. This is termed as total consumption of plastics by Ministry of Petroleum which is the main source of date on the Indian petro-chemical industry. In the absence of reliable data on the inventory of these raw materials held by manufacturers and users, the consumption figure estimated in this way may be taken as the actual consumption. These data are set out in Table 1.4.

In the year 1970-71, the consumption of thermoset resins was 6.79 per cent of the total consumption of plastics. The share fell to 3.50 per cent in 1978-79, in 1980-81 it further declined to 31.6 per cent. Among the thermoplastics, the consumption of PVC was 38.4 per cent of the total plastics consumption in 1980-81. It was followed by LDPE (32.9 per

SIMPLIFIED DERIVATION OF PRINCIPAL PLASTIC POLYMERS



Source: Industry sources.

TABLE 1.3

Production of Plastics Raw Materials

(Tonnes)

Products	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
(1)	(2)	(3)	(4)	(5)	(6)	(7)
A. *Thermoset*						
M.F. moulding powder	78	145	160	168	109	120
P.F. moulding power	8286	4363.40	4434.40	6038.20	3681.00	3665
U.F. moulding power	1735	1825.60	1861.30	2012.90	1590.00	1887
C.A. moulding power	1084	1284.30	1536.60	1603.40	1008.60	1133
Sub-Total (A)	6183	7618	7992	9822	6389	6805
B. *Thermoplastic*						
LDPE	24437	28061.00	28426·40	27301.40	26948.70	27636
HDPE	21153	21933.30	21546.30	23065.30	24058.80	20018
PS	8925	12317.20	13097.70	14376.60	8024.20	9203
PVC resins	41472	42850.60	48836.00	48005.60	46746.10	43818
PP	—	—	—	—	—	—
Sub-Total (B)	95987	105162	111906	112749	105778	100675
Grand TOTAL	102170	112780	119898	122571	112167	107480

TABLE 1.3 (Cont'd.)

(Tonnes)

Products	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82	1982-83-
(1)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
A, *Thermoset*							
M.F. moulding power	144	180	178	245	214	328	386
P·F. moulding power	4078.60	4378	4236	4592	4794	4556	4308
U.F. moulding power	2280.90	2226	2497	3077	2845	3249	2795
C.A. moulding power	1025.80	990	765	627	324	291	677
Sub-Total (A)	7530	7774	7676	8541	8177	8424	8166
B. *Thermoplastic*							
LDPE	25741.20	18451	56028	71275	87154	94293	106148
HDPE	25177.30	25585	28073	25380	24293	31732	32702
PS	13398.20	13569	14474	12036	10205	7642	12580
PVC resins	47499.70	59023	62643	49891	52050	37037	41648
PP	—	—	7127	13425	16729	20644	24018
Sub-Total (B)	111816	116628	168345	172007	180431	191348	217096
Grand TOTAL	119346	124402	176021	180548	188608	199772	225262

Note: * Provisional

Source: Ministry of Petroleum, *Indian Petrolem and Petrochemicals Statistics*, Economics and Statistics Division, Government of India, New Delhi (various issues).

Table 1. 4

Estimated Consumption of Plastic Raw Materials

(Tonnes)

Products	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76	1976-77	1977-78	1978-79	1979-80	1980-81
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)
A. Thermosets											
M.F. moulding Powder	78	148	160	168	76	120	144	180	178	245	214
P.F. moulding powder	3367	4333	4466	5912	3893	3661	4042	4673	4287	4753	5214
U.F. moulding powder	1663	1823	1893	2005	1685	1939	2283	2261	2506	3071	2870
C.A. moulding powder	1170	1384	1676	1706	1397	1465	1068	1235	1093	689	387
Sub-Total (A)	6278	7685	8198	9791	7051	7185	7537	8349	8064	8758	8685
B. Thermoplastics											
LDPE	22988	28525	30013	33202	27621	35012	34230	53738	83770	73633	90544
HDPE	13590	21575	24275	29029	27199	21479	33367	48574	54251	62706	59624
PS	8189	12443	13510	14840	8181	9610	13639	14102	15531	12457	10552
PVC resins	41452	42540	49586	48973	47453	44223	47796	67227	68736	81953	105768
Sub-Total (B)	86219	105083	117384	126044	110454	110324	129032	183641	222288	230749	266488
Grand TOTAL (A+B)	92497	112768	125582	135835	117505	117509	136569	191990	230352	239507	275173

Source: Ministry of Petroleum, *Indian Petroleum and Petrochemicals Statistics*, Economics and Statistics Division, Government of India, New Delhi (various issues).

cent) and HDPE (21.7 per cent). The share of these three resins in the total was as high as 93.0 per cent. The above figures, however, do not include the consumption of pp.

c. *End-use applications.* The major end-use of thermosets is in power generation and distribution, electronics and telecommunications, fertiliser and chemical industries, defence, etc. These applications account for almost 60 per cent of their consumption.

Generally, thermoplastic resins have a spectrum end-use. Some of their products are final, whereas others are intermediate items which need further processing in order to make them usable. Depending upon the desired physical and chemical properties in the final product, more than one type of thermoplastic material can be used in the manufacture of final products In other words, wide substitutability exists among the use of thermoplastic resins. The second factor that may influence the pattern is the process adopted in the manufacturing of the product. Some of the thermoplastc resins are suitable for a particular type of process such as injection moulding, extrusion, blow moulding etc.

A broad end-use pattern of major thermoplastic materials for the years 1970 to 1981 is given in Table 1. 5. Fro n this table it would be seen that in the case of LDPE 70 per cent of the raw material goes for the production of films which are mainly used in packaging, and around 10 per cent for the production of household goods. The sheets and films made from this material are easily vacuum-formed to make blister packages

HDPE is a fine low-friction material often used for drawer slides. Other attractive electrical properties of this raw material makes this polymer suitable for cable insulation. Its markets include injection moulding products like household articles; blow moulding goods such as consumer and industry packaging items; and extrusion products, such as films and sheets, monofilament cane strapping, pipes and cables etc. Films and sheets account for hardly 4 per cent of the total production of HDPE while the use of HDPE in blow moulding and other extrusion production (such as cane strapping, pipes and cables and woven sacks) is increasing.

TABLE 1. 5

End-Use of Thermoplastics by Broad Categories

(Per Cent)

Polymer	Applications	1970	1971	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
LDPE	i. Film & Coating	74.3	73.8	74.3	64.6	75.9	76.7	72.3	76.9	69.7	85.2	85.6	74.3
	ii. Moulding	6.8	7.0	6.4	6.8	6.3	6.3	6.4	13.8	12.5	7.8	8.3	12.0
	iii. Wires and Pipes	7.9	7.9	8.0	8.3	8.2	7.5	6.9	7.2	7 4	2.8	1.7	2.0
	iv. Miscellaneous	11.0	11.3	11.3	10.3	9.6	9.5	14.4	2.1	10,4	4.2	4.4	11.7
	TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100 0	100.0	100.0	100.0	100.0
PVC	i. Wires and Cables	27.5	30.3	30.5	28.6	25.5	28.8	26.5	24.2	20.3	32.6	26.1	18.9
	ii. Pipes, fitting conduits	6.1	7.7	13.5	16.0	25.1	17.1	20.0	21.8	24.2	25.4	31.0	43.0
	iii. Leather cloth and sheets/film	17.5	18.0	20.4	20.1	18.9	24.0	24.7	28.3	26.4	22.3	27.8	21.8
	iv. Footwear	22.3	19.2	17.4	17.1	11.1	11.6	8.8	10.0	7.3	9.2	4.2	6.1
	v. Compounders	18.3	14.4	10.7	10.6	10.4	7.9	7.8	7.2	10.1	2.3	0.2	0.3
	vi. Miscellaneous	8.9	10.4	7.5	7.4	9.1	9.6	1.2	8.5	11.7	8.2	10.7	9.9
	TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100·0	100.0	100.0	100.0

TABLE 1.5 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)
LDPE	i. Injection moulding	63.7	52.5	40.3	32.4	31.6	31.6	34.0	33.6	35.9	26.6	19.8	29.7
	ii. Blow moulding	17.9	19.0	25.3	27.2	26.6	18.6	21.8	25.7	27.4	29.6	31.3	25.4
	iii. Extrusion	18.4	28.5	34.4	40.5	41.8	49.8	44.2	40.7	36.7	43.8	48.9	44.9
	(a) Film and sheets	5.0	5.4	2.9	3.3	2.8	4.1	3.1	3.7	2.5	3.0	3.0	3.5
	(b) Others	13.4	23.1	31.5	37.2	39.0	45.7	41.1	37.0	34.2	40.8	45.0	41.4
	TOTAL	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.4	100.0	100.0	100.0	100.0

Source: Ministry of Petroleum, *Indian Petroleum and Petrochemicals Statistics*, Economic and Statistics Division, Government of India, New Delhi (various issues).

PVC, one of the relatively low-cost materials, is a single-volume plastic material which is in general use. It has achieved the market leadership because of its good physical properties, compounding versatility for a wide variety of applications, low cost and processing ease. Its products are usually made by extrusion, injection moulding, rotational moulding, compression and blow moulding, calendering and foaming procedures. Principal markets for rigid PVC include pipes, conduits, pipe fittings, wire and cable insulation. Flexible PVC sheets are used for rain coats, bottles, film sheetings, garden base, curtains, novelties and wire insulation. PVC is also a useful blow-moulding material as its bottles combine a high level of clarity approaching that of glass with break resistance as good as that of polyethylene. Sheetings and films have an increasing share in the consumption of PVC. A similar trend is observed for wire and cable insulation, and pipe fittings and conduits.

Other types of thermoplastic material like polycarbonates, polybutylene, cellulose acetate etc., are not used for the manufactcre of extrusion or calendering products such as tubes, films etc.

Studies carried out in the past show that the cost of thermoplastic resins constitutes a significant proportion of material costs in most of their end-use applications[1]. In particular, in polythene bags made of HDPE resins constitute 95 per cent. Similarly, the novelty items which are manufactured from PVC sheets, the proportion is about 65 per cent. Given that the price of naphtha accounts for a high proportion of the total material costs in the naphtha-based thermoplastic materials, the increase in the price of naphtha in recent years has affected end-product prices significantly.

Profile of the Industry

The Indian plastics industry may be conveniently considered as consisting of raw material manufacturers and

[1] Tata Economic Consultancy Services, "The Small Scale Plastic Industry in Greater Bombay", 1972 .

plastics processers.

a. *Raw material manufacturing—Indian thermoset industry.* In the organised sector thermoset resins are manufactured by Indian Plastics Ltd (IPL), Bakelite Hylams (BH), and the Industrial Plastics Corporation Pvt. Ltd (TIPCO). In addition, there are three units, *viz.*, Nuchem Plastics, Ciba and Allied Resin and Chemical manufacturing urea formaldehyde resin and moulding powder. Both urea and melamine are white crystalline substances showing some chemical resemblance. Each reacts with formaldehyde to form a resin having many points in common with phenolic resins, and these can be made into moulding powders by similar methods. The users of these resins are generally located in the small and tiny sectors.[2] Resins such as phenolic, alkyd and maleic resins are thermoplastic in nature, but once converted into moulding powder they become thermosets.

Phenol formaldehyde, belonging to phenoplast group, is derived from the condensation phenol or any number of its homologues with aldehyde, particularly formaldehyde. For the phenols, the major supplier is Rashtriya Chemical and Fertilisers while formaldehyde is supplied by Herdillia Pharmaceuticals. The nature of the final product varies according to the conditions under which the reaction is conducted. In other words, by changing the temperature, time and pressure (or vacuum), many grades of phenolic resins can be obtained such that each grade will have a special application. For instance, TIPCO alone manufactured about 77 different grades of PFMP whose ex-factory prices ranged from Rs 5.00 to Rs 48.80 per kilogram in the year 1981

Thermoset resins whether phenolic, maleic or urea cannot be used as such. They have to be converted into moulding powder. There are many small units which manufacture phenol formaldehyde resins for the purpose of captive consumption while making laminated sheets.

PF resins are mainly used for making decorative laminates

[2] It is pertinent to point out that about 200 small-scale units are operating currently on thermosets.

and industrial laminates. The decorative laminates are glossy, mat and woodtex, while the industrial laminates are used extensively in the electrical, electronic and engineering industries.

b. *Indian thermoplastic industry.* Four important types of products are manufactured in India. They are:

i. Polyethylenes, both high and low densities,

ii. Polystyrene,

iii. Polyvinyl derivatives, and

iv. Polyacrylic and polymethacrylic derivatives.

i. *Polyethylene.* Among the polyethylenes, the two popular types are the HDPE and LDPE. In India, only Poleolefin India Limited (PIL) in the corporate sector manufactures HDPE, with ethylene supplied by its sister unit NOCIL. Its production started in 1968. The attractive electrical properties of HDPE makes it desirable as a cable insulator. Its main large markets include users of pipe, pipe fittings, packaging films, surgical implements, wire coatings and cable insulation, disposable products, beverage cases, bottles and closures. Poleolefin manufactured 32,702 tonnes of HDPE in the year 1982-83.

LDPE is one of the major polymerised plastics. Its production in India started when Alkali and Chemical Corporation of India Limited (ACCI) was established in 1955 with its 2,500 MTA plant based on alcohol ethylene. The second manufacturing facility was provided by Union Carbide India Limited (UCIL) with commissioning of a 3,000-MTA plant in 1961. This plant is based on petro-ethylene. By 1979-80, the production capacity of ACCI increased to 12,000 MTA whereas that of UCIL to 28,000 MTA. Total production of LDPE of these two units was around 28,000 MT indicating about 70 per cent of the capacity utilisation. One more naphtha-based plant in the public sector has been commissioned in 1978-79 with installed capacity of 80,000 MTA. The total production of LDPE during 1982-83 was of the order of 1,06,148 MT, IPCL contributing 74.1 per cent, UCIL 17.1 per cent and ACCI 8.8 per cent, respectively.

Among the major applications of LDPE, films and coatings are the most important ones. LDPE films can be used for a wider variety of packaging and for manufacturing bags. Another fast developing use of these films is in the manufacture of canal linings in agriculture.

ii. *Polystyrene.* It is prepared from ethylene and benzene. Ethylene is made from natural gas or petroleum whereas benzene is often obtained as a by-product from coke-ovens. Polystyrene (PS) is a polymerised product being manufactured in India by Polychem and Hindustan Polymers with a total capacity of 17,500 MTA (as of 1975-76). The capacity increased to 23,500 MTA in 1979-80. These units use both petro-ethylene as well as alcohol-ethylene, but the break-ups are not available. In other words, none of these units maintain any account as to how much is produced from which type of ethylene. The performance of Polychem and Hindustan Polymers over this period has been characterised by contrasting trends. While in the former, capacity utilisation declined from 74.69 per cent to 40.57 per cent, in the latter it increased from 22.49 per cent to 74 per cent during 1975-76 to 1979-80. This was partly due to the fact that while Polychem expanded its installed capacity from 10,000 MTA in 1975-76 to 16,000 MTA in 1979-80, its production actually declined from 7,469 MT to 6,492 MT during this period. In 1982-83, Polychem produced 5,839 MT of polystyrene as against 6,741 MT manufactured by Hindustan Polymers.

iii. *Polyvinyl derivatives.* It is perhaps one of the lowest cost materials which has achieved a kind of market leadership in the plastics industry because of its physical properties, compounding versatility for a wide variety of applications and processing ease. Its compounds range from soft, flexible films to rigid, high-strength producets. Plasticisers, lubricants, fillers and stabilisers are used to produce this kind of versatility. Apart from this, it is possible to make a compound with the right balance of properties for almost any application. Its products are usually made by extrusion, injection moulding, blow moulding and calendering. The principal products of rigid PVC include pipes, conduits, weather. stripping, etc.,

whereas flexible PVC is used for raincoats, baby pants, films, sheeting, curtains, novelties and many other such items.

