सत्यमेव जयते

ANNUAL REPORT

2017-18

स्वच्छ भारत
एक कदम स्वच्छता की ओर

Skill India
कौशल भारत - कुशल भारत

MAKE IN INDIA

Government of India
Ministry of Chemicals and Fertilizers
Department of Chemicals and Petrochemicals
New Delhi
Website: www.chemicals.nic.in

CONTENTS

ANNEXURES

Chapter - 1

INTRODUCTION

1.1 Department of Chemicals and Petrochemicals (DCPC) aims:

i. To formulate and implement policy and programmes for achieving growth and development of the chemical and petrochemical sectors in the country; and

ii. To foster the spirit of public-private partnership for overall development of above mentioned sectors of the industry.

1.2 The Department has the mandate to deal with the following broad subject matters:

i. Insecticides excluding the administration of The Insecticides Act, 1968 (46 of 1968);

ii. Molasses;

iii. Alcohol - Industrial and Potable from the molasses route;

iv. Dye-stuffs and Dye-Intermediates;

v. All organic and inorganic chemicals, not specifically allotted to any other Ministry or Department;

vi. Planning, development and assistance to all industries dealt with by the Department;

vii. Bhopal Gas Leak Disaster-Special Laws relating thereto;

viii. Petrochemicals;

ix. Industries relating to production of non-cellulosic synthetic fibers (Nylon Polyesters, Acrylic etc.);

x. Synthetic Rubber; and

xi. Plastics including fabrication of plastic and moulded goods.

1.3 The Department has five major Divisions viz. Chemicals, Petrochemicals, Administration, Statistics & Monitoring (S&M) and Economic Division. The Internal Finance Division is common to the three Departments in the Ministry of Chemicals and Fertilizers. There are three Central Public Sector Undertakings (CPSU) in the chemical sector namely Hindustan Organic Chemicals Ltd. (HOCL), Hindustan Insecticides Ltd. (HIL) and Hindustan Fluorocarbons Limited (HFL), which is a subsidiary of HOCL and one CPSU in the petrochemical sector viz., Brahmaputra Cracker and Polymer Ltd. (BCPL). The autonomous institutes under this Department are Central Institute of Plastics Engineering & Technology (CIPET) and Institute of Pesticides Formulation Technology (IPFT).

1.4 Shri Ananth Kumar is the Minister of Chemicals and Fertilizers. Shri Rao Inderjit Singh is the Minister of State for Chemicals and Petrochemicals. Shri Anuj Kumar Bishnoi superannuated as Secretary on 31.05.2017. Shri Rajeev Kapoor assumed charge as Secretary in the Department on 23.06.2017.

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Chapter - 2

AN OVERVIEW OF CHEMICAL AND PETROCHEMICAL INDUSTRY

Chemical and Petrochemical Industry:

2.1 The chemical industry is a knowledge intensive as well as capital intensive industry. It is an integral constituent of the growing Indian Industry. It includes basic chemicals and its products, petrochemicals, fertilizers, pesticides, paints, varnishes, gases, soaps, perfumes and toiletry and pharmaceuticals. The diversification within the chemical industry is large and covers more than eighty thousand commercial products. This Industry occupies a pivotal position in meeting basic needs and improving quality of life. The industry is the main stay of industrial and agricultural development of the country and provides building blocks for several downstream industries, such as textiles, papers, paints, varnishes, soaps, detergents, pharmaceuticals, etc.

2.2 As per National Industrial Classification (NIC) 2008, Chemical & Chemical products are covered under the industry division 20. The description of product groups at 4-digit level under this division is given below:

Table I: Description of Product Groups

Class	Description
2011	Manufacture of basic chemicals
2012	Manufacture of fertilizers and nitrogen compounds
2013	Manufacture of plastics and synthetic rubber in primary forms
2021	Manufacture of pesticides and other agrochemical products
2022	Manufacture of paints, varnishes and similar coatings, printing ink and mastics
2023	Manufacture of soap and detergents, cleaning and polishing preparations, perfumes and toilet preparations
2029	Manufacture of other chemical products n.e.c.
2030	Manufacture of man-made fibres

The industry division 24 of NIC 2004 is equivalent of industry division 20 (manufacture of chemical & chemical products), 21(manufacture of pharmaceuticals, medicinal chemicals and botanical products) and 268 (manufacture of magnetic and optical media) of NIC 2008.

2.3 According to National Accounts Statistics 2017, brought out by the Central Statistics Office (CSO), chemical and chemical products sector (industry division

20 and 21 of NIC 2008) accounted for 2.39% of the GVA (at 2011-12 prices) in 2015-16, compared to 2.23% in 2014-15. The share of this sector in the GVA of manufacturing sector at 2011-12 prices was 13.38% during 2015-16 as compared to 12.82% in 2014-15. The average Indices of Industrial Production (IIP) for the Chemicals and Chemicals product (Industry Division 20: NIC 2008) for the year 2016-17 stands at 116.5, which is 2.46% higher as compared to previous year. The size of the Indian Chemical industry (industry division 20 and 21 of NIC 2008) in terms of value of output in the year 2015-16 was Rs. 922,908 crore.

2.4 The production of Selected Major Chemicals and Petrochemicals during the years 2013-14 to 2017-18 (up to September 2017) is given in Table-II. The production of Major Chemicals and Petrochemicals in 2017-18 (up to September 2017) was 12814 thousand MT, compared to 12906 thousand MT in 2016-17 (up to September 2016) implying negative growth of 0.71%.

Table II: Production of selected major chemicals and petrochemicals

Figures in 000'MT

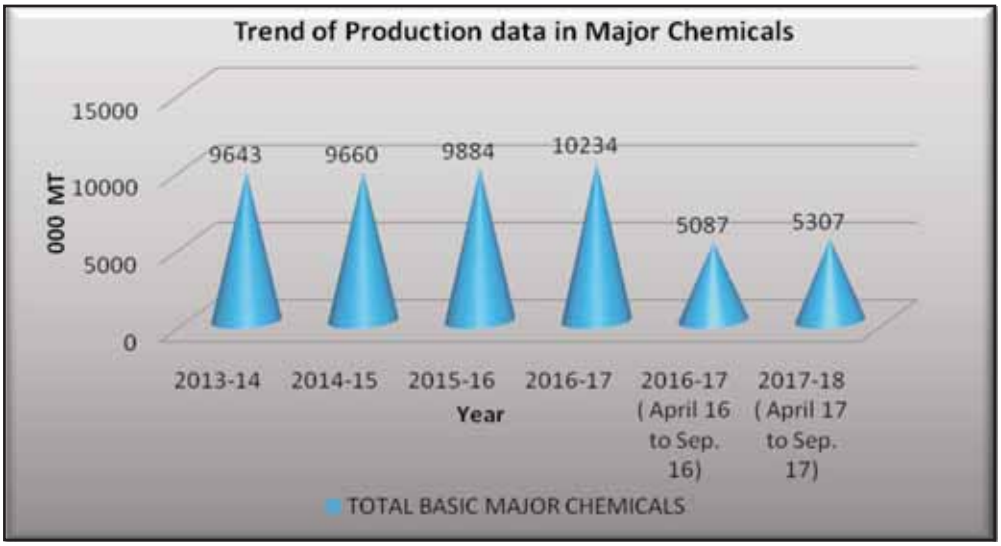
Group	Production / Growth Rate	2013-14	2014-15	2015-16	2016-17	2016-17 (April 16 to Sep. 16)	2017-18 (April 17 to Sep. 17)
Alkali Chemicals	Production	**6481**	**6625**	**6802**	**7009**	**3494**	**3682**
	Growth Rate (%)	-0.09	2.22	2.67	3.04		5.37
Inorganic Chemicals	Production	**906**	**944**	**1002**	**1053**	**530**	**520**
	Growth Rate (%)	1.70	4.18	6.08	5.13		-1.89
Organic Chemicals	Production	**1792**	**1619**	**1589**	**1638**	**790**	**821**
	Growth Rate (%)	6.28	-9.67	-1.87	3.12		3.93
Pesticides (Technical)	Production	**179**	**186**	**188**	**214**	**108**	**110**
	Growth Rate (%)	15.41	3.95	0.57	13.97		1.86
Dyes & Pigments	Production	**284**	**285**	**304**	**320**	**165**	**174**
	Growth Rate (%)	18.40	0.58	6.60	5.28		5.62
Total Major chemicals	Production	**9643**	**9660**	**9884**	**10234**	**5087**	**5307**
	Growth Rate (%)	1.94	0.18	2.32	3.54		4.32
Synthetic Fibers	Production	**3144**	**3527**	**3554**	**3595**	**1809**	**1808**
	Growth Rate (%)	0.63	12.18	0.75	1.16		-0.06
Polymers	Production	**7876**	**7558**	**8839**	**9163**	**4626**	**4349**
	Growth Rate (%)	4.88	-4.04	16.95	3.67		-5.98