To begin with, five units, *viz.*, National Organic Chemical Industry Limited (NOCIL), Chemplast, Calico, Sri Ram and Plastics Resins and Chemical (PRC)[3] were in the production line of PVC. Total installed capacity with these five companies was 90,200 MTA as on 31.3.1976. Due to a massive expansion programme at Sri Ram Chemicals, the total capacity grew to 1,03,400 MTA by 31.3.1980. The installed capacity of some of the other units is also fairly high. For instance, Calico is one such unit, but most of its production is for captive consumption.

Besides petro-ethylene, alcohol-ethylene and acetylene are also used in the manufacture of PVC. Currently, Sri Ram and Calico use calcium carbide as the basic raw material, whereas Chemplast is alcohol-based and NOCIL is naphtha-based.

Two grades of resins are manufactured in the country. These are suspension grade and emulsion grade. The suspension grade constitutes about 93 per cent of the total availability of PVC resins, while only two units, *viz.*, Chemplast and Calico have the facility to produce emulsion grade. The total production of PVC during 1982-83 was 41465 tonnes, Chemplast contributing 19,183 tonnes, Nocil 18,493 tonnes, Sri Ram 2,604 tonnes and Calico 1,185 tonnes, respectively.

The polyvinyl acetate resins are used as an adhesive for all sorts of materials, including paper, metal, mica, glass, plastic sheets, wood and porcelain. This polymer is manufactured both in the small-scale sector as well as by medium or large manufacturers. Among the big units are Calico Chemicals and Plastics Division, Hoechst, Parekh Dyechem, Hico, Indofil, Colour Chem, Surfactant and Chemical, P.C. Chande, BASF and Quinn India. Besides, there are a number of small manufacturers of this polymer.

iv. *Polypropylene (pp).* The pp resins are polymerised propylene gas generated at relatively low temperatures and

[3] Subsequently, Plastics Resins and Chemical closed down in 1978 due to uneconomic working conditions.

pressures. This resin is light in weight, translucent in its natural state, and can be readily coloured. It surpasses polyethylenes in many fields because of its higher thermal operating range. It has good surface hardness and fair abrasion resistance. Products are made from pp by all of the conventional processes for thermoplastics. The production of pp resins started in the country in 1978 when the IPCL was commissioned. The annual production capacity of this plant is 30,000 MTA and its production in 1982-83 was of the order of 24.018 MT.

b. *Plastics semi-finished goods.* Plastic materials have a wide range of applications due to their common characteristic of plasticity, that is, the capability of being formed under external influence into shapes which are retained even after the external influences are removed. The shaping processes used include moulding, casting, extruding, etc. Some of these applications lie in the finished products while others are semi-finished in nature. Though the semi-finished products sometimes possess the characteristics of finished articles ready for use, they are classified, as a general rule, as "semi-finished", irrespective of whether or not they are surface-worked.

Semi-finished products include plastic boards, sheets, sheeting, films and lay flat tubings. Plastic boards, generally made of thermoset resins, especially phenolic resins, are used for industrial purposes. These boards are rigid in nature. Besides plastic boards made of phenolic resins and rigid PVC, other similar materials within the thermoset group are also used in manufacturing these boards. Sheets and sheeting are thinner than the plastic boards, but thicker than the films. The dividing line between sheets and films is rather thin.[4] The sheets can be laminated ones. Two or more sheets joined together form a board. Similarly, two or more films make a laminated film. A lay flat tubing, on the other hand, is a seamless flexible tube made by the extrusion process. If it is cut vertically it becomes a film. A film can also be manufac-

[4] The term 'film' is used for sheeting having nominal thickness not greater than 0.010 inch ASTM D—883—76, p. 369 (= 0.0256 cm = 25mm).

tured by the calendering process. The advantage with an extruded film lies in that its maximum width can be more than what is possible for a calendered film. But a calendered film is superior because of its uniform thickness. Generally, extrusion moulding is used to make such continuous shapes. This process is also used in making articles of various profile shapes. Extrusion coating is employed to add a thin layer of plastics on a substance such as textile or paper. Sometimes, thick-sheet extrusion is also possible. All these articles, whether semi-finished or unfinished, are used in varied applications such as lining in refrigeration, packaging, bags, raincoats, etc.

In the organised sector, only five firms are registered with DGTD for manufacturing PVC rigid and flexible sheets and films by the calendering process. These are Bhor, Caprihans, Calico, Amartara and Indian Cork Limited. In all, they have nine plants, Bhor and Caprihans having more plants. Because of the very high capital costs involved in a calendering plant, these units are all of medium size. However, for extruded films there are a number of small units. These units generally first make lay flat tubings and then cut them vertically to get a film. The materials used in the lay flat tubings are PVC, LDPE and pp. The main use of these films, sheeting and lay flat tubings is in packaging garments and other similar products. The type of resin to be based depends on the transparency and clarity required in the film.

Sheets made of HIPS and PVC are used as a "liner" in refrigerators and other similar products. LDPE films are used for canal lining and for storage purposes. Polyester films, if metallised, are used for zari yarn and packaging, whereas unmetallised films are used for manufacture of magnetic tapes used in tape recorders and floppy discs used in computers. Acrylic sheets are mainly used as a stationery item. Cellulose acetate films are used in X-ray films. Several concerns are engaged in the production of these films.

Sheets and films made of plasticised PVC by a calendering process can be sewn, heat-sealed, or electrically-sealed. It is used for apparel, protective clothing and the like. Thicker sheets are coloured and embossed for women's handbags,

luggage, seat covers, and upholstery. Thin PVC film is used for packaging, especially of meat and fruits. Another important use is as a laminate for printed papers.

Flooring tiles, largely made of PVC, are manufactured by lamination and decorated either by printing or by rolling in colour chips; the commonest tile is vinylasbestos, pressed into sheets on calender and then embossed and cut into tiles.

Rigid PVC sheets have high dimensional stability and in the corrugated form are used for building construction, partitions, rain gutters, downspouts, industrial tank linings, vacuum-formed signs and lighting panels.

Styrene film is widely used for semirigid food containers especially used for packaging.

Acrylonitrile butadiene styrene or ABS possesses a wide range of properties, notably scuff resistance, plus high impact strength at lower temperature, making it suitable for high-quality luggage, refrigerator linings, and food and detergent containers because of its chemical resistance.

Nylon films are ideal for food packaging because of strength, impermeability to oils and greases, and high melting point. As such films are steam sterilisable, they find many uses in hospitals. They are frequently laminated. Acrylic sheets have high resistance to ultraviolet light and external exposure. Their prime use is in surfacing laminates.

To conclude, articles like plastic boards, sheets, sheeting and films are made of a variety of plastic raw materials. Such articles are mainly used for packaging purposes. It has been estimated that consumer packaging currently absorbs approximately 60,000 MT of plastic raw materials a year. This accounts for roughly 34 per cent of the total consumption of thermoplastics in the country.

c. *Polyurethane foam and articles thereof.* Polyurethane is used either as flexible or rigid foam or as elastomers. Internationally, polyurethane is a large volume product with several sophisticated applications. It is well-known as a cold insulant which can contribute substantially to energy saving. In India, the major use is in the production of mats, mattres-

ses, pillows, cushions, etc. The production of rigid foam in India is yet in its infancy. U-foam and Allwyn are the pioneers in the industry. Polyurethane elastomer products are also manufactured by U-foam (Hyderabad), but the quantity produced is not significant.

The main raw materials for the production of flexible foam are polyol and TDI, both of which happen to be imported products. For production of one tonne of flexible foam, on an average 1.0871 tonne of raw materials are required, polyol contributing roughly 0.6728 tonne, respectively. For rigid foam, TDI is replaced by MDI. For producing one tonne of rigid foam, 1.0859 tonnes of raw materials comprising polyol 0.4748 tonne, MDI 0.5979 and others 0.0132 tonne are required. For polyurethane elastomer products, polyol, NDI and catalysts are used.

2

Structure of Excise Duty on Plastics

Introduction

THIS chapter gives a brief account of the structure of excise duty on artificial or synthetic resins and plastic materials and other specified materials.

The tariff item under which plastics are brought under excise duty at present is much wider in scope than when the item was first incorporated in the Cental Excise Tariff Schedule. Excise duty on plastics came to be levied in 1961 with the introduction of item 15A in the Tariff Schedule with the title and description of "PLASTICS, ALL SORTS, namely, (i) moulding powders, granules and flakes (thermosetting and thermoplastics); (ii) polyethylene films, lay flat tubings and PVC sheets (that is to say, polyvinyl chloride sheets)". The tariff head in question underwent many changes since its incorporation and eventually came to be divided into four sub-items. In 1982, when the item was last reworded, sub-item (1) was aligned with item 39.01/06 of the Indian Customs Tariff Schedule to facilitate classifications of indigenous as well as imported plastics for purposes of levying excise duty and additional duty of customs. This alignment further expanded the scope of the item. 'Cellophane' which had earlier come under a separate head was omitted and merged in tariff item 15A. Likewise, 'polyester films' which had been

incorporated in the excise tariff schedule as a separate item 15BB in 1981 Budget became part of item 15A. An account of the evolution of the tariff item 15 A and the duty structure is given in Appendices I and II. The paragraphs below contain a brief description of the components and coverage of the tariff item 15A as it stands now and some of the anomalies noticed in definition of the respective sub-items.

Sub-items of Tariff Item 15A

As of September, 1983, Tariff Item 15A contains four sub-items, namely:

(1) Resins and materials;
(2) Articles of materials;
(3) Polyurethane foam; and;
(4) Articles of polyurethane foam.

Of the four, (1) is by far the most important from the tax angle, accounting for 81.85 per cent of revenue in the year 1981-82. Sub-item (2) contributed 13.45 per cent and sub-items (3) and (4) taken together accounted for the remaining 4.70 per cent (Table 2.1).

a. **Resins and materials.** Resins and materials which are taxed under tariff head 15 A (1) fetching the bulk of the revenue from plastics include mainly the following categories of plastic materials/products:

i. Condensation, polycondensation and polyaddition products;
ii. Polymerisation and co-polymerisation products;
iii. Chemical derivatives of cellulose;
iv. Regenerated cellulose;
v. Vulcanised fibre;
vi. Hardened proteins;
vii. Natural resins modified by fusion (rungum);
viii. Ester gums;
ix. Chlorinated rubber, rubber hydrochloride, oxidised rubber, cyclised rubber;

TABLE 2.1

Revenue from Basic Duty under 15A—Sub-itemwise

(Rs.' 000)

Sub-items	1970-71	1971-72	1972-73	1973-74	1974-75	1975-76
(1)	(2)	(3)	(4)	(5)	(6)	(7)
15A (1)	132509	195609	272633	310168	448372	419303
	(71.58)	(78.15)	(80.09)	(79.29)	(77.59)	(77.76)
15A (2)	56617	41560	60325	70157	118712	105072
	(28.42)	(17.50)	(17.72)	(17.93)	(20.54)	(19.49)
15A (3)	—	8965	5599	6256	5901	8267
		(3.77)	(1.64)	(1.60)	(1.02)	(1.53)
15A (4)	—	1392	1877	4597	4914	6580
		(0.59)	(0,55)	(1.18)	(0.85)	(1.22)
Total	185126	237526	340434	391178	577899	539222
	(100.00)	(100.00)	(100.00)	100.00)	100.00)	(100.00)
Miscellaneous duty	17174	618	792	906	3817	1507
Total basic duty	203300	238144	341226	392014	481716	540729

TABLE 2.1 (Contd.)

Sub-items	1976-77	1977-78	1978-79	1979-80	1980-81	1981-82
(1)	(8)	(9)	(10)	(11)	(12)	(13)
15A (1)	387123	477099	729125	N.A.	1004494	1073888
	(81.26)	(76.80)	(83.36)		(84.79)	(81.85)
15A (2)	68870	113388	110548	N.A.	132692	176413
	(14.46)	(19.33)	(12.64)		(11.20)	(13.45)
15A (3)	9148	12850	16803	N.A.	28034	20094
	(1.92)	(2.19)	(1.92)		(2.37)	(1.53)
15A (4)	11266	17906	18209	N.A.	19509	41647
	(2.36)	(3.04)	(2.08)		(1.64)	(3.17)
Total	476405	621243	874685	1096383	1184729	1312042
	(100.00)	(100.00)	(100.00)	(100.00)	(100.00)	(100,00)
Miscellaneous duty	541	1905	687	—	2683	2577
Total basic duty	476946	623148	875372	1096383	1187412	1314619

Notes: 1. Figures in parentheses are the percentages.

2. Does not include data in respect of cellophane and polyester films falling under Tariff Item No. 15B and 15 B B.

Source: *Statistical Year Book*, Central Excise—relevant issues.

x. Alginic acid, its salts and esters; and

xi. Linoxyn.

The sub-item, however, does not include artificial waxes and starches.

Explanation III to the Tariff item makes it clear that sub-item (1) is to be taken to apply to materials in the following forms only;

(a) liquid or pasty (including emulsions, dispersions and solutions);

(b) blocks, lumps, powders (including moulding powders), granules, flakes and similar bulk forms; and

(c) waste and scrap.

Part (a) of the explanation is in line with 'note 3(a)' of chapter 39 of the Indian Customs Tariff. As indicated later, the explanation is not adequate to clear doubts about the nature of certain plastic materials like aqueous solution. In the absence of the term 'solutions' in (a), aqueous solutions of resin have been declared as not artificial or synthetic resin in liquid form in a judgement by the Delhi High Court ('Indian Plastics and Chemical Pvt., Limited versus Union of India', decided in 1980).

The basic tariff rate for 15A(1) is 50 per cent *ad valorem*. However, through notifications issued under the Central Excise rules, the effective rates have been reduced for all items. For important items of thermoplastics, the rates broadly range from 27 per cent to 35 per cent, for polypropylene, it is 27 per cent, for LDPE, 30 per cent and for PVC and HDPE, the rate is 35 per cent. For thermosetting plastics, the rate is 15 per cent *ad valorem* both for resins and moulding powders. The 15 per cent is also applicable to certain resins (including moulding powders) like polyester resins, ABC resins, polystyrene resins, nylon resins, and epoxy resins. For certain new items like vulcanised fibre, dextran and chlorinated rubber, the rate of duty is 10 per cent *ad valorem*. Alkyd resins and maleic resin including fumeric resin whether modified or not are wholly exempted from duty, but their moulding powders or compounds in any form are dutiable. For phenolic resins and terpene phenolic resins, the

duty is 20 per cent *ad valorem.*

Alkyd, maleic (including fumeric) phenolic and terpene phenolic resins have been so defined as to exclude blends with other artificial or synthetic resins. For residuary items not separately mentioned in the exemption notifications, the rate of duty is 40 per cent *ad valorem.* Differential rates prescribed earlier for naphtha-based and other than naphtha-based plastics have been done away with and uniform rates rates are now applicable except in the case of HDPE, for which the rate is 35 per cent *ad valorem* if naphtha-based. By inference, the rate for other than naphtha-based HDPE may be taken to be 40 per cent, but since IPCL is the only manufacturer of this item, and it is naphtha-based, the distinction is of academic interest only.

PVC compound and polyester polymer chips are wholly exempted from duty, but cellulose acetate moulding granules are dutiable at 10 per cent *ad valorem.* Plastic materials reprocessed from or produced out of scrap or waste of plastic materials and articles of plastics are exempted from duty. There are a few conditional exemptions related to end-use, e.g., cellulose acetate if used in the manufacture of acetate yarn; polyamide chips for manufacture of nylon yarn; resins for particle boards, etc., are exempt from duty.

This sub-item is also covered by the general exemption scheme for small manufacturers. Under this scheme, which has been discussed at some length elsewhere, clearances upto Rs 5 lakh are exempt from duty and clearances in excess of Rs 5 lakh upto Rs 25 lakh enjoy a concessional rate of 75 per cent of the normal duty payable.

Excise duty relief scheme for encouraging higher production is also applicable to this sub-item. Under this scheme, the quantum of relief is as under:

(a) Where effective basic excise duty is not more than 20 per cent *ad valorem*	Upto 110 per cen of base clearances	30 per cent of the duty paid on excess clearances
	In excess of 110 per cent of base	40 per cent of the duty paid on cle-

	clearances	arances in excess of 110 per cent of base clearances
(b) Where effective basic excise duty exceeds 20 per cent *ad valorem*	Upto 110 per cent of base clearances	15 per cent of duty paid on excess clearances
	In excess of 110 per cent of base clearances	20 per cent of the duty paid on clearances in excess of 110 per cent of base clearances

A close look at tariff sub-item 15A(1), shows that this item has certain features which could facilitate evasion. For instance, alkyd and maleic resins (including fumeric resins) have been defined in notification No. 157/81 CE dated 29.8.1981 so as to exclude blends of mixtures of such resins with other artificial or synthetic resins. While these resins are duty-free, the duty on their blends, being residuary items, is 40 per cent *ad valorem*. Such wide difference in tax incidence prompts manufacturers especially those using these blends/mixtures to declare their products as resins. This happens more especially in factories which use these blends for captive consumption.

A similar tendency is noticeable in the case of producers of phenolic resins and terpene phenolic resins where also the definition excludes blends. In the case of phenolic resins, the problem is further accentuated by the prescription of lower duty at 15 per cent *ad valorem* in the case of phenol formaldehyde resin including moulding powder (under notification No.241/82 CE dated 1.11.1982) as against 20 per cent *ad valorem* for phenolic resin (under notification No. 157/81 CE dated 29.8.1981). Phenol formaldehyde resin is a type of phenolic resin, in fact, is its principal variety and yet, while the latter has been defined in the notification, no formal definition has been given for the former. This leads to confusion and is a source of litigation. Several manufacturers are paying duty on phenolic resin under protest and it will not be surprising if some manufacturers clear the product at lower

rates even though as per definition, the duty payable would be higher.

The prescription of lower duty on certain moulding powders with naphtha as the base without simultaneously changing the rates for resins, accentuated the tendency to evade by misclassifying the products. Fortunately, the tendency has been neutralised by recently revised notifications (Nos.190/82 and 241/82) levying the same duty both on moulding powders and resins and also by doing away with the distinction between naphtha-based and other than naphtha-based products.

b. *Sub item 15A(2) or articles of materials described in sub-item (1).* Tariff item 15A (2) brings under the charge of excise duty "articles of materials described in sub-item (1)". Not all such articles are, however, excisable. The sub-item specifies the articles on which duty is leviable. These are: boards, sheeting, sheets and films whether lacquered or metallised or laminated or not; and lay flat tubings not containing any textile material. These articles become excisable if made of any of the materials specified under 15A (1). Thus one could say that not all boards, sheeting, sheets etc., are excisable under 15A(2); only those which are made of materials specified under 15A (1), that is to say, articles which conform to the description of boards, sheeting, sheets, films, etc., and are made of materials described in sub-item (1) are liable to excise duty. This description is decidedly better than the earlier formulation of the sub-item whereby articles made of plastics, all sorts (including tubes, rods, sheets, etc,) were covered and duty was confined to boards, sheets, sheeting, films, etc., through exemption notification. The earlier description led to some litigation (refer to Gujarat High Court ruling in the case of Jalal Plastics Industries given in December, 1980). Presumably, the present description seeks to clear the doubt which led to such litigation. The Customs Tariff Schedule also uses the words 'articles of materials' under item 39.07.

From the revenue point of view, the scope of sub-item 15A (2) has been further circumscribed by two exemption notifications of 1982 (Nos. 149/82 CE and 150/82 CE). The second notification exempted articles made of non-plastic

material dutiable under sub-item 15A (1), provided duty has been paid on such material. Through notification No.149/82, articles made of plastics, all sorts other than the following have been exempted from duty provided they are produced out of duty-paid artificial resins or plastic materials or cellulose esters and ethers in any form or such articles are produced out of scrap of plastics:

i. films or sheet of regenerated cellulose and polyester films, whether lacquered or laminated or metallised or not:

ii. rigid plastic boards, sheeting, sheets and film whether lacquered or laminated or metallised or not; and

iii. flexible polyvinyl chloride sheeting, sheets, films whether lacquered or laminated or metallised or not and lay flat tubings not containing any textile material. As tariff item 15 A except films or sheet of regenerated cellulose is covered by the Rule 56A, even in the case of the above three items except films or sheets of regenerated cellulose, duty is set off by the proforma credit, of the duty paid on raw materials falling under this tariff item. Provisions have also been made for relief of duty on:

(a) cellophane, paper or cotton fabrics used in the manufacture of rigid articles of other than PVC; and

(b) cellophane, paper, cotton fabrics, adhesives, coated copper foils or plain copper foils used in the manufacture of rigid PVC articles.

Acrylic sheets and acrylic plastic bangle tubes are also exempt from duty if produced out of duty-paid artificial resins and plastic materials, and/or scraps of plastics, and or methyl methacrylate monomer. Like-wise, metallised cellophane is exempt from duty if made from duty-paid plain cellophane film.

There are some end-use exemptions also. For instance:

i. flexible PVC sheeting, sheets and films not containing any textile material are exempt from duty if used

within the factory of production in the manufacture of coated textile fabrics, etc., falling under Tariff Item Nos. 19,22 and 22B. Prior to 1.3.1983, concession was also available even when these sheeting, etc., were used outside the factory of their production;

ii. cellulose triacetate, and cellulose triacetate film are exempt from duty if intended for use in the manufacture of cine-films, X-ray films or photograph films.

Goods coming under this sub-item do not come within the purview of the general exemption available to small-scale industries. However, PVC films of thickness below 0.25mm. and lay flat tubings, produced by extrusion process by an industrial unit with initial investment in plant and machinery not exceeding Rs 20 lakh are exempt from duty. Prior to March 1, 1981, the critical limit for investment was Rs 10 lakh.

As mentioned earlier, an important feature of the structure of duties for products coming under sub-item 15A (2) is that such products are distinguished on the basis of rigidity/flexibility. In exemption notification (No. 149/82 CE dated 22.4.1982) criteria for rigidity and flexibility have been laid down as follows:

i. The expression 'flexible' in relation to an article made of plastics, means articles which have a modulus of elasticity either in flexture or in tension of not over 700 kilogram per square centimetre at 23 degrees centigrade and 50 per cent relative humidity when tested in accordance with the method of test for stiffness of plastics (ASTM Designation D-747-63), for flextural properties of plastics (ASTM Designation D-790-63), for tensile properties of plastics (ASTM Designation D-638-64T), or for tensile properties of thin plastic sheeting (ASTM Designation D-882-64T); and

ii. The expression "rigid" in relation to an article made of plastics, means all articles other than "flexible" as defined in (i) above.

The above criteria for rigidity have been in operation for

duty purposes since January, 1977. However, when applied to polyethene films, the criteria have resulted in some anomalies and led to abuse. Test results from the National Test House, Calcutta, revealed that plastic films which are very thin in dimension and appear to be not at all rigid in its ordinary sense are actually "rigid" for duty purpose as their modulus of elasticity far exceeds 750 kilograms per sq.cm. and therefore should be treated as dutiable. But in practice these were passed as flexible and so not liable to duty. The result was that there was substantial leakage of excise duty as many manufacturers all over India did not pay any duty on such plastic films. The confusion was compounded by the fact that in the field of plastic technology these films were not really treated as rigid films, but categorised as semi-rigid. It is understood that whenever declarations were obtained from the assessees, the assessees showed them as flexible because of their apparent thinness. The defence of the assessees was that they did not have any machinery to ascertain the modulus or elasticity by ASTM. Thus, excise duty amounting to crores of rupees is believed to have been evaded by plastic sheet manufacturers through misclassification of rigid sheets as flexible. The problem has now practically been got over with the issue of notification No.231/82 CE of October, 1982. This notification exempts films or sheets upto and including thickness of 0.25mm. other than those manufactured from PVC from duty leviable thereon provided such films and sheets are produced out of duty-paid (excise or countervailing customs duty as the case may be) artificial resins or plastic materials or cellulose esters and ethers.

Thus the current position regarding duty liability of articles under sub-item 15A (2) is as follows:

i. Rigid plastic boards, sheeting, sheets and films whether of PVC or other than PVC are liable to duty. However, films and sheets made of plastic material other than PVC is exempt, provided the thickness does not exceed 0.25mm. and the non-PVC ingredient is manufactured from duty-paid artificial resins or plastic materials or cellulose esters and ethers;

ii. Rigid plastic boards, sheeting, sheets and films of PVC are dutiable;

iii. Flexible PVC sheeting, sheets and films are dutiable. However, PVC films, whether rigid or flexible, of thickness below 0.25mm. and lay flat tubings made by small manufacturers have been specifically exempted;

iv. Films or sheet of regenerated cellulose (cellophane) are dutiable; and

v. Polyester films are dutiable.

The basic tariff duty on sub-items 15A (2) is 50 per cent *ad valorem*, but through exemption notifications, the rates have been reduced to 30 per cent *ad valorem* on (i), (ii), (iii) and (v) above and to 20 per cent *ad valorem* on (iv).

In the light of the preceding discussion on the structure of sub-item 15A (2), two suggestions are offered below for reform in order to avoid confusion.

a. *Notification No. 39/73.* In item (iii) of this notification, 'polyvinyl chloride lay flat tubings' may be replaced by 'polyviny chloride lay flat tubings not containing any textile material'. The latter description will be in consonance with the description of tariff sub-item 15 A (2) and avoid confusion.

b. *Criteria for rigidity/flexibility.* Since films or sheets of other than polyvinyl chloride with maximum thickness of 0.25mm. have been exempted from duty, it does not seem to be necessary to distinguish between rigid and flexible films of other than PVC for duty purpose. Both could be made dutiable. In that case, there will be hardly any need for ASTM for this purpose.

Polyurethane Foam and Articles made of Polyurethane Foam: Sub-item 15A(3) and 15A (4).

Basic tariff rates for these two sub-items are 75 per cent *ad valorem*. The effective rates are also the same except in the case of rigid polyurethane foams for which the effective rate is 15 per cent. The concessional rate for rigid polyurethane is applicable with effect from 9.6.1982. The same rate is applicable to rigid polyurethane foam if such foam is not removed

from the factory but is consumed or utilised as such or after subjection to any process or processes in the manufacture of any other goods of polyurethane foam. The following articles made of polyurethane foam are excisable:

(a) Sheets and sheeting,
(b) Mattresses and the like,
(c) Quilts and the like,
(d) Pillows,
(e) Cushions,
(f) Mats,

in any shape or size. Other articles made of polyurethane foam are exempt from duty if produced out of duty-paid (excise or additional duty under section 3 of Indian Custom Tariff Act) polyurethane foam. Articles of polyurethane foam are also exempt from duty if manufactured from wastes or scrap of polyurethane from, or from waste and scrap of articles of polyurethane foam.

Special Excise Duty

Besides basic duty, tariff item 15A is subjected to special excise duty. The latter is levied as a fraction of the former. While the tariff rate of special duty is 10 per cent of the basic duty, the effective rate is 5 per cent of the basic duty. For some time beginning with 1st March, 1974, this item was subjected to auxiliary duty as well, but it was merged with basic duty with effect from 16th March, 1977.

Critical Appraisal of the Tax Structure

The preceding paragraphs give an idea of the current excise tax structure of this item. The evolution of the duty structure relating to plastics since inception is surveyed in Appendices I and II. Two notable points which emerge from this survey are:

i. the tax is levied both at the raw material stage and also at the article stage;
ii. the tax structure does not appear to have been viewed in totality at one time.

Taking the second point first, we find that the existing duty structure is the outcome of attempts made over the years to tackle problems as and when they have arisen without going fully into their overall implications. This has resulted in frequent changes and instability of the tariff structure. Rates have occasionally been changed. It is not clear whether their effect on other similar items was taken fully into account. This has resulted in imbalances, encouraging misclassification, evasion and litigation. In the 1982 Budget the tariff head was aligned with the customs tariff and the form and description of the tariff was changed and yet the notifications issued still read as if the old tariff was in vogue.

Coming to the first point, it is sometimes argued that it might be preferable to levy the duty at one stage only, perferably at the raw material stage. The underlying assumption is that such a step would ease assessment, reduce disputes and make for smoother and easier collection.

Though administratively attractive, shifting the point of levy to the raw material stage only without granting full set-off at the product stage which is possible only under a system of value-added tax, is not desirable. The present system of levying duty both at the raw material and the product stage thus has its merits. In any case, with changed description of the tariff, difficulties of levying duty at the product stage have been considerably reduced.

3

Evasion

Introduction

As in the case of several other commodities, a significant proportion of the duty due on plastics is believed to be evaded through some means or the other. The common methods of excise duty evasion especially where the duty is *ad valorem*, are the following:

—Underreporting;
—Misclassification; and
—Undervaluation.

Underreporting of production is one of the common methods of evading taxes, be it income tax or excise duty. Since it is possible to correlate production with inputs, even though roughly, underreporting of production calls for suppression of purchase of raw materials too. Alternatively, the figure of output can be reduced simply by overstating the proportion of wastage in the production process. However, the conversion of raw materials into plastic products takes place through a chemical reaction and the process does not differ materially from unit to unit. Some norms can be set up for the proportion of wastage and these can be applied for several years until any significant technological change takes place. Hence overstating wastage does not offer a convenient device for underreporting output in plastics.

Misclassification is also a very common way of minimising the tax liability in commodity taxes where different rates of tax are laid down for products which look similar. Units

manufacturing a wide range of products which cannot be easily distinguished from each other can evade duty by misclassification if the products are taxed differentially. Obviously, the larger the differential, the greater the temptation to misclassify and show articles carrying high rates as ones going in the low-tax category.

When the duty is *ad valorem*, under-valuation also offers scope for evasion. Understatement of the excisable value is resorted to in various ways, e.g., by appointing sales agents of one's choice and showing the sale price at a lower figure than the price at which it is actually sold. Another way is to show a part of such price as "post-manufacturing expense" and reduce the excisable value thereby.

Finally, in addition to the above-mentioned methods, the SRP Committee pointed out a few more common tax evasion practices adopted by larger units. These include manipulation of accounts, duplication of gate pass book, transportation of more than one consignment on a single gate pass, misdeclaration of composition of excisable goods, understatement of raw material stock position, overstatement of wastage and damage during production, inflation of weight of containers or packing materials, 'damage' during storage and transit and even manipulation of treasury challans.

Evasion through Under-reporting of Production

If excise taxes are to be evaded by underreporting output, the factory concerned has to suppress the actual consumption of inputs also in its accounts. In the plastics industry, especially thermoplastics, the basic raw materials are supplied by government or government-controlled sources. Naphtha, which is an important raw material for several categories of plastics, is supplied by government refineries. In the case of thermoset materials also, formaldehyde is supplied by Rashtriya Chemical and Fertilizer (RCF), which is again in the public sector. Similarly, phenol, the other raw material, essential for manufacturing thermoset plastics has only one manufacturer in the country, *viz.*, Herdillia which is in the large corporate sector. It is unlikely that these undertakings would resort to concealment of their output and this probably

is one of the main considerations for taxing plastics by levying the duty mainly on resins and materials while exempting articles made from duty-paid materials.

However, the possibility of underreporting of production cannot be ruled out altogether. But, even assuming that underreporting is practised by some units, quantification of the unreported production poses formidable problems since that requires reliable data on the quantity of feedstocks of different categories supplied to manufacturers of plastic materials and the quantity of materials manufactured in each category. Some of the plastic materials are also produced in the small-scale sector. There are no reliable data on the production of the small sector by type of product or on the quantity of inputs used by small-scale units. The only way one can check whether the clearances of plastic materials are in line with actual production is to compare the figures of clearances compiled by the Central Excise Department with production data available from other sources.