Elastomers (S.Rubber)	Production	**105**	**172**	**242**	**285**	**138**	**135**
	Growth Rate (%)	8.67	64.13	40.76	17.91		-2.35
Synth. Detergent Intermediates	Production	**597**	**596**	**566**	**664**	**352**	**364**
	Growth Rate (%)	-4.82	-0.11	-5.09	17.36		3.32
Performance Plastics	Production	**1685**	**1591**	**1700**	**1799**	**894**	**854**
	Growth Rate (%)	-0.37	-5.54	6.86	5.82		-4.48
Total Basic Major Petrochemicals	Production	**13406**	**13443**	**14900**	**15506**	**7819**	**7509**
	Growth Rate (%)	2.75	0.28	10.83	4.07		-3.96
Total Major Chemicals and Basic Petrochemicals	Production	**23048**	**23103**	**24783**	**25739**	**12906**	**12816**
	Growth Rate (%)	2.41	0.24	7.27	3.86		-0.7

Note: Production is aggregated based on Monthly Production Returns from manufacturers under large and medium scale. Product- wise and Group wise details of installed capacity and production for major chemicals and major petrochemicals are given in Annexure-I & Annexure-II respectively.

Chemical Sector- Production Trends

2.5 It may be seen from Table II that the production of Alkali Chemicals accounts for around 69% of the total production of Major Chemicals. The production of Major Chemicals in 2017-18 (up to September 2017) was 5307 thousand MT, compared to 5087 thousand MT during the same period in 2016-17 (up to September 2016) implying a growth of 4.32%. The trend in the production of selected major chemicals is depicted in Chart I.



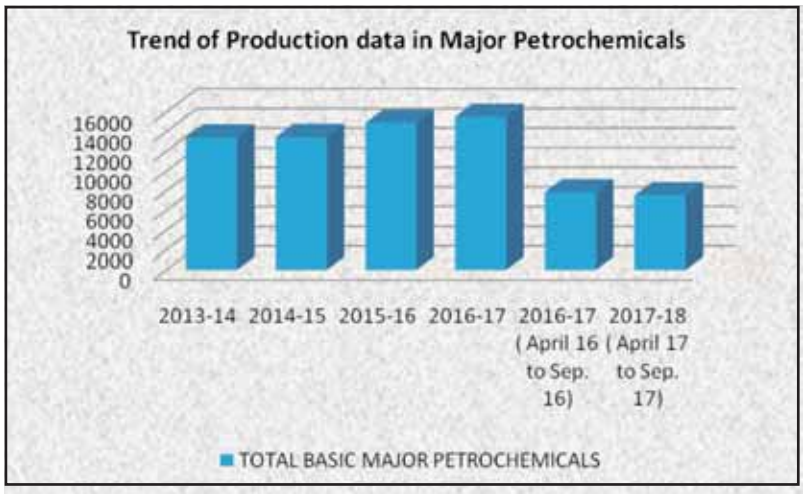
Petrochemical Sector- Production Trends

2.6 Petrochemicals, which comprise of plastic and host of other chemicals, are downstream hydrocarbons derived from crude oil and natural gas. The value

additions in the petrochemicals chain offer immense possibilities and cater to the need of textiles and clothing, agriculture, packaging, infrastructure, healthcare, furniture, automobiles, information technology, power, electronics and telecommunication, irrigation, drinking water, construction and a host of other articles of daily and specialized usage amidst other emerging areas.

2.7 There are four naphtha and four gas based cracker complexes in the country with a combined annual ethylene capacity of 4.23 million MT. There are six aromatic complexes with a combined Xylene capacity of 4.45 million MT. There is combined Propylene capacity of 4.7 million MT.

2.8 From Table II, it may be seen that the production of polymers account for around 59% of the total production of Basic Major Petrochemicals. The production of Basic Major Petrochemicals in 2017-18 (up to September 2017) was 7509



thousand MT, compared to 7819 thousand MT in 2016-17 (up to September 2016) implying negative growth of 3.96%. The trend in the production of selected major petrochemicals has been depicted in Chart II.

Index of Industrial Production

2.9 The weight of chemical and chemical products (Industry Division 20 of NIC 2008) is 7.87 out of 100 in the Index of Industrial Production (Base Year: 2011-12). The General Index for the month of September 2017 stands at 122.7, which is 3.8% higher as compared to the level in the month of September 2016. The cumulative growth for the period April-September 2017-18 over

the corresponding period of the previous year stands at 2.5%. The Index of Industrial Production for the Manufacturing sector for the month of September 2017 stands at 125.1, which is 3.39% higher as compared to the level in the month of September 2016, whereas the Index of Industrial Production for the Chemicals and Chemical products for the month of September 2017 stands at 118.5 which is 1.37% higher as compared to the level in the month of September 2016. The cumulative growth in manufacturing sector during April-September 2017-18 over the corresponding period of 2016-17 has been 1.9%. The month wise Index of Industrial production during 2016-17 and 2017-18 (up to September 2017) is depicted in Table III.