A comparison of the statistics regarding production of plastic materials available from different sources and the clearance figures gathered from the *Statistical Year Book* of the Central Excise Department shows that clearances under sub-item 15A(1) in the aggregate did not fall short of the production in the years for which data are available (vide Table 3.1). It must be mentioned, however, that a proper investigation of the incidence of evasion of excise duty through underreporting could not be undertaken in the absence of adequate information regarding quantity of feedstock used in the production of plastic materials in the country. It is understood that the field offices of Central Excise authorities do collect information regarding inputs but these are not collected or compiled at one place and so a valuable source of information goes unutilised.

Another way of checking the reliability or otherwise of the reported production figures of an industry is to check the quantity of production disclosed with the consumption of the article in question and inventory change in a given year. In the case of plastic materials, to estimate underreporting by the consumption route is rather difficult because of

the heterogeneous nature of the plastic products and the difficulty of relating actual consumption to the figures given in the *Statistical Year Book* under different sub-heads of the tariff item in question. However, this method was tried for the present study in the case of polyurethane foam and the results are discussed elsewhere.

(a) *Suggested methodology for estimating evasion in 15A(2).* It has been mentioned earlier that item 15A (2) was intended to comprise the following three major categories of semi-finished goods for taxation purposes:

i. Rigid PVC items;
ii. Flexible PVC items; and
iii. Rigid items manufactured from resins other than PVC.

With the changes made through the 1982 Budget, cellophane and polyester films have been included in 15A(2). While in the case of (i) and (ii), films of thickness below 0.25 mm. and lay flat tubings made by small-scale industry were exempt from duty, in the case of (iii) also exemption has been extended to films and sheets with maximum thickness of 0.25 mm. w.e.f. October, 1982. In the case of (i) and (ii), it should be possible to get an idea of the magnitude of evasion by correlating the end-use of the polymer with the clearances of semi-finished product, the only constraint being the paucity of data on production in the exempted sector. The methodology is explained below:

Starting with the production of the polymer. from end-use analysis one can get an idea of the quantity of polymer used in the manufacture of profile shapes such as particle boards, films, sheets and sheeting. As the duty is *ad valorem*, precise data on prices of various items are necessary for deriving the figure of production in quantitative terms from the amount of duty paid.

To use some algebra, let Q_i be the total quantity of production of a particular resin (say i) and x_i be the proportion of this resin used in the manufacture of excisable goods. Further, let y_i be the conversion factor, i.e., one unit of the polymer required in the production of y_i units of the final

TABLE 3.1

Production/Clearances of Plastic Resins and Materials

(Tonne '000)

Resins/Materials	Petroleum Ministry (Production)				DGTD (Production)				DSIE & C (Clearances)			
	1977-78	1978-79	1980-81	1981-82	1977-78	1978-79	1980-81	1981-82	1977-78	1978-79	1980-81	1981-82
1. Thermoplasts												
a. LDPE	18.45	56.03	87.15	94.29	19.10	57.11	87.06	92.72	—	—	—	—
b. HDPE	25.59	28.07	24.29	31.73	25.60	28.07	24.29	31.73	—	—	—	—
c. PVC	59.02	62.64	42.05	37.04	55.57	62.64	39.41	37.26	—	—	—	—
d. PS	13.57	14.47	10.21	7.64	13.50	14.47	10.20	7.94	—	—	—	—
e. PP	—	7.13	16.73	20.64	—	—	16.73	20.64	—	—	—	—
TOTAL—1	116.63	168.34	180.43	191.34	113.77	162.29	177.69	190.29	—	—	—	—

TABLE 3.1 (Contd.)

2. Thermosets												
a. MFMP	0.18	0.18	0.21	0.33	—	—	0.19*	0.43*	—	—	—	—
b. PFMP	4.38	4.24	4.79	4.56	4.49*	3.81*	4.73†	5.25†	—	—	—	—
c. UFM	2.23	2.50	2.85	3.25	2.19†	2.11†	3.15†	3.42†	—	—	—	—
d. CAMP	0.99	0.77	0.32	0.29	—	—	0.26†	0.31†	—	—		—
TOTAL—2	7.78	7.69	8.17	8.43	6.68†	5.92†	8.33	9.41	—	—	—	—
TOTAL (1 + 2)	124.41	176.03	188.60	199.77	120.45	168.21	186.02	199.70	189.31††	231.71††	216.63††	282.24††

Notes: †For calendar year beginning with

††Does not include data reported in units other than tonne. Details of production, clearances and revenue as per DSIE & C for all the four sub-items of Tariff Item 15A are shown in Table 3.1a.

Sources: 1. Directorate of Statistics and Intelligence, *Statistical Year Book-Central Excise*—relevant issues.

2. Ministry of Petroleum.

3. D.G.T.D.

TABLE 3.1a

Production, Clearance and Revenue* of Artificial or Synthetic Resins and Plastic Materials and Articles

Tariff item/Revenue		Unit		1976-77		1977-78		1978-79		1980-81		1981-82	
				Pro-duction	Clear-ance	Pro-duction	Clear-ance	Pro-duction	Clear-ance	Pro-duction	Clear-ance	Pro-duction	Clear-ance
				(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
15A(1)	Artificial or	Nos.	('000)	164	161	—	—	2317	1816	415	260	42987	20140
	synthetic	Litres	('000)	448	278	1750	1806	2469	2455	896	930	2035	2062
	resins and	Kgs.	('000)	196846	188518	204378	189306	268068	231712	223384	216629	287349	282239
	plastic material	Metres	('000)	—	—	—	—	—	—	19	21	8844	7762
	in any form	Sq.m.	('000)	—	—	—	—	356	61	82	83	115	91
	Revenue	(Rs)	('000)	387123		477099		729125		1004494		1073888	
15A(2)	Articles made	Nos.	('000)	78993	75513	71533	60696	78274	73345	85064	76462	31447	31001
	of plastics	Litres	('009)	—	—	—	—	22	23	5	1	—	—
		Kgs.	('000)	9689	8759	20726	21835	15040	12971	18941	13137	21179	18418
		Metres	('000)	15229	17022	30331	26858	34390	31492	29406	22809	29085	29052
		Sq.M.	('000)	—	—	—	—	3746	2005	2043	1973	3707	2772
		Rims	('000)	—	—	—	—	1376	837	—	—	—	—
	Revenue	(Rs)	('000)	68870		113388		110548		132692		176413	

TABLE 3.1a (Contd.)

				(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
15A(3)	Polyurethane foam	Nos.	('000)	130	132	182	189	313	330	1234	1262	719	720
		Litres	('000)	—	—	—	—	—	—	—	—	—	—
		Kgs.	('000)	985	902	1157	905	1509	1169	1034	1011	555	560
		Metres	('000)	—	—	—	—	—	—	32	43	27	19
		Sq.M.	('000)	—	—	—	—	37	37	52	46	8	3
	Revenue	(Rs)	('000)	9146		12850		16803		28034		20094	
15A(4)	Articles made of polyurethane foam	Nos.	('000)	986	945	1662	1673	1751	1964	1266	1437	3102	3084
		Litres	('000)	—	—	—	—	—	—	—	—	—	—
		Kgs.	('000)	601	609	829	679	588	586	479	446	1587	1295
		Metres	('000)	—	—	—	—	—	—	7	5	227	236
		Sq.m.	('000)	—	—	—	—	—	—	7	5	171	172
	Revenue	(Rs)	('000)	11266		17906		18209		19509		41647	
	TOTAL Revenue	(Rs)	('000)	476405		621243		874685		1184729		1312042	

Note: *Revenue from basic duty.

Source: Compiled from various issues of the *Statistical Year Book-Central Excise*, published by Directorate of Statistics and Intelligence.

product. If the price of the final product is p_i and t_i the rate of duty then the gross yield of excise dulty is $T = x_i y_i Q_i P_i t_i$.

If price of polymer is p_i and the rate of excise duty paid on the polymer is T_i, the value of proforma credit available is obtained as

$P_i (x_i Q_i) T_i$ and the net potentiai tax revenue is

$$PT = x_i y_i Q_i P_i t_i - x_i p_i Q_i T_i$$
$$= x_i Q_i (y_i p_i t_i - p_i T_i)$$

The revenue potential estimated in the above manner as compared to the revenue actually collected on the items would give an idea of the extent of evasion of excise duty, provided some adjustment can be made to allow for production of profile shapes in the exempted sector on which no duty is payable.

Theoretically, the above method could also be applied for estimating evasion in the case of rigid items manufactured from plastic materials other than PVC. However, in practice, one faces a host of difficulties. In the first place, the item is composed of a heterogeneous group of products manufactured from different types of polymers with prices differing widely both for the final products and for the polymers. Secondly, the excise records show the revenue for the item as a whole and not separately for each product. Thirdly, no record is maintained about the quantity cleared free of duty, especially in the case of manufacturers who are not required to take out a licence. Fourthly, the quantity of polymers used in the production of rigid and flexible items according to end-use is not known. Finally, the criterion of rigidity is still not entirely clear. In view of these difficulties, it has not been possible to make use of this method for determining the quantum of evasion in the case of rigid items of plastics other than PVC.

The production approach suffers from another serious constraint, *viz.*, the intermingling of production, clearances and revenue figures of various materials and products, either at the reporting stage or at the compilation stage or at both. It is stated that there are five items, *viz.*, polyethylene;

polyester films; rigid PVC boards, films, sheeting, sheets; flexible PVC films, sheeting, sheets; and boards, films, sheeting, sheets of other than PVC where the current rate of basic duty is 30 per cent *ad valorem* in each case. Data regarding these items are mixed up, rendering it difficult to derive precisely the actual base for comparison with the estimated figures. This is a serious drawback particularly in this industry, thwarting any serious attempt to arrive at a precise estimate of evasion.

For estimating the extent of evasion in PVC articles, we started with the year 1977-78. Available data show that the consumption of PVC resins during the year was of the order of 67, 227 MT of which 28.3 per cent was used in the manufacture of films, sheets, lay flat tubing, etc. Applying this proportion to the total PVC consumption, the quantity of PVC resins used in making films works out to 19,294.15 MT. Our assumption is that 15 per cent of the said 19, 294.15 MT. (or 2.894.12 MT.) went into the manufacture of rigid films and the remaining 85 per cent (i.e., 16,400.03 MT.) was used for producing films of the flexible category.[1]

To calculate the amount of set-off available for each of these two types of films, the quantity of PVC resins used in manufacturing rigid and flexible films was multiplied by the value and the relevant rates of excise duty (*viz.*, Rs 5, 748.67 per MT. and 42 per cent *ad valorem*, respectively).[2] Based on these data the set-off for rigid films worked out to Rs 69,87,683 and for flexible films to Rs 3,95,96,911.

The production figure of rigid and flexible films could be obtained by applying the relevant conversion factors. Raw material requirements for these films as gathered from industry sources are given below (Table 3. 2.).

[1] Report of the Reconstituted Working Group on Petrochemicals, Ministry of Petroleum, Chemicals and Fertilisers, New Delhi.

[2] Price of PVC resins used here is the weighted average of individual prices of each of the five manufacturers of PVC resins.

TABLE 3. 2

Raw Material Requirement of PVC Films

Ingredients	Flexible films	Rigid films
PVC resins	80.30 kgs.	92.24 kgs.
Plasticizers	17.75 kgs.	1.91 kgs.
Stabilizers	1.61 kgs.	2.38 kgs.
Pigments etc.	0.40 kgs.	0.46 kgs.
Total weights of final product	99.86 kgs.	99.93 kg..

Source: Industry source.

From the above table it will be observed that one kg. of PVC resins yields approximately 1.08 kgs. of rigid films. Similarly, one kg of resin yields 1.24 kgs. of flexible films. Thus, 2,894.12 MT of PVC resins should normally yield 3,135.4896 MT of rigid films. Likewise, 16,400.03 MT of PVC resins should yield 20,395.077 MT of flexible films. Assuming that the average price of these films was around Rs 15,019.76 per MT, [3] the value of rigid films comes to Rs 4,70,94,301 and that of flexible films, Rs 30,63,32,900.

To estimate the maximum realisable revenue from excise duty on these two types of films, we take the rate of duty on rigid film at 25.2 per cent and that on flexible fiilm at 31.5 per cent.[4] Applying these rates, the potential revenue from excise duty on rigid films worked out to Rs 1,18,67,763, and

[3] Prices of rigid and flexible films vary quite widely, depending upon various factors such as thickness, colourability, etc. For the five calendering units the figures were available for production in physical quantities and value thereof from the DGTD.. Of these five units, the product of two big ones, *viz.*, Bhor and Caprihans, manufacturing similar products have been considered here while for computing a representative price of the films, we have taken a weighted average of these prices.

[4] In the year 1977-78, the rate of basic duty on rigid films was 24 per cent whereas that on flexible films was 30 per cent. In addition, 5 per cent of the basic duty was charged by way of special excise. Thus the effective rates for rigid and flexible films worked out to 25.2 per cent and 31.5 per cent, respectively, for the year under consideration.

from flexible films, Rs 9,64,94,863.

To obtain the net tax liability or the potential tax revenue, we have to subtract the amount of set-off available from the duty paid on resins following the method described earlier for each of these films. Allowing for set-off, the potential tax from the rigid films came to Rs 48, 80, 080. Similarly, the potential tax for flexible films worked out to Rs. 5,68,96,741.

The actual revenue from the basic duty on rigid films in 1977-78 was Rs 44,13,000, while on flexible films it was Rs 2, 25, 80, 000. Besides basic duty revenue from auxiliary and special duties should also be added to the yield of the basic duty. To carry out this adjustment, first, a ratio of the total revenue from auxiliary and/or special duty to the total gross revenue had to be obtained. The required ratio, i.e., the adjustment factor was $\frac{34193}{623151}$ or 0.0547.

The realised revenue from the basic duty on each of the two types of films was raised by the above proportion. The adjusted yield of excise duty on rigid films and other similar products came to Rs 44,13,000 (1+0.0547) or Rs 46,54,391. Similarly, the total revenue from flexible films worked out to Rs 2, 25, 80,000 (1 + 0.0647) or Rs 2, 38, 15, 126. Hence the degree of evasion in the case of rigid films may be put at $(1 = \frac{46,54,391}{48,80,080})$ or 4.6 per cent of the potential.

By this method the incidence of evasion in the case of rigid films and other similar items made of PVC turns out to be roughly 5 per cent of the potential. In other words, roughly 95.00 per cent of the potential revenue was realised.

In the case of flexible films, we may assume that 57 per cent of total production takes place in the extruding units.[5] If K is the proportion of extruded films (i.e., K per cent of the production of lay flat tubings marketed as films), then the potential revenue of excise duty from these films in the year in question should have been Rs 5,68,96,741 (0.43 + 0.57K), depending on the value of K. Obviously the value of K

[5] This figure has been supplied by the AIPMA.

would lie between O and 1.

Scenario 1

Taking K to be equal to zero, that is, assuming that the production of lay flat tubings is not sold as films at all, the potential revenue will be the revenue of the excise duty collected from the calendering units alone. On this assumption the potential revenue from flexible films in the year under consideration was Rs 2,44,65,598. Comparing this figure with the actual revenue, we find that roughly 97.34 per cent of the potential was realised and, the extent of evasion was 2.66 per cent.

Scenario 2

If K=1, that is, all extruded films are marketed as flexible film, the potential revenue comes to Rs 5,68,96, 741.

Comparing this figure with actual revenue it is noticed that only 41.86 per cent of the estimated potential was realised. If this assumption happens to be valid, the incidence of evasion comes to about 58 per cent of the potential in the year in question.