Table III: Index of Industrial Production

(Base : 2011-12=100)

Period	Chemicals and chemical products	Manufacturing	General
Weight	7.87	77.63	100.00
Apr-16	109.6	114.0	113.7
May-16	119.8	122.4	121.3
Jun-16	117.4	121.1	119.7
Jul-16	119.1	119.4	116.8
Aug-16	119.5	119.6	116.5
Sep-16	116.9	121.0	118.2
Oct-16	117.1	121.3	120.3
Nov-16	111.1	115.7	115.9
Dec-16	112.8	121.4	121.7
Jan-17	116.2	123.1	123.1
Feb-17	114.2	119.7	119.2
Mar-17	124.7	132.7	133.2
Apr-17	108.5	117.3	117.3
May-17	113.6	125.6	124.8
Jun-17	110.2	120.3	119.3
Jul-17	111.5	119.1	117.9
Aug-17	117.1	123.7	121.7
Sep-17	118.5	125.1	122.7

Source: website of Ministry of Statistics and Programme Implementation.

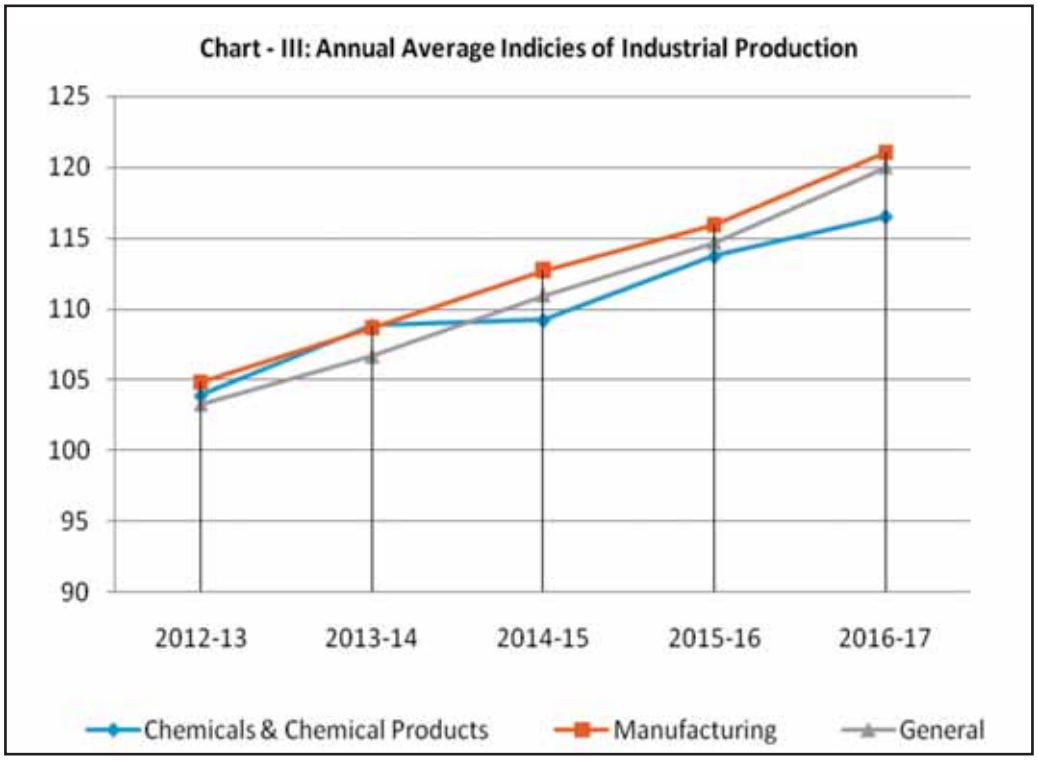
2.10 The behaviour of IIP of chemicals and chemical products vis-à-vis General IIP and IIP in respect of manufacturing from 2012-13 to 2016-17 is depicted in Table IV and Chart III.

Table IV: Annual Average (April – March) Indices of Industrial Production

(Base: 2011-12 =100)

Particulars	Weight	2012-13	2013-14	2014-15	2015-16	2016-17
Chemicals & Chemical Products	**7.87**	103.9	108.8	109.2	113.7	116.5
Manufacturing	**77.63**	104.8	108.6	112.7	115.9	121.0
General	**100.00**	103.3	106.7	111.0	114.7	120.0

Source: website of Ministry of Statistics and Programme Implementation.