In estimating the extent of evasion both for rigid and flexible PVC films, etc., it was not possible to adjust the potential to allow for the production of flexible films of thickness below 0.25 mm. and lay flat tubings by extrusion process in the small-scale units. The data required for such adjustment are not available. Again, flexible PVC sheeting, sheets and films used in the manufacture of impregnated or coated fabrics were exempt from duty. Some adjustment is needed in the consumption data of PVC for flexible films to allow for these uses also as otherwise the estimate of evasion gets inflated. Again, the use of flexible PVC sheets, films and sheeting elsewhere than in the factory of production of these sheets, films, etc., was subject to the procedure set out in Rule 56 A. It is anybody's guess as to what is the amount of proforma credit availed of under this Rule. Evidently, the estimate of evasion would be on the high side unless some allowance is made for proforma

credit as well. The *Statistical Year Book* of the Excise Department gives some statistics of production and clearances of flexible films, sheets, etc., cleared free of duty for use in the manufacture of impregnated and coated fabrics. But, the data are given in varying units, rendering it difficult to use them for the purpose we had in mind. It is said that 60 per cent of the consumption of flexible sheets is accounted for by leather cloth. Assuming this to be true, the further question regarding the size of proforma credit availed of still remains to be answered. Further, against proforma credit, there would not be any set-off of material stage duty. This could also be worked out, but that would involve many assumptions which may not be valid in fact. Hence the matter was not pursued further.

It was not possible to attempt any estimate of evasion for subsequent years, partly because of the problems mentioned above and partly because the data for subsequent years except 1978-79 are either not available or are not reliable. For 1979-80, the relevant data have not been compiled. For 1980-81, data for different types of films, sheets and sheetings appear to have got enmeshed. For 1981-82, the consumption figures of PVC could not be obtained from the Ministry of Petroleum as they are not yet ready.

b. *Polyurethane foam.* In the case of polyurethane foam, coming under sub-item 15 A (3), it was not possible to estimate the potential for comparison with actual production due to non-availability of import statistics in respect of TDI and polyol, the two principal inputs. These raw materials are on the OGL list and their imports are not separately reported. However, an attempt was made by examining production figures against the utilisation of raw materials by various factories and the results are set-out below. Likewise in the case of articles of polyurethane foam [sub-item 15 A (4)] no comparison between estimated production could be attempted as the actual production figures of articles are reported in heterogeneous units and therefore cannot be matched.

Table 3. 3 sets out the data on raw materials used and flexible polyurethane foam produced in seven factories. The weighted average of raw materials used in the seven factories for producing one tonne of flexible polyurethane foam works out to 1.0871 tonne. The utilisation of raw materials for producing one tonne of foam for each factory was compared with the norm of 1.0871 and the differences noted. Standard error of these differences was worked out and it came out to 1.24. As the sample was small, 't' test was applied. It was noted that standard error is not significant either at 10 per cent or 5 per cent level.

TABLE 3. 3

	Production (tonne)	Raw material utilised (tonne)	Average quantity utilised for producing one tonne of foam (tonne)
Factory I	103	115.7	1.1233
Factory II	379.58	404.47	1.0656
Factory III	182.26	194.44	1.0668
Factory IV	274.39	297.541	1.0843
Factory V	23.91	27.56	1.1527
Factory VI	344.30	379.40	1.1020
Factory VII	144	158.80	1.1028

The variations could, therefore, have arisen due to errors and no inference regarding evasion can be drawn.

Evasion through Misclassification

Misclassification is another common method of evading commodity taxes. Ambiguity in the definition of the tariff item is the main factor which facilitates evasion through this device. The more ambiguous the tariff head and the notifications, the greater the scope for evasion and litigation. The tendency to exploit ambiguity and lack of clarity increases where the items are assessable to duty *ad valorem*. For with *ad valorem* duty, evasion is all the more paying as generally high-priced articles are subjected to comparatively high rates

of duty. We have earlier drawn attention to the possible loss of revenue arising from the lack of clarity in the criterion for flexibility in the case of films, sheets and sheeting of non-PVC materials. Here we examine the scope for evasion in phenol formaldehyde moulding powders and a few other items.

a. *Phenol formaldehyde moulding powders.* Currently the effective rates of basic duty on moulding powder of phenol formaldehyde is 15 per cent *ad valorem*, effective from June 3, 1982. The same rate is also applicable to phenol formaldehyde resins. On phenolic resins, however, the effective rate of duty at present is 20 per cent under notification No. 157/81 CE of 29.8.1981. Explanation (iii) of the said notification runs as follows:

Explanation—For the purpose of this notification—(iii) the expression "phenolic resins" means synthetic resin manufactured by reacting any of the phenols with an aldehyde and includes chemically modified phenolic resins and liquid phenolic resins but does not include blends of the phenolic resins with other artificial or synthetic resins.

Since phenolic formaldehyde resins are also synthetic resins and manufactured by reacting phenol with formaldehyde (an aldehyde), one would have thought that they ordinarily come under the category of "phenolic resins". The rate of basic excise duty on the phenol formaldehyde resins including their moulding powders is 15 per cent *ad valorem* by virtue of notification No. 241/82 CE of 1.11.1982. On phenolic resins other than those of formaldehyde, however, the rate is 20 per cent *ad valorem.*

The position was different during the period February, 1980 to June, 1982. During this period, (i) the general effective basic duty rate was 40 per cent *ad valorem* on tariff item 15A (1) (notification No. 5/80 CE of 27.2.1980); the rate of duty on phenolic resins was 20 per cent *ad valorem* (notification No. 122/71 CE of 1.6.1971 as amended from time to time); (iii) since phenolic formaldehyde resins are also phenolic resins, the rate on these could also be assumed to be 20 per cent *ad valorem*: (iv) however, the rate of duty on phenol formaldehyde moulding powder manufactured from duty-paid raw

naphtha or any chemical derived therefrom was 30 per cent *ad valorem*. Thus by derivation, the rate of duty applicable to other phenol formaldehyde moulding powder would be the general rate, i.e., 40 per cent *ad valorem*.

According to the DGTD and the Ministry of Petroleum, there are three major factories which produce phenol formaldehyde moulding powder. They are (i) M/s Indian Plastics Ltd., Kandivili, of Bombay (IPL); (ii) The Industrial Plastics Corporation Pvt. Ltd. (TIPCO) and (iii) Bakelite Hylam, Sanathnagar, Hyderabad (BH). From statistics maintained by the Ministry of Petroleum, it appears that these three factories produced 4,693 tonnes of phenol formaldehyde moulding powder during the year 1981. In the year 1982, while the total production was of the order of 4,351 tonnes, the contribution of IPL was 1,615.1 tonnes, TIPCO 1,444.2 tonnes and BH 1.291.7 tonnes, respectively. TIPCO's production of 1,444.2 tonnes includes a certain quantity of resins also for which separate figures are not available. However, from excise records, it appears that in the months of April and May, 1982, the total production of 221.6 tonnes included 20.7 tonnes of resins, i.e., less than 10 per cent of the total production.

From what has been stated earlier, it would be seen that the rate of basic excise duty on phenol formaldehyde moulding powder during the period 27th February, 1980 to 2nd June, 1982 was 30 per cent *ad valorem* if manufactured from duty-paid naphtha or any chemicals derived therefrom and 40 per cent otherwise. From a perusal of RT 12 returns for April and May, 1982 (extracts given in Table 3.4) it will be seen that two factories, *viz.*, IPL and TIPCO, cleared their goods by paying basic duty at the rate of 20 per cent *ad valorem*. Thus, *prima facie*, they seem to have short-paid the duty by 50 per cent. The shortfall in duty realisation from the two factories comes to approximately Rs 63 lakh in 1981-82. It is to be noted, however, that there is no differential now in the rate of duty on formaldehyde resins and moulding powder. Hence these factories have been paying duty at the rate of 15 per cent *ad valorem* from June, 1982 onwards.

In the case of the third factory, *viz.*, M/s Bakelite Hylam

Ltd., nothing wrong was found as the factory paid duty at the rate of 30 per cent *ad valorem* on the powder manufactured by them, the powder manufactured being, presumably, naphtha-based.

b. *Non-PVC rigid films, sheets, sheeting.* Earlier we have explained the difficulty in applying the PVC approach in measuring evasion to non-PVC plastics products. At the same time, our study suggests that a sizeable amount of duty was probably evaded because of the non-application of the American Standard of flexibility in the case of plastics products. It is difficult to make any precise estimate of revenue loss on this account. However, comparing the value of clearances of this item in the first six months of 1982-83 with that of the first six months of 1981-82, one notices a rather large difference. The value of clearances in the period April to September, 1982 was of the order of Rs. 26.91 crore as against Rs. 18.33 crore in the period April to September, 1981. The sharp rise in the clearances during April-September, 1982 cannot be explained entirely by increase in production. There is reason to think that rigorous enforcement of the ASTM standard in the later period has led to the disclosure of clearances which escaped the revenue net earlier.

With the rate of duty at 31.5 per cent *ad valorem* (basic and special), the shortfall in revenue within the first six months of 1981-82 as compared to that realised in the corresponding period of 1982-83 comes to Rs. 2.70 crore. The gap for the entire year 1981-82 due to misclassification may, therefore, be placed at Rs. 5.40 crore. This is a rather crude way of looking at the problem but the large gap does indicate substantial evasion which, however, has now been taken care of to a considerable extent though rationalisation of rates.

c. *Ambiguity about the relevant tariff head for plastics products.* Products containing plastics material often give rise to problems of classification and thus evasion/avoidance also because of uncertainty as to whether they are assessable under tariff item 15A (2) or under some other specific head or under the residuary head item 68. There have been disputes regarding the tariff head under which plastics products ought to be taxed in several cases. For instance, in a case which

TABLE 3.4

Extracts from RT 12 Returns

Dated	Description	Production (kg.)	Duty-Paid clearances for home consumption: Outside the factory (kg.)	Duty-Paid clearances for home consumption: Within the factory (kg.)	Value of clearance (Rs)	Basic duty (Rs)	Rate of duty (per cent)
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	1. INDIAN PLASTICS LTD., KANDIVILI, BOMBAY (IPL)						
1. April 1982	(i) Phenolic resin	58009	56119	1380	1462908	292580	20
	(ii) P.F. moulding powder	138394	107028	365	1417662	283532	-do-
	(iii) P.F. moulding powder nylon filled	—	215	—	12335	3700	30
	(iv) P.F. modified M.F., U.F. resins	1425	1000	—	9124	3650	40
2. May 1982	(i) Phenolic resin	45297	45698	550	1145816	229163	20
	(ii) P.F. moulding powder	129393	123537	300	1658552	331710	20
	(iii) P.F. moulding powder nylon filled	—	299	—	17153	5146	30

TABLE 3.4 (Contd.)

(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	(iv) P.F. modified, M.F. and U.F. resins	601	706	—	6660	2664	40
	2. THE INDUSTRIAL PLASTICS CORPORATION PVT. LTD. (TIPCO)						
3. April 1982	Phenolic material 'M' P.F. resins in form of moulding powder	111813	102933	—	1378385	275677	20
	Phenolic material 'O', i.e., P.F. resins in forms other than moulding powders	12408	17433	—	388321	77665	20
	N.B. Clearances, without payment of duty for other purposes were 3,800 kgs. and 17,515 kgs. respectively.						
4. May 1982	Phenolic material 'M' i.e., P.F. resins in form of moulding powder	89033	74768	—	817069	163424	20
	Phenolic material 'O', i.e., P.F. resins in form other than moulding powder	8328	9628	—	205042	41008	20

N.B Issue for reprocess of phenolic material 'M' 535 kgs.

went up before the Gujarat High Court, the question was whether marble floor tiles with a given composition were liable to excise duty under tariff item 15A(2). The Court took the view that the tiles in question were not articles made of plastics because plastics materials constituted only 10 to 15 per cent of the total quantity of a tile and served only as a binding agent and not as the principle ingredient (Bhor Industries Limited vs. Union of India). A similar problem arose in the classification of plastic bangles made out of a monomer, technically known as methyl methacrylate. The monomer in question is not a plastic material but undergoes polymerisation in the process of manufacuring bangles. The Court held that these bangles were not excisable under tariff item 15A. In another case, the question arose whether torches made of plastics came under tariff item 15A(2). In yet another case, the question was about the classification of certain PVC sealing tapes.

An important factor which seems to have been responsible for giving rise to litigation over classification of products made out of plastics was the wide coverage of sub-item 15A(2) as it stood before the change made through the 1982 Budget. The coverage of the item then was wide and thus any article which contained even a small quantity of plastic material was liable to be classified under item 15A(2). The sub-item in question has since been redefined and its scope considerably narrowed down with the result that product of plastics other those those clearly specified under the sub-item 15A (2) now come under some other head such as item 68. The exemption granted to items of plastics under item 68 also has served to reduce litigation over classification of plastic products. Further, a uniform rate of basic duty, i.e., 30 per cent *ad valorem* is now applicable to all the three, rigid PVC items, flexible PVC items, and rigid items manufactured from resins other than PVC. This also should have acted as a disincentive for evasion. However, there is still scope for improvement as indicated in the chapter on suggestions and recommendations.

Evasion through Undervaluation

As indicated in Chapter 2, plastics are subjected to excise

duty at *ad valorem* rates. On some of the plastic materials and products, the rates of duty are quite high. For instance, on polyurethane foam and foam products the rate of duty is as high as 78.5 per cent. On four out of five items covered under sub-item 15A(2), the rate of duty is 31.5 per cent *ad valorem* and on cellophane, the fifth item under this head, the rate is 21 per cent. While the rates of duty in respect of several resins and powders covered under sub-item 15 A (1) have been reduced, the rates on the main items like PVC, LDPE and HDPE remain high. Not surprisingly, this creates a tendency among manufacturers to undervalue their products and in the proccss to evade duty. Multiplicity of products and variation in quality provide scope for undervaluation in plastics more than in products with standardised quality and price.

Whether and if so to what extent undervaluation is resorted to in order to defraud revenue is not easy to make out in the absence of reliable information regarding the prevailing prices of the various products at arm's length transactions. However, from the RT 12 returns it was noticed that resins produced for captive consumption within a factory are often undervalued. A sample check of the RT 12 returns revealed that against an average price of Rs 15.55 per kg. in December, 1982, the prices reported for valuation purposes were unduly low in the case of some important manufactures and users or phenolic resin. The prices of the products were lower than Rs 10 per kg. in the case of these manufacturers. Such variation is difficult to explain even if some allowance is made for differences in quality between manufacturers.

For LDPE films, the value was strikingly low in respect of one important factory in Chandigarh collectorate. The relevant figures are given below:

TABLE 3.5
November, 1982

Production		63,501 kgs.
Removal		
Outside the factory		1,231 kgs.
Within the factory		6,2663 kgs.
Value	Rs	10,11,776
Duty (Basic)	Rs	2,94,766

There are three factories manufacturing LDPE. An examination of the assessable value of these factories during the period April to June, 1982 showed that there were large variations in their assessable value, as will be evident from the following table:

TABLE 3.6
Low-Density Polyethylene

Factory	Removal during April to June, 1982 (tonne)	Assessable Value	
		Total (Rs '000)	Per tonne (Rs)
IPCL	17,949	2,23,447	12,449
UCIL	3,672	51,203	13,944
ACCI	2,572	27,951	10,867

It would be seen that the assessable value per tonne in respect of ACCI is 87.3 per cent of the assessable value of IPCL and 77.9 per cent of the assessable value of UCIL. The difference may be due to the fact that IPCL and UCIL are naphtha-based whereas ACCI is alcohol-based. Even so, such differences appear to be somewhat intriguing.

There have been numerous disputes over valuation in Central Excise. Sometimes, the Courts' interpretation of the law on the point has been conflicting. The question whether post-manufacturing expenses should be included in the excisable value has been a matter for dispute until the recent judgement of the Supreme Court. To what extent the uncertainty on the point affected the collection of duty under item 15A is not known. Even after the law is settled on the question, the scope for evasion through undervaluation will remain. However, the extent of such evasion is difficult to quantify at the aggregate level and has to be found out case by case, which is beyond the scope of this study.

Abuse of Concessions in the Small-Scale Sector

Another potent source of tax evasion is the misuse of concessions given to the small-scale sector. Prior to March, 1978, small manufacturers of commodities under the Central

Excise control enjoyed concessions based on varying criteria for different commodities. In the 1978 Budget, an attempt was made to rationalise the structure of exemption of small manufacturers. With this end in view, 69 excisable commodities were specified and full exemption was given for clearances upto Rs 5 lakh in respect of manufacturers, whose total clearances, for domestic consumption of the specified goods, during the preceding financial year did not exceed Rs 15 lakh. Consequential changes were made simultaneously in the existing exemptions relating to small manufacturers, wherever applicable, and the changes were enforced with effect from the 1st April, 1978. The annual loss of revenue due to this change was estimated at Rs 28 crore.

One more item was added later and at the time of the introduction of the Finance (No. 2) Bill, 1980, 70 specified items were covered under the general scheme of exemption for small manufacturers. The scope of the scheme was widened by including three more items, *viz.*, (1) certain specified chemicals; (ii) artificial or synthetic resin and plastic material; and (iii) all varieties of paper and paper board and a comprehensive notification No. 80/80 CE was issued on the 19th June, 1980. This notification also provided additional relief in excise duty to the extent of 25 per cent of the duty leviable on each of the items in respect of units which were eligible for the said exemption and whose clearances exceeded Rs 5 lakh, in a financial year. The concessional rate was made applicable on clearances upto a value of Rs 10 lakh in excess of the clearance of Rs 5 lakh. For becoming eligible for the concessions, the aggregate value of clearances of the specified goods for home consumption should not have exceeded Rs 15 lakh of the specified goods or of Rs 20 lakh of all excisable goods manufactured.

From 1.4.1981, the existing limit for duty-free clearances was raised from Rs 5 lakh to Rs 7.5 lakh, per annum. Thus, from 1.4.1981, full exemption was available on the first clearances of Rs 7.5 lakh of specified goods in a financial year to a manufacturer, whose clearances of such goods from one oe more factories during the preceding financial year did not exceed Rs 15 lakh, but where the manufacturer was also

engaged in the production of other excisable goods, the value of all excisable goods should not have been in excess of Rs 20 lakh. Further, for such manufacturers, further clearances of specified goods of Rs 7.5 lakh were chargeable to duty at only 75 per cent of the Central excise duty leviable thereon.

With effect from the financial year 1983, the general scheme was again modified and is now applicable to 67 specified items. The limit of duty-free clearance has been reduced again to Rs 5 lakh. For clearances in excess of Rs 5 lakh upto Rs 25 lakh, reduced rate equal to 75 per cent of the effective duty would be chargeable. In the earlier schemes, there were two eligibility limits of Rs 15 lakh and Rs 20 lakh relating to the clearances of specified goods and the clearances of all excisable goods respectively. Under the new scheme, there is only one eligibility limit of Rs 25 lakh relating to clearances of all excisable goods. Under the new scheme, for the purpose of computing the aggregate value of clearances, the value of goods completely exempt from duty is not to be taken into account. As in the old scheme, in the new scheme also, small manufacturers of artificial or synthetic resins and plastic materials and other specified materials under tariff 15A(1) are covered.

From the preceding discussion, it would be seen that artificial or synthetic resins and plastic materials were brought under the general scheme of exemption for small manufacturers only from June, 1980. It is to be noted that initially (i.e., in June, 1980) the exemption was granted only to sub-item (1) of tariff item 15A and that in the year of its introduction, it was estimated that this relief measure would cost the exchequer Rs 1 crore annually. In 1981-82, when the duty-free limit was raised from Rs 5 lakh to Rs 7.5 lakh per annum, the revenue loss was estimated at Rs 4.00 crore for all the 72 specified commodities. Separate estimate for tariff item 15A(1) is not available. However, it could roughly be placed at Rs 12 lakh (vide Table 3.7).

Taking into account the possible growth in clearances and increase in prices, the revenue cost of the relief to small units may be placed at Rs 1.20 crore in the year 1981-82.

TABLE 3.7

(Rs crore)

1. Estimate of relief for 69 commodities 1968		28.00
2. Estimate for relief of 8 commodities added in 1980		
Plastics Tariff item 15A (1)		1.00
Paper Tariff item No. 17		0.87
Chemicals Tariff item 14 AA		0.13
		2.00
3. Estimated relief due to 25 per cent concession over certain clearances		4.50
4. Total of 1 and 2 and 3		34.50
5. Additional relief in 1981 for 72 items		4.00
6. Share of plastics	$\frac{4.00}{34.50} \times 1.00$	0.12

Source: Memorandum explaining provisions of the Finance Bill—various issues.

There is, however, reason to think that the cost of the concession to small units may be much more than Rs. 1.20 crore. For, firstly, the estimate of revenue cost seems to be based primarily on the revenue which would have been payable by units with clearances between Rs 7.5 lakh and Rs 15 lakh had there been no concession. It does not include the revenue forgone in respect of producers with clearances below Rs 7.5 lakh. What is more, the concession provides scope for evasion by splitting up units with clearances above the critical limit.

To what extent this is resorted to in practice is difficult to specify, again because of absence of information from an independent source regarding the number of small units and their production.

From data available from the Annual Survey of Industries (ASI) it appears that in 1975-76, 1976-77 and 1977-78 there were more than 1,500 factories producing "plastic products not elsewhere classified" (NIC 303) and the value of their production was of the order of Rs 210 to 340 crore a year (vide Table 3. 8).

TABLE 3. 8

Manufacture of Plastic Products Not Elsewhere Classified (Except House Furnishing)

Year	Sector	Factories (number)	Fixed capital (Rs lakh)	All workers (number)	Total output (Rs lakh)	Value of product per factory (Rs lakh)
1975 76	F.S.	1175	3551	21764	14523	12.36
	C.S.	156	1588	8636	6326	40.55
1976-77	F.S.	1335	3923	24505	22175	16.61
	C.S.	184	2003	9595	9811	53.32
1977-78	F.S	1313	4635	25698	24837	18.92
	C.S	84	1773	8462	9483	112.89

Notes: F.S. Factory Sector
C.S. Census Sector

Source: Annual Survey of Industry

The total number of factories paying excise duty under 15A was less than 750 in the years just mentioned. The value of clearances of products under 15 A (2) does not seem to have exceeded Rs 60 crore in any year. It is possible that many of the products coming under NIC 303 are exempt from duty and some are possibly taxed under other tariff heads of Central Excise. Even, so, the large gap seems somewhat puzzling.

Concluding Remarks

In the preceding sections an attempt has been made to examine the possibility of evasion of excise duty on plastics and the devices adopted for evasion. It was, however, not possible to quantify the magnitude of evasion because of intractable problems. The problems stem from the following factors:

(i) The tariff item in question is composed of a heterogeneous group of commodities and raw materials which have several other alternative uses. It was not possible to relate output to input in the absence of data on the raw materials used and the final products:

(ii) varying rates of *ad valorem* duty have been prescribed and statistics for various products are not maintained separately. Besides, wherever the same rates have been prescribed, statistics regarding production of several articles are mixed together;

(iii) Numerous notifications giving partial or complete exemption from duty have been issued from time to time and there have been frequent changes in the incidence of duty. Statistics of production, clearances, etc., separately to show the impact of each notification are either not maintained or are maintained in varying units rendering any comparison difficult. It is understood that statistics on value of clearances are collected, but these are not given in the Statistical Year Book. Figures of clearances are given in quantities only. Thus a valuable item of information remains unutilised ;

(iv) Statistics on material utilisation are not compiled centrally and hence comparability of conversion ratios of raw material into product in different manufactures is not possible;

(v) Information collected and compiled is mostly tariff-oriented. For reviewing tariff as well as for studies on evasion, tradewise information is essential. It would be helpful to have an annual return from producers giving trade nomenclature-wise information on production, etc., to be collected either by Central Excise authorities or by DGTD. This will strengthen the data base for estimating total production. It may be added that detailed trade nomenclature-wise information is either not collected by any other organisation and if collected it becomes obsolete by the time it is to be put to use;

(iv) The plastic industry is in the developing stage. New products are coming up, and old products are finding varied uses. Techniques of manufacture and processing are also changing. In view of these factors, classification problems arise all the time. Loss of revenue through misclassification unless deliberately resorted to can hardly be called evasion and yet the Government loses revenue. Since each case of misclassification is unique in itself, it becomes difficult to quantify evasion due to these factors at the macro level; and

(vii) Lastly, some important revenue-yielding products are manufactured by a few manufacturers. For example, there is only one manufacturer of HDPE and polypropylene, only two for polystyrene, while for LDPE, there are three and these three products account for a sizeable portion of the revenue from the industry. Investigation regarding evasion in such cases has to be undertaken at the micro-level, especially when two or three concerns manufacturing the same product are using different materials for production. In the case of LDPE, out of three factories, two are napha-based and the third alcohol-based. Given this background, a macro-level study of evasion cannot possibly make much headway in detecting evasion.

However, a rough estimate of the magnitude of evasion was attempted on the basis of alternative assumptions. The findings may be summed up as follows:

a. Evasion through under-reporting. No estimate was possible of the extent of evasion through under-reporting of production of plastic materials which are taxable under 15A (1) because of severe data problems.

So far as articles dutiable under item 15A (2) are concerned, the quantum of evasion may be about 5 per cent of the potential in the case of rigid PVC. The percentage may be higher in the case of flexible items. Due to the heterogenous nature of non-PVC items, it is difficult to apply the potential production approach to estimate evasion with the with the present state of statistical data.

As for products dutiable under item 15A (3), the utilisation of raw materials per unit of production of polyurethane foam did not show significant variation as between factories. In the case of articles of polyurethane foam, no comparison between the estimated potential and the actual production could be attempted as the actual production figure of the articles of polyurethane foam is reported in heterogeneous units.

b. Evasion through misclassification. Ambiguity in the definition of the tariff item facilitates evasion through misclassification. In 1981-82, two factories evaded duty to the

tune of Rs 63 lakh by paying duty on phenol formaldehyde moulding powder manufactured by them at the lower rate applicable to phenolic resin. Again, a sizeable amount of duty appears to have been evaded by taking advantage of imprecision in the criterion of flexibility applied in the case of non-PVC rigid articles. The evasion could be contained if the American Standard of flexibility was applied.

In several cases there have been disputes regarding the tariff head under which a given plastic product ought to be taxed. The recent formulation of the definition of articles dutiable under 15A (2) has imparted some precision to the tariff head and considerably reduced the scope of avoidance and disputes. Moreover, the introduction of a uniform duty rate of 30 per cent *ad valorem* on all the three products dutiable under the head, *viz.*, rigid PVC articles, flexible PVC articles and rigid articles made out of non-PVC material has also served to minimise the scope for evasion through misclassification.

c. Evasion through undervaluation. Very high rates of duty on some items create an impetus among manufacturers for undervaluing their products and thereby to evade duty. Prices for valuation purposes for phenolic resin were unduly low in the case of certain manufacturers, giving rise to suspicion of evasion. Likewise, the price of LDPE films for one manufacturer was abnormally low, bearing, *prima facie* evidence of evasion. Again, wide differences in the assessable value of LDPE produced by three manufacturers appear to be somewhat intriguing and call for some deeper probe than was possible to undertake for this study.

d. Evasion through abuse of concessions to the small-scale sector. The actual resource cost of concession to small units is in all probability substantially higher than estimated. The concession provides scope for evasion by splitting up units which would otherwise have clearances above the critical limit. It is difficult to make any precise estimate of evasion through the device of splitting up units but large gaps are noticeable in the data regarding the value of clearances as reported by the Excise Department and the production data

thrown up by the ASI. The reasons for such wide variation are not very clear. Part of the variation can perhaps be attributed to evasion by small units.

4

Conclusions and Recommendations

OUR study of revenue from excise duty on plastics, which was undertaken primarily from the angle of evasion, showed that the revenue has steadily grown over the years. Between 1970-71 and 1982-83, excise revenue from plastics grew at the compound rate of 15.6 per cent per annum. The revenue growth has beeen much faster than the growth in the production of some of the basic plastic materials, *viz.*, thermosets and thermoplastics. The production of thermosets increased during this period in terms of quantity at the rate of 1.3 per cent (from 6183 tonnes to 8166 tonnes) and that of thermoplastics at the rate 6.9 per cent (from 95987 tonnes to 21, 7, 096 tonnes). Consumption of thermosets has also increased but only at the rate of 1.7 per cent while that of thermoplastics increased at the rate of 11.1 per cent per annum. Thus, judging by the growth of production, the revenue growth does not appear to be inadequate.

However, there was a sharp rise in the price of plastic materials during the seventies, reflecting the escalation in prices of petroleum-based materials, The price of LDPE increased from Rs 5,130 per tonne in 1971 to about Rs 22,000 per tonne in 1982, registering an increase of about 14 per cent per annum. The prices of other plastic materials, HDPE and PVC, have also increased significantly at rates varying between 12 and 14 per cent per annum. Viewed against the

background of price increase of this order and increase in production and consumption noted above, the growth of revenue from plastics does not seem to have been commensurate with the value of the products consumed in the economy. There were no significant changes in the structure of duty during this period. Some relief was given in the form of set-off for duty paid at the earlier stages, but, on the whole, the nominal incidence remained more or less the same during the seventies. The rate of duty on certain resins and powders was reduced only in 1982. One would, therefore, have expected a faster growth of revenue from the item than is actually observed. *Prime facie*, it would thus appear that revenue from plastics has not kept pace with the increase in the volume of production and prices although the duty is levied at *ad valorem* rates.

It would, however, not be appropriate to conclude that the apparent lack of elasticity in the revenue from plastics was caused only or even mainly by evasion. For, firstly, even though the rate of duty did not undergo much change during the period, the effective coverage of the item 15A varied from time to time because of the operation of the concessions granted through notifications, the exact impact of which cannot be easily determined. Secondly, for a heterogeneous item like plastics, in examining whether revenue has kept pace with production and prices one should proced item by item, that is, compare the figures of production and prices with the revenue from and clearances of each item individually. This was not possible because of paucity of data. Moreover, the bulk of the duty is collected from materials used for manufacturing plastics and these materials are produced mainly by a few large producers, some of whom are in the public sector. Plastic products except a few specified ones are exempt from duty. Nevertheless, the possibility of evasion of sizeable revenue cannot be ruled out especially in view of the fact that the total revenue from the item has not grown commensurately with the increase in the production and prices of plastic materials. The number of producers in the case of some item like resins and films is also large and this gives rise to the possibility of evasion. Hence,

it is necessary to exercise vigilance and to explore ways in which the scope for evasion can be reduced. The possible lines on which measures could be taken towards this end are briefly indicated below.

a. Measures for reducing under-reporting. The most profitable method of evading taxes is under-reporting of production. This not only helps to evade excise duty but also other taxes like sales tax and income tax. It is widely believed that the practics of under-reporting production is quite common in many industries.

Whether and, if so, to what extent under-reporting is resorted to in plastics is difficult to specify with any degree of precision at the aggregate level because of the heterogeneous character of the industry and the alternatives available in the matter of choice material out of which the products can be manufactured. Hence, relating inputs to the production of the final product by using any conversion norm becomes difficult at the aggregative level. Even so, since under-reporting of production presupposes concealment of information on consumption of inputs, an effective way of checking evasion is to monitor the input and output figures both in the aggregate as well as at the factory level at least for the major items. In order to minimise the possibility of under-reporting, it is necessary to devise a method of relating inputs to output for the main plastic products. In the case of major plastic materials like polyethylene, polypropylene and PVC, it should not be difficult to exercise a check in this way since both the products of these items as well as suppliers of raw materials are limited in number' Examination of the correlation of the entries in the raw materials register of the producers with corresponding entries of suppliers should help to check leakage. However, this can be done only at the factory level. In the case of plastic products like sheets, films and sheeting also, the suppliers of materials are not very large in number and hence it should be possible to check whether the supplies are duly accounted for by the producers.