Source: Ministry of Statistics and Programme Implementation. Data accessed from http://www.mospi.gov.in/time-series-indices-industrial-production-2011-12 as on 12.12.2017

Whole Sale Price Index (WPI)

2.11. The annual rate of inflation based on monthly WPI (Base Year: 2011-12) released by the Office of the Economic Advisor, for 'all commodities' stood at 2.60% for the month of September 2017 over September 2016. The index for 'Food Articles' group rose by 2.04%, for 'Manufactured Products' by 2.72

% and for 'Chemicals & Chemical products' by 0.91% during the same period. The weight of Chemicals & Chemical products in the WPI is 6.47 out of all commodities weight of 100. The month-wise Index of WPI from April 2016 to September 2017 is given in Table V.

Table V: Whole Sale Price Index

(Base Year: 2011-12 =100)

Month	All commodities	Food Articles	Manufactured Products	Chemicals & Chemical products
Weight	100.00	15.26	64.23	6.47
Apr-16	109.0	137.8	109.2	111.5
May-16	110.4	140.9	109.8	111.7
Jun-16	111.7	144.0	110.0	111.3
Jul-16	111.8	144.5	110.3	111.7
Aug-16	111.2	142.6	110.2	110.7
Sep-16	111.4	141.9	110.4	110.3
Oct-16	111.5	141.9	110.8	110.3
Nov-16	111.9	142.0	111.0	110.5
Dec-16	111.7	137.6	111.1	110.2
Jan-17	112.6	136.5	111.6	110.7
Feb-17	113.0	136.6	111.8	111.3
Mar-17	113.2	137.6	112.3	111.7
Apr-17	113.2	138.6	112.6	111.6
May-17	112.9	137.9	112.6	111.7
Jun-17	112.7	139.2	112.6	111.5
Jul-17	113.9	147.9	112.6	111.1
Aug-17	114.8	150.9	112.8	111.1
Sep-17	114.3	144.8	113.4	111.3

Source: Office of the Economic Advisor, Ministry of Commerce & Industry, Data accessed on 12.12.2017 from http://www.eaindustry.nic.in

2.12 Table VI and Chart IV below show the WPI for chemicals & chemical products vis-à-vis all commodities, food articles and manufactured products during the years 2012-13 to 2016-17.

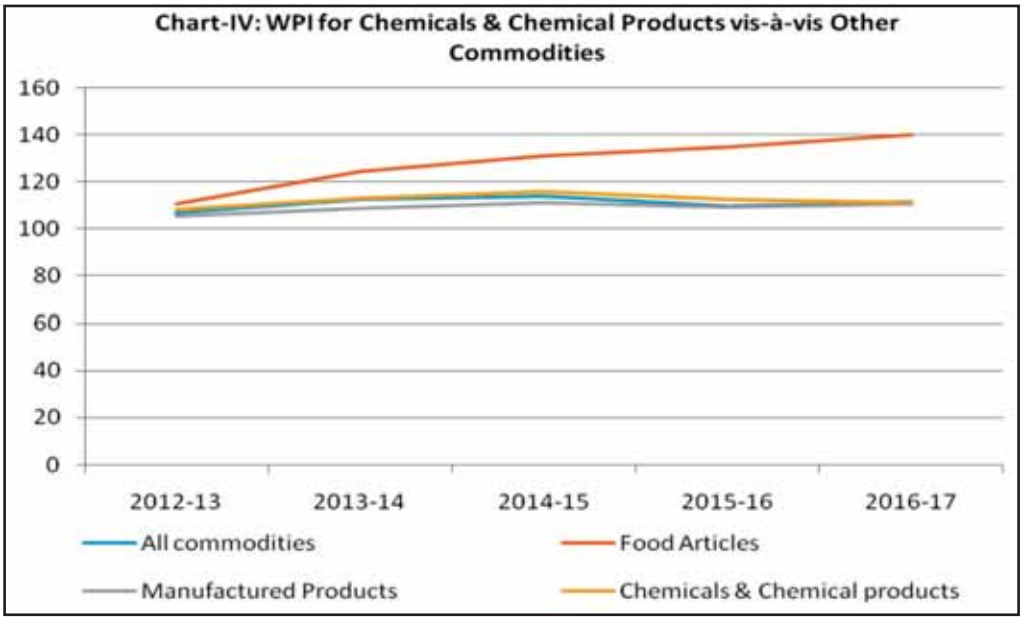
Table VI: Annual Average (April - March) Indices of Wholesale Price

(Base Year: 2011-12 = 100)