Once some effective control is exercised on the input of raw material, the next step is to correlate production to the utilisation of the raw materials. It appears that data on raw

materials are collected at the field level but these are not compiled centrally. It is suggested that the information available from the raw material returns should be compiled by the Excise Department centrally and an attempt should be made to correlate the inputs with the production figures on the basis of information compiled from the RT 12 returns. It would facilitate such comparison if a separate return was obtained annually from producers giving details of their production according to the prevailing trade nomenclature. Norms of conversion ratios of inputs into outputs may then be worked out in consultation with the industry so that any significant deviation from the norms could be identified for possible leakage.

The problem, however, is not simple in the case of polyurethane foam. The raw materials for this commodity are mostly imported from other countries on OGL. Unless the import figures of these raw materials are compiled separately at the ports or by the DGCI & S and made available to some centralised agencies, it may not be possible to check whether the imports are duly accounted for by consumption of manufacturers of foam and foam products. Hence it is suggested that for these items some contralised agency should be made responsible for correlating imports to receipts by the factories, and for monitoring output figures in order to see that the total production is commensurate with the input consumption.

Another common source of leakage of revenue is underreporting of production by taking undue advantage of the exemption granted to small units. As will be seen from the discussion on the structure of duty on plastics in Chapter 2, the bulk of the revenue from plastics comes from sub-item-15A (1). The major part of the production of items falling under 15A(1) takes place in the large factories. While there are a number of small units producing resins of various kinds, these are mostly for their own captive consumption. In any case, small units producing materials taxable under 15A (1) have been exempted from duty liability subject to the specified limits of clearances. The possibility of evasion through the misuse of this exemption cannot be ruled out but the magnitude is unlikely to be very large. It is, however, noticed that

in the past changes have often been made in the exemption limit for small units as well as in the eligibility criteria. Too frequent changes in the law create problems in enforcement and should, as far as possible, be avoided.

Items dutiable under item 15A (2) are also produced in the small sector. But here again, the bulk of the production comes from relatively large units. In any case, plastic products except films, sheets, sheeting, boards and lay-flat tubing are now exempt from duty. The items which are taxed are generally produced in the big and medium-size factories. Exemption is given to small-scale units with reference to the size of investment in plant and machinery. This can no doubt provide scope for evasion by splitting up medium-size units. However, the possibility of evasion on large scale by misusing this concession may not be very high.

b. *Measures for reducing misclassification.* A widely practised method of evading duty on commodities which are taxed selectively or at varying rates for different products of the same industry or for essentially similar products, is misclassification. Misclassification has been a source of revenue leakage in plastics too, though the extent is difficult to specify. The scope for misclassification of duty payable under 15A (1) arises from differential treatment of apparently similar products, *viz.*, maleic resins, alkyd resins and phenolic resins. Earlier, only alkyd resins were exempt while the other two bore duty at rates varying between 15 and 20 per cent. The three resins look alike. Hence, there was scope for misclassification. At present, maleic resins have also been exempt from duty but phenolic resins are subject to tax at the rate of 20 per cent. The scope for misclassification has thus been reduced so far as alkyd and maleic resins are concerned but classification between these two resins on the one hand and phenolic resins on the other can give rise to evasion.

Further, two different rates have been prescribed for formaldehyde resin and moulding powder on the one hand and phenolic, on the other. This can also create confusion. The confusion can be removed either by prescribing the same rate of duty for all the three or by defining phenolic resin as excluding formaldehyde resin. It is also suggested that lower

rates should be prescribed for blends of alkyd including fumeric resin, phenolic resin and terpene phenolic resin, as in the absence of such rates these resins become liable to the rate of 40 per cent *ad-valorem*, thus encouraging evasion and litigation.

As for misclassification under 15A (2), classification disputes were many when the coverage of this sub-item was wide. With restricted coverage of the item as contemplated now, the chances of misclassification have been reduced. Still, there are areas where ambiguity remains and misclassification can be used as a device for evading duty.

So far as plastic products are concerned, the general exemption is based on a classification of PVC and non-PVC products and on whether they are rigid or flexible. PVC products are all taxable while non-PVC items are taxable only if they are rigid. As noted earlier, the criterion of rigidity applied in practice led to some problems as the industry sometimes classifies products which are rigid by the standard contemplated in the excise laws, as semirigid and thus flexible. However, the problem seems to have eased somewhat as films of thickness of not more than 0.25 mm. have now been exempted from duty. But the criterion used earlier in terms of modulus of elasticity still remains. Although films of thickness greater than 0.25 mm. are mostly rigid, the possibility of misclassification and disputes remains. Hence, it might be helpful if the criterion in terms of elasticity is withdrawn and both flexible and rigid items of non-PVC items made taxable.

It is to be noted, however, that in the case of PVC films, it appears that there has been a decline in the production by calendering units since 1977. PVC films can be produced by calendering or by extrusion. PVC films of more than 0.25 mm. thickness are now exempt from duty if produced by the extrusion process in a small-scale unit. The decline in the production of films manufactured through calendering might be the result of some diversion in production from calendering to extrusion or plain evasion. The rate of excise duty on calendered PVC films is 31.5 per cent. As Tariff item 15A is covered by Rule 56A procedure, the excise duty paid on the resin is adjusted, but still there is a

price advantage of approximately 20 per cent in the small units since no excise duty is payable on films extruded in small units. It is learnt that there has been a substantial growth of extruder units in the small-scale sector. The exemption for small units manufacturing PVC films through extrusion needs to be reviewed.

c. *Undervaluation.* Where the tax is *ad valorem,* valuation proves an intractable problem and, as is well-known, undervaluation is widely resorted to in evading the tax. In plastics too undervaluation is reported to be fairly common but a solution to the problem is not easy to find. For, prices can vary substantially simply because of variations in quality, and deliberate undervaluation is difficult to establish with evidence. In polyethylene, for instance, in September, 1982, the average value inclusive of duty varied from Rs 14,230 to Rs 18,326 per tonne whereas the market price (wholesale) varied from Rs 18,250 to Rs 21,700 per tonne. Similarly, in PVC, the assessable values ranged from Rs 12,011 per tonne to Rs 13,452 per tonne while market prices varied from Rs17,000 to Rs 22,550 per tonne. Whether the gap is due to undervaluation cannot be stated with certainty without looking at the quality of the product of each factory.

Under the excise law, value has been defined as the normal price, i.e., the price at which goods are ordinarily sold by the assessee to a buyer in the course of wholesale trade for delivery at the time and place of removal, where the buyer is not a related person and the price is the sole consideration for the sale. The concept though apparently simple has led to a lot of litigation. The onus of proving sale to a related person rests with the assessing authority and this is not easy to discharge. Hence many cases of undervaluation have gone undetected because of lack of adequate evidence. The courts also have been somewhat liberal in absolving the assessees of the charge of undervaluation where clear-cut proof of the sale to the related person could not be established. Although no conclusive evidence is available, as noted in Chapter 3, there are indications that undervaluation is resorted to in plastics to minimise the incidence of duty. Hence it is necessary to consider whether alternative modes of assessment

such as taxation through a specific levy can be used to stop leakage of revenue through undervaluation.

Ad valorem assessment has many advantages in that with every increase in price, revenue automatically goes up. Being proportional to value, *ad valorem* taxation also helps to mitigate the regressive nature of a commodity tax. However, *ad valorem* levies create scope for evasion through manipulation of value.

Leakage of revenue through undervaluation can be checked to some extent and at the same time the merit of *ad valorem* can be partly retained if *ad valorem* assessments are replaced by *ad valorem*-cum-specific rates of tax. As the Tariff item for plastics compriscs a number of heterogeneous goods, each with its own specific characteristics, it should be possible to prescribe *ad valorem*-cum-specific rates in a number of cases. The share of specific and *ad valorem* components could be decided in the light of factors like the price of the goods, the current rate of duty and the extent of leakage apprehended.

Under the Central excise law, each manufacturer of excisable goods is supposed to submit a classification list enumerating the excisable items produced by him and also show the rate at which they are assessable. In the case of commodities assessable *ad valorem*, the assessee is in addition required to submit a valuation list indicating the assessable value of each item manufactured by him. He is supposed to submit a fresh classification and valuation list whenever there is any change. For standardised goods, valuation of various manufacturers could be compared centrally and in case wide variations are noticed, inquiries could be instituted. However, such comparison may not be possible in the case of non-standardised goods.

Comparison of ex-factory, wholesale and retail prices of goods on a continuing basis could also be helpful in detecting cases of undervaluation. A wide variation between ex-factory and wholesale prices without any apparent reason should lead to investigation to find out whether the sales were genuine. This however calls for continuous monitoring of prices and assessable values.

d. *Other methods*. While discussing the tax structure of the duty on 'resins and materials' it was noted that Explanation III of the tariff item is not adequate to clear doubts about the nature of certain plastics like aqueous solution of resins and attention was drawn to the Delhi High Court judgement where aqueous solution of resin was declared as not artificial or synthetic resin in liquid form. From the wording of the Explanation, it appears that the intention is to include such solution in the tax base, although because of the ambiguity the intended result may not be achieved in all cases. In view of this, it is suggested that the word 'materials' in Explanation III should be substituted by 'resins and materials' or simply 'goods'. A similar change should also be made in the heading of sub-item 15A(2) as well. The world 'materials' presumably has been used in the generic sense in the explanation but the use of the same term in the specific sense in the heading of Tariff Item 15A may cause problems.

While investigating the extent of evasion in plastics, we made some observations about the weaknesses of the data base. The following suggestions are offered for strengthening the information system to facilitate investigation of evasion:

(i) Value of clearances wherever possible should be exhibited in the annual reports, i.e., year books;

(ii) Manufacturers may be requested to report quantity figures in a given unit to be prescribed by the Central authority for this purpose;

(iii) Detailed statistics of production according to the trade nomenclature should be collected and compiled annually. The nomenclature should, as far as possible, correspond to that used for collection of statistics through the Annual Survey of Industries and for the small-scale sector;

(iv) Returns pertaining to utilisation of raw materials should be compiled centrally at least once a year;

(v) Intermingling of the data should be avoided by prescribing suitable procedure for reporting, compilation, etc. under appropriate commodity classification.

Appendix I

Description of Central Excise Tariff Item 15(A) Artificial or Synthetic Resins and Plastic Materials and other Specified Materials and Articles from the levy of duty to date

1. *From 1.3.1961*

15 A — Plastics, All Sorts, Namely

(i) Moulding powders, granules and flakes (thermosetting and thermoplastics)

(ii) Polyethylene films, lay flat tubings and PVC sheets (that is to say polyvinyl chloride sheets).

2. *From 2.4.1962*

15 A — Plastics, all sorts

(i) Moulding powders, granules and flakes (thermosetting and thermoplastics)

(ii) Polyethylene films, lay flat tubings and PVC sheets (that is to say, polyvinyl chloride sheets)

(iii) Not otherwise specified.

3. *From 1.3.1964*

15 A — Artificial or synthetic resins and plastic materials, and articles thereof

(1) Artificial or synthetic resins and plastic materials in any form, whether solid, liquid or pasty, or as powder, granules or flakes, or in the form of moulding powders, the following, namely;

(i) Condensation, polycondensation and polyaddition products, whether or not modified or polymerised, including phenoplasts, aminoplasts, alkyds, polyurethane, polyallyl esters and other Unsaturated polyesters;

(ii) Polymerisation and copolymerisation products including polyethylene and polyterahaloethylene, polyisobutylene, polystyrene, polyvinyl chloride, polyvinyl acetate, polyvinyl chloroacetate and

other polyvinyl derivatives, polyamides, polyacrylic and polymethacrylic derivatives and coumarone-indene resins; and

(iii) Cellulose acetate (including di- or triacetate), cellulose acetate butyrate and cellulose propionate, cellulose acetate propionate, ethyl cellulose and benzyl cellulose, whether plasticised or not, and plasticised cellulose nitrate.

(2) Articles made of plastics, all sorts, including tubes, rods, sheets, foils, sticks, other rectangular or profile shapes, whether laminated or not, and whether rigid or flexible, including lay flat tubings and polyvinyl chloride sheets.

Explanation: For the purpose of sub-item (2), 'Plastics' means the various artificial or synthetic resins or plastic material included in sub-item (1).

4. *From 17.6.1977*

15A—Artificial or synthetic resins and plastic materials and cellulose esters and ethers, and articles thereof;

(1) The following artificial or synthetic resins and plastic materials, and cellulose esters and ethers, in any form, whether solid, liquid or pasty, or as powder, granules or flakes or in the form of moulding powders, namely:

(i) Condensation, polycondensation and polyaddition products, whether or not modified or polymerised; and whether or not linear such as phenoplasts, aminoplasts, alkyds, polyamides, super polyamides, polyesters, poly allyl esters, polycarbonates, polyethers, polyethyleneimines, polyurethanes, epoxide resins and Silicones;

(ii) Polymerisation and copolymerisation products such as polyethylene, polytetrahaloethylenes, polyisobutylene polystyrene, polyvinyl chloride, polyvinyl acetate, polyviny chloroacetate and other polyvinyl derivatives, polyacrylic and polymethacrylic derivatives and coumarone-indene resins; and

(iii) Cellulose acetate (including cellulose diacetate or cellulose triacetate), cellulose acetate butyrate and cellulose propionate, cellulose acetate propionate, ethylcellulose and Benzyl cellulose, whether plasticised or not, and plasticised cellulose nitrate.

(2) Articles, made of plastics, all sorts, including tubes, rods, sheets, foils, strips, other rectangular or profile shapes, whether laminated or not, and whether rigid or flexible, including lay flat tubings, and polyvinyl chloride sheets, not otherwise specfied.

(3) Polyurethane foam

(4) Articles made of Polyurethane foam

Explanation: For the purpose of sub-item (2) "Plastics" means the various artificial or synthetic resins or plastic materials or cellulose esters and ethers included in sub-item (1).

5. *From 1.3.1979*

The same as from 18.6 1977 except the explanation was numbered as explanation I and after that explanation as so numbered, the following explanation inserted, namely, "Explanation II—This item does not include electrical insulators or electrical insulating fittings or parts of such insulators or insulating fittings."

6. *From 1.3.1981*

The same as earlier, except that for Explanation II, the following explanation II was substituted.

Explanation II: This item does not include

(a) Polyester films; and

(b) Electrical insulators or electrical insulating fittings or parts of such insulators or insulating fittings.

N.B. From the same date Polyester films was formed a separate tariff item 15BB.

7. *From 28.2.1982*

15A—Artificial or synthetic resins and plastic materials,

and other materials and articles specified below:

(1) Condensation, polycondensation and polyaddition products, whether or not modified or polymerised, and whether or not linear (for example, pheno-plasts, amino-plasts, alkyds, polyallyl esters and other unsaturated polyesters, silicones); Polymerisation and copolymerisation products (for example, polyethylene, polytetrahaloethylenes, polyisobutylene, polystyrene, polyvinyl chloride, polyvinyl acetate, polyvinyl chloroacetate, and other polyvinyl derivatives, polyacrylic and polymethacrylic derivatives, coumaroneindene resins); regenerated cellulose; cellulose nitrate, cellulose acetate and other cellulose esters, cellulose ethers and other chemical derivatives of cellulose, plasticised or not (for example, collodions, celluloid); vulcanised fibre; hardened protein (for example, hardened casein and hardened gelatin); natural resins modified by fusion (run gums); artificial resins obtained by esterification of natural resins or of resinic acids (ester gums); chemical derivatives of natural rubber (for example, chlorinated rubber, rubber hydrochloride, oxidised rubber, cyclised rubber); other high polymers, artificial resins and artificial plastic materials, including alginic acid, its salts and esters; linoxyn.