Description	Weight	2012-13	2013-14	2014-15	2015-16	2016-17
All commodities	**100**	106.9	112.5	113.9	109.7	111.6

Food Articles	15.26	110.9	124.5	131.5	134.9	140.3
Manufactured Products	64.23	105.3	108.5	111.2	109.2	110.7
Chemicals & Chemical products	6.47	108.3	113.3	116.1	112.6	111

Source: Office of the Economic Advisor, Ministry of Commerce & Industry, Data accessed on 12.12.2017 from http://www.eaindustry.nic.in



Source: Office of the Economic Advisor, Ministry of Commerce & Industry, Data accessed on 12.12.2017 from http://www.eaindustry.nic.in

2.13 Table VII shows WPI of different commodity groups within Chemicals & Chemical products group during the years 2012-13 to 2016-17.

Table VII: WPI of Chemicals & Chemical Products

(Base year: 2011-12=100)

DESCRIPTION	WEIGHT	2012-13	2013-14	2014-15	2015-16	2016-17
Chemicals and Chemical Products	6.47	108.30	113.30	116.10	112.60	111.00
Basic Chemicals	1.43	107.20	112.10	114.10	105.80	104.7
Fertilizers and Nitrogen Compounds	1.48	113.50	116.50	118.90	121.40	118.7
Plastic and synthetic rubber in primary form	1.00	108.90	118.50	124.40	115.30	113.7

Pesticides and Other Agrochemical Products	0.45	107.50	111.10	120.70	122.60	116.8
paints, Varnishes and Similar Coatings, Printing Ink and Mastics	0.49	105.50	109.70	111.90	109.80	108.5
Soap and Detergents, Cleaning and Polishing Preparations, Perfumes and Toilet Preparations	0.61	106.80	111.50	112.40	112.30	113.7
Other Chemical Products	0.69	104.80	110.70	111.80	108.40	106.5
Man-Made Fibres	0.30	102.30	105.60	100.90	93.30	94.1

Source: Office of the Economic Advisor, Ministry of Commerce & Industry, Data accessed on 12th December 2017 from http://www.eaindustry.nic.in/

INTERNATIONAL TRADE

2.14 Trends in exports and imports of Chemicals and Chemical Products (excluding Pharmaceutical Products and Fertilizers) during 2013-14 to 2017-18 (up to September 2017) are given in Table VIII and Chart V and Chart VI.

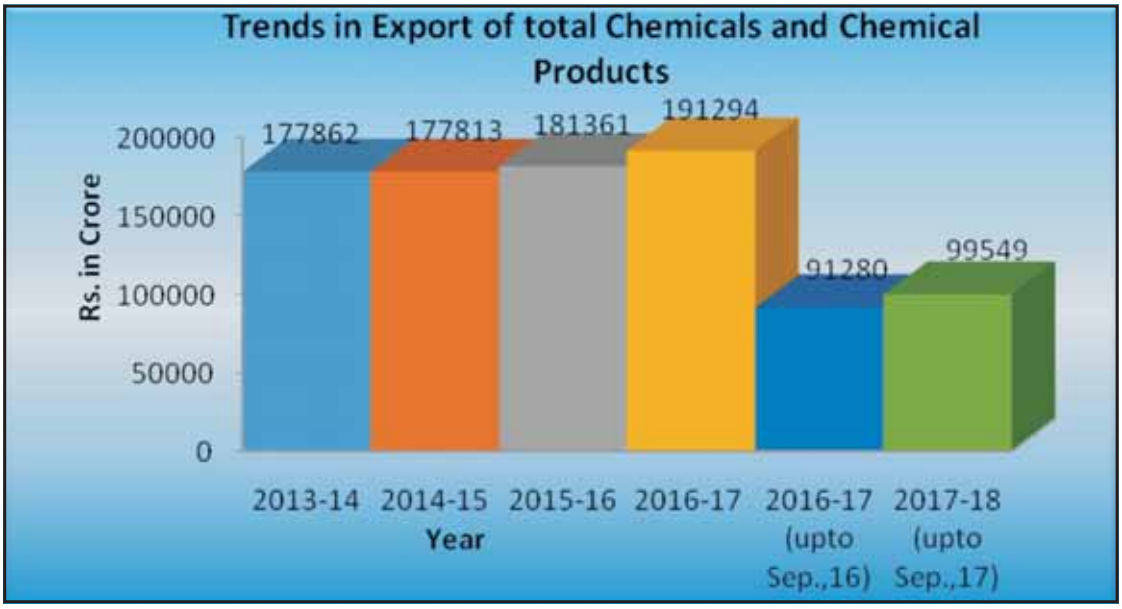
Table VIII: Exports and Imports– Chemicals and Chemical Products (excluding Pharmaceutical Products and Fertilizers)

A. Exports (Rs. in crore)

HS Code	Commodity	2013-14	2014-15	2015-16	2016-17	2016-17 (upto Sep.,16)	2017-18 (upto Sep.,17)
	Total National Exports	**1905011**	**1896445**	**1716378**	**1852340**	**883371**	**937701**
28	Inorganic Chemicals	8258	8749	7913	9518	4047	4843
29	Organic Chemicals	72860	73069	75325	78717	37425	41951
32	Tanning or Dyeing	15455	17206	16165	17250	8679	9071
38	Miscellaneous Chemical Products.	18694	19432	20083	21876	9897	10996

39	Plastic and Articles thereof.	34154	31022	34339	35642	17412	18557
4002	Synthetic Rubber and Factice	245	379	452	483	195	239
54	Man-Made Filaments.	15575	14621	13460	13379	6727	7001
55	Man-Made Staple Fibres.	12621	13334	13625	14429	6897	6891
A:Total Chemicals and Chemical Products		**177862**	**177813**	**181361**	**191294**	**91280**	**99549**
% share in total export		9.3	9.4	10.6	10.3	10.3	10.6

Source: Directorate General of Commercial Intelligence and Statistics (DGCIS) Portal , accessed Data accessed on 14th December 2017.



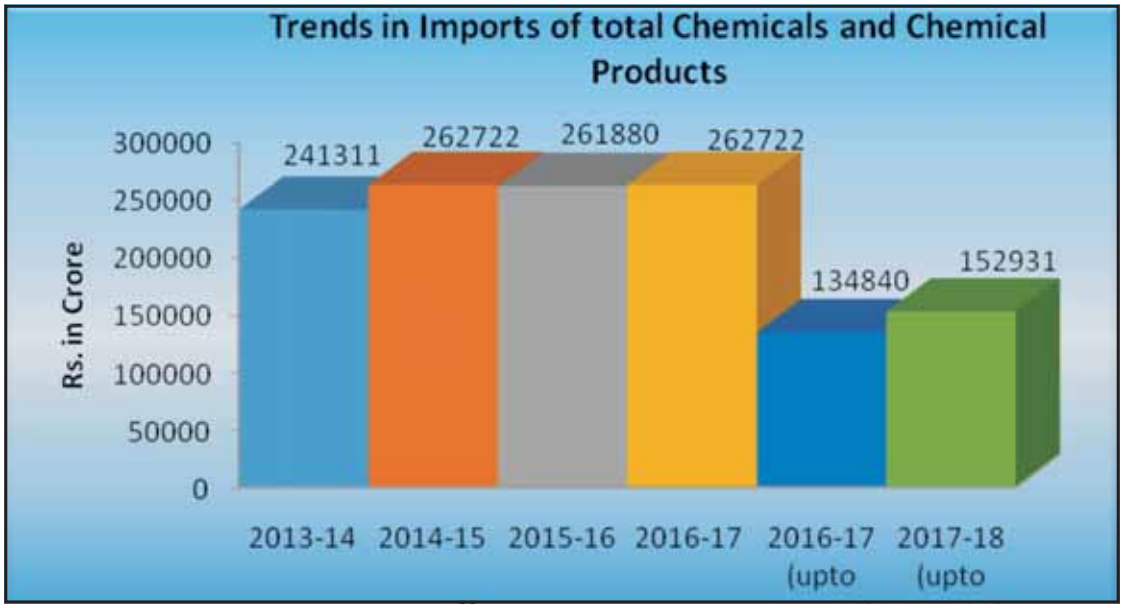
B. Imports

(Rs. in crore)

HS Code	Commodity	2013-14	2014-15	2015-16	2016-17	2016-17 (upto Sep.,16)	2017-18 (upto Sep.,17)
	Total National Imports of which	**2715434**	**2737087**	**2490298**	**2577422**	**1173665**	**1419495**
28	Inorganic Chemicals	29063	31413	33170	31413	16725	17923

29	Organic Chemicals	103157	108320	101986	108320	50580	57588
32	Tanning or Dyeing	9254	9821	10467	9821	5322	6639
38	Miscellaneous Chemical Products	23107	25494	27207	25494	15438	17715
39	Plastic and Articles thereof	61072	71398	74566	71398	39494	44776
4002	Synthetic Rubber And Factice	7339	6697	5205	6697	2915	3352
54	Man-Made Filaments	4597	5042	4879	5042	2470	2747
55	Man-Made Staple Fibres.	3722	4539	4401	4539	1896	2191
B: Total Chemicals and Chemical Products		**241311**	**262722**	**261880**	**262722**	**134840**	**152931**
% share in total import		8.9	9.6	10.5	10.2	11.5	10.8

Source: Directorate General of Commercial Intelligence and Statistics (DGCIS) Portal , accessed Data accessed on 14th December 2017.