(2) Articles of materials described in sub-item (1), the following namely:

Boards, sheeting, sheets and films whether lacquered or metallised or laminated or not; lay flat tubings not containing any textile material.

(3) Polyurethane foam

(4) Articles made of polyurethane foam.

Explanation I: Sub-item (1) does not include:

(i) Polyurethane foam;

(ii) Artificial waxes; and

(iii) Starches (including dextrin and other forms of modified starches).

Explanation II: In sub-item (1) "condensation, polycondensation, polyaddition, polymerisation and co-

polymerisation products" are to be taken to apply only to goods of any kind produced by chemical synthesis answering to one of the following descriptions:

(a) artificial plastics, including artificial resins;

(b) silicones; and

(c) resols, liquid polyisobutylene, and similar artificial polycondensation or polymerisation products."

Explanation III: Sub-item (1) is to be taken to apply to materials in the following forms only:

(a) liquid or pasty (including emulsions, dispersions and solutions);

(b) blocks, lumps, powders (including moulding powders), granules, flakes and similar bulk forms; and

(c) waste and scrap.

Appendix II

Rates of Excise Duty under 15A—Artificial or Synthetic Resins and Plastic Materials and other specified Materials and Articles

A. **Resins and Materials**

(Effective rate of excise duty in %)

Sl. No.	period	Basic (adv.)	Special (adv.)	Auxiliary (adv.)	Total (adv.)
	(1)	(2)	(3)	(4)	(5)
1.	1.3.61 to 28.2 63	20	—	—	20
2.	1.3.63 to 25.5.67	20	4	—	24
3.	26.5.67 to 16.3.72	30	6	—	36
4.	17.3.72 to 28.2.74	40	—	—	40
5.	1.3.74 to 31.7.74	40	—	8	48
6.	1.8.74 to 15.3.76	40	—	16	56
7.	16.3.76 to 17.6.77	30	—	10	40
8.	18.6.77 to 28.2.78	40	—	—	40
9.	1.3.78 to 28.2.79	40	2	—	42
10.	1.3.79 to 3.12.79	40	—	—	40
11.	4.12.79 to 26.2.80	40	—	—	40
	Naphtha based				
	LDPE	27	—	—	27
	HDPE	27	—	—	27
	Polypropylene	27	—	—	27
	Polyvinyl chloride	33	—	—	33
12.	*27.2.80 to date others* (special duty applicable from 16.6.80 only)	40	2	—	42
	Polyvinyl chloride (upto 12.11.81	45	2.25	—	47.25

Contd....

(1)	(2)	(3)	(4)	(5)
From 13.11.81)	35	1.75	—	36.75
Naphtha based Polyvinyl chloride (upto 12.11.81)	33	1.65	—	34.65
P,V.C. Compound	—	—	—	—
Naphtha based *LDPE* (upto 12.11.81)	27	1.35	—	28.35
LDPE from 13.11.81 if manufactured by undertaking with annual licensed capacity less than one lakh tonne	30	1 50	—	31.50
LDPE from 28.2.82 required for use in the manufacture of laminated paper for milk packing and subject to chapter X procedure	—	—	—	—
Naphtha based HDPE (upto 26.3.81)	27	1.35	—	28.35
from 27.3.81	35	1.75	—	36.75
Naphtha based polypropylene	27	1.35	—	28.35
from 13.11.81 polypropylene	27	1.35	—	28.35
Naphtha based polystyrene upto 2.6.82	27	1.35	—	28.35
Polystyrene resins and moulding powder from 3.6.82	15	0.75	—	15.75
Naphtha based polyester resin (upto 2.6.82)	29	1.45	—	30.45
Polyester resin and moulding powder from 3.6.82	15	0.75	—	15.75
Naphtha based *acrylonitrile* Butadiene styrene (upto 2.6.82)	20	1.45	—	30.45
Acrylonitrile butadiene styrene resin including moulding powder from 3.6.82	15	0.75	—	15.75

Contd...

(1)	(2)	(3)	(4)	(5)
Naphtha based Nylon *moulding powder* (upto 2.6.82)	36	1.80	—	37.80
Nylon resins or its moulding powder from 3.6.82	15	0.75	—	15.75
Naphtha based *Phenol* formaldehyde moulding powder upto 2.6.82	30	1.50	—	31.50
Phenol formaldehyde resin and moulding powder from 3.6.82	15	0.75	—	15.75
Naphtha based *Urea* formaldehyde moulding power (upto 2.6.82)	33	1.65	—	34.65
Urea formaldehyde resin moulding powder from 3.6.82	15	0.75	—	15.75
The following goods including their moulding powders from 3.6.82				
(a) Melamine formaldehyde resins	15	0.75	—	15.75
(b) Epoxy resins	15	0.75	—	15.75
(c) Styrene acrylonitrile	15	0.75	—	15.75
(d) Polymethyl methacrylate	15	0.75	—	15.75
(e) Polyphonylene oxide	15	0.75	—	15.75
(f) Polybutyl terepthalate	15	0.75	—	15.75
(g) Polycarbonate resins	15	0.75	—	15.75
(h) Polyacetals resins	15	0.75	—	15.75
(i) Polytetrafluoresthylene	15	0.75	—	15.75
(j) Polysulphones	15	0.75	—	15.75
Vulcanised fibre from 28.2.82	8	0.40	—	8.40
from 1.3.83.	10	0.50	—	10.50
Chlorinated rubber from				

Contd...

(1)	(2)	(3)	(4)	(5)
22.4.28	10	0.50	—	10.50
Dextran from 22.4.82	10	0.50	—	10.50
Ester gum from 22.4.82	10	0.50	—	10.50
from 22.4.82 Ester gum if used in the factory of production for manufacture of good falling under Tariff item No. 14	—	—	—	—
From 22.4.82 Linoxyn when used in the manufacture of Linoleum in the factory of production	—	—	—	—
Non-plasticised cellulose nitrate from 28.2.82	8	0.40	...	8.40
From 1.3.83	10	0.50	·	10.50
From 27.6.84 polyvinyl alcohol manufactured from duty paid (excise or additional duty under Section 3 of the Customs Tariff Act 1975) Vinyl acetate monomer	10	0.50	—	10.50
From 1.3.83, diallyl phthalate resins including moulding powders) if used in the manufacture of connectors or switches, subject to following of chapter X procedure in case of use elsewhere than in the factory of production	—	—	—	—
Cellulose acctate moulding granulose from 26.12.81	10	0.50	—	10.50

Note: i. *Alkyd* resins were exempted from duty with effect from 23.9.65 and the exemption has continued since then.

ii. For *maleic* and *phenolic* resins a specific basic duty

of 80 paise per kilogramme was prescribed with effect from 23.9.65. This was changed to 10 per cent *ad valorem* for maleic resin and 15 per cent *ad valorem* for phenolic resins with effect from 1.6.71. A special excise of 20 per cent of the basic duty was also leviable on them till 16.3.72. The total effective duty remained unchanged in 1972 merger of the basic and special duties, the basic duty being stepped to 12 per cent and 18 per cent respectively. The auxiliary duty of 20 per cent of the basic duty with effect from 1.3.74 and 40 per cent of the basic duty with effect from 1.8.74 was imposed in the 1974 Budget. In 1976-77 Budget, the basic duty was reduced for the two resins to 9 per cent and 13.5 per cent respectively, and auxiliary duty changed to 1/3 of the basic duty. In 1977-78 Budget, after merger of the auxiliary duty with the basic duty, the rates on these resins were fixed at 12 per cent and 18 per cent respectively. In 1978 budget, special excise duty at the rate of 5 per cent of the basic duty was again levied with effect from 1.3.78 and the total rates became 12.60 per cent and 18.90 per cent respectively. In 1979 Budget, basic duty rates were again stepped upto 15 per cent for maleic resin and 20 per cent for phenolic resin. However, the special duty was discontinued. Special excise duty at the rate of 5 per cent of the effective basic duty was reimposed with effect from 19.6.80 at it is continued since then. With effect from 29.8.81, maleic resins including fumeric resin have been exempted from duty and phenolic resin and terpene phenolic resin have been subjected to excise duty at the rate of 20 per cent *advalorem*, in addition to the continuation of special duty. Thus, currently the total burden on phenolic resin and terpene phenolic resin is 21 per cent *ad valorem*.

iii. *Polyester polymerchips* are exempt from duty with effect from 1.3.73.

iv. *Polyamide chips* are exempt from duty with effect

from 1.3.73 if used in the manufacture of nylon yarn, subject to the following of Chapter X procedure where such use is elsewhere than in the factory of production.

v. *Cellulose acetate* is exempt from duty with effect from 1.3.73 if used in the manufacture of acetate yarn, subject to the following of Chapter X procedure where such use is elsewhere than in the factory of production.

vi. *Plastics materials* in any form reprocessed from or produced out of scrap or waste of (i) plastic materials, (ii) articles of plastics are exempt from duty with effect from 12.2.73.

vii. Artificial or synthetic resins used in the manufacture of *particle boards* are exempt from duty with effeect from 5.8.70. Notification 158/70 and 255/77.

viii Samples of goods under item 15A(1) when cleared for test purposes provided quantity of such clearances during a year not exceeding 0.03 per cent of total quantity of goods produced in the previous year and the quantity of each sample not exceeding 2 kilogramme are exempt from duty.

ix. With effect from 15.4.83, copolymers of acrylonitrile used in the factory of production for manufacture of acrylic fibre is exempt from duty.

x. With effect from 21.5.83 resorcinol formaldehyde solution (dip solution) used within factory of production for manufacture of tyre is exempt from duty.

xi. Cellulose acetate moulding compound was exempt from so much of duty of excise as is equivalent to 3 per cent *ad valorem* upto 25.12.81.

xii. Cellulose tri-acetate intended for use in the manufacture of cine-films, X-ray films or photographic films subject to following of Chapter X procedure in case of use elsewhere than in the factory of production, is exempt from duty.

xiii. In the case of artificial of synthetic resins, duty on the cost of packing of a durable nature and supplied by the buyer is exempted.

xiv. Cellulose xanthate for manufacture of cellophane or viscose filament yarn subject to following of Chapter X procedure for use elsewhere than in the factory of production, is exempt from duty.

B. Rate of Excise Duty under 15A(3) and 15A(4)

Polyurethane foam and articles made of polyurethane foam.

From 29th May, 1971, higher rates of excise duty were prescribed for these items. Rates from 29.5.71 onward are shown below.

(Effective rate of excise duty in %)

Sl. No.			Base (adv.)	Special (adv.)	Auxiliary (adv).	Total (adv.)
	(1)		(2)	(3)	(4)	(5)
1.	29 5.71	to 16.3.72	40	8	—	48
2.	17.3.72	to 28.2.74	50	—	—	50
3.	1.3.74	to 31.7.74	50	—	10	60
4.	1.8.74	to 15.3.76	50	—	20	70
5.	16.3.76	to 17.6.77	50	—	20	70
6.	18.6.77	to 28.2.78	70	—	—	70
7.	1.3.78	to 28.2.79	70	3.5	—	73.5
8.	1.3.79	to 18.6.80	75	—	—	75
9.	19.6.80	to date	75	3.75		78.75

N.B. 1. Excise duty on rigid polyurethane foam is 15.75 per cent *ad valorem* including special excise duty with effect from 9.6.82.

2(a) The following articles made of polyurethane foam are excisable

1. Sheets and sheeting
2. Mattresses and the like
3. Quilts and the like

4. Pillows
5. Cushions
6. Mats

in any shape or size.

(b) Other articles made of polyurethane foam are exempt from duty if produced out of duty-paid polyurethane foam on which the duty of excise or the additional duty under Section 2A of the Indian Tariff Act, 1934 (32 of 1934), as the case may be, has already been paid.

C. Rates of Excise Duty on Articles Sariff Sub-item 15A(2)

1. *Cellophane*

from 1.3.61	to 28.2.63	20% *ad valorem*
grom 1.3.63	to 19.2.64	24% *ad v.* including special duty
from 1.3.64	to 28.2.78	20% *ad v.*
from 1.3.78	to 28.2.79	21%*ad v.* including special duty
from 1.3.79	to 18.6.80	20% *ad v.*
from 19.6.80	to date	21% *ad v.* including special duty

N. B. Metallised cellophane is exempt from duty with effect from 9.7.66 if proved to the satisfaction of the proper officer that excise duty or additional duty under Section 2A of the Indian Tariff Act, 1934 in respect of plain cellophane used as base material has already been paid.

2. *Polyester films*—from 1.3.81 to date rate of duty is 31.5% adv.

Prior to 1 3.81, it was part of 15(A); from 1.3.81 to 26.2.82, it was separate item 15BB; from 27.2 82, again part of 15(A).

3. *Others (current rates only):*

i. Articles of non-plastic materials if produced out of duty-paid (excise or additional duty under Section 3 of Cus-

toms Tariff Act, 1975) goods falling under sub-item 15(A) (1) are exempt from duty.

ii. Articles made of plastics, all sorts other than (a) films or sheets of regenerated cellulose, (b) rigid plastic boards, sheeting, sheets and films; (c) flexible polyvinyl chloride sheets, sheeting, films and lay flat tubings not containing any textile material are exempt from duty if produced out of (i) duty paid (excise or additional duty under Section 3 of the Customs Tariff Act, 1975) artificial resins or plastic materials or cellulose esters and ether: (ii) Scrap of plasttcs.

iii. Rigid plastic boards, sheeting, sheets and films, whether lacquered or metallised or laminated or not; and flexible polyvinyl sheeting, sheets, films, whether lacquered or metallised, laminated or not and lay flat tubings, not containing any textile material are leviable to duty at the rate of 3.15 per cent adv. inclusive of special excise duty. However, rigid PVC boards, sheeting sheets and films, whether lacquered or metallised or laminated or not are exempt from duty, (excise or countervailing customs) already paid on cellophane, paper, cotton fabrics, adhesives, coated copper foils or plain copper foils, used in the manufacture of the former). Similarly, rigid plastic boards, sheeting, sheets and films, whether lacquered or metallised or laminated or not, other than manufactured from PVC are exempt from duty (excise orc ountervailing customs) already paid on cellophane, paper or cotton fabrics used in the manufacture of the former. In both above cases, exemption is admissible if procedure set out in Rule 56 A is allowed.

iv. Films or sheets upto and including thickness of 0.25mm other than those manufactured from polyvinyl chloride and if produced out of duty-paid (excise and countervailing customs) artificial resins or plastic materials or cellulose esters and ethers in any form are exempt from duty.

v. PVC films of thickness below 0.25mm and lay flat tubings produced by extrusion process, by an industrial unit

with capital investment on plant and machinery only, installed therein, as on date or dates of initial installation of plant and machinery being not more than Rs 20 lakhs are exempt from excise duty.

vi. Flexible PVC sheeting, sheets and films not containing any textile material used within the factory of production in the manufacture of textile fabrics impregnated or coated with preparations of cellulose derivatives or of other artificial plastic materials are exempt from duty.

vii. Cellulose triacetate, and cellulose tri-acetate films when intended for use in the manufacture of cine-films, X-ray films or photographic films, subject to the following of Chapter X procedure for use elsewhere than in the factory of production are exempt from duty.

viii. Acrylic sheets and acrylic plastic bangle tubes if produced of any of the following materials or combination thereof, namely; (a) Duty paid (excise or countervailing customs) artificial resins or plastic materials in any form; and/or (b) Scrap of plastics; and/or (c) methylmethacrylate monomer, are exempt from duty.