2.15 The Import of Chemicals and Petrochemical products (excluding Pharmaceutical Products and Fertilizers) contributed 10.8% of total imports in 2017-18 (Up to September 2017) compared to 11.5% in 2016-17 (Up to September 2016) whereas the Export contributed 10.6% of total Export in 2017-18 (Up to September 2017), compared to 10.3% in 2016-17 (Up to September 2016).

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Chapter – 3

SCHEMES OF THE DEPARTMENT

3.1 Department of Chemicals and Petrochemicals is implementing three Central Sector Schemes viz Assam Gas Cracker Project (AGCP), New Schemes of Petrochemicals (Plastic Parks Scheme & Scheme of Centres of Excellence) and Chemical Promotion & Development Schemes (CPDS). In addition, the department is also implementing other schemes for funding its Secretariat expenses, Central Institute of Plastic Engineering & Technology (CIPET) which is engaged in Academic, Technology support, Research and Skill development activities, Institute of Pesticides Formulation Technology (IPFT) and Bhopal Gas Leak Disaster (BGLD)

3.2 The Assam Gas Cracker Project (AGCP) has been implemented by M/s Brahmaputra Cracker and Polymer Limited to produce about 2.8 lakh MT polymers per annum. The last revised cost of the project approved by the Hon'ble Minister (C&F) in July, 2016, is Rs.9965 crore comprising capital subsidy of Rs. 5,239.45 crore, debt of Rs. 3,307.88 crore and equity of Rs. 1,417.67 crore. Out of total capital subsidy of Rs.5,239.45 crore, Rs.4,790.00 crore has been released till June, 2017. The Plant/ Project has been commissioned on 2nd January, 2016 and dedicated to the nation on 05.02.2016 by Hon'ble Prime Minister.

3.3 To make the project economically viable, BCPL has proposed many steps including feedstock subsidy, which are under deliberation.

3.4. In view of time overruns, foreign exchange fluctuations, price escalation, increase in statutory levies etc. further cost and time escalations occurred and therefore, BCPL proposed revised project cost of Rs. 9965 crore . The increase in project cost of Rs. 1045 crore was proposed to be funded by capital subsidy of Rs. 549.45 crore, equity of Rs. 148.67 crore and debt of Rs. 346.88 crore. Ministry of Finance allocated Rs. 100 crore under BE 2017-18 for AGCP out of the requirement of RS. 549.45 crore and it has been approached for allocation of the balance Rs. 449.45 crore.

3.5. The larger objective of the Plastic Parks scheme is to contribute to the economy

by increasing investment, production, exports in the Petrochemicals sector alongwith generation of employment.

3.6. Scheme of Centres of Excellence provides Grant-in-aid to reputed educational/ research institutes for setting up a CoE, with the objective of improving the existing petrochemicals technology and research in the country and to promote development of new applications of polymers and plastics.

3.7. Under the Chemicals Promotion Development Scheme (CPDS), the department provides Grant-in-aid for creation of knowledge products through studies, survey, data banks, promotional materials etc. and dissemination of knowledge through conduct of seminars, conferences, exhibitions, etc. to facilitate development of these sectors. The scheme also aims to incentivize research and innovation by awarding outstanding efforts in the field of chemicals and petrochemicals.

3.8. The Department provides budgetary support to CIPET for strengthening its Civil and Technical infrastructure, Research and Development capacities and Academic and Training initiatives and also for construction of hostels and setting up new CIPET centres.

3.9. IPFT, located at Gurgaon, is an autonomous body under the Department with mandate to develop environment and user friendly pesticides formulation technologies for a safer environment and also develop methods for the detection and analysis of pesticides and their residues. Budgetary support is provided to IPFT for improvement of infrastructure and research facilities.

3.10. Office of the Welfare Commissioner of Bhopal is entrusted with the work of disbursement of compensation to Bhopal Gas victims. Budgetary support is provided for Settlement of the ex-gratia cases.

3.11. Expenditure under Secretariat head is of contingent nature for payment of salaries and office expenses etc. of the Department.

3.12. Scheme-wise Outlay (BE/RE for 2017-18), Expenditure for 2016-17, 2017-18 are given in Tables below:

Table No. IX: Scheme-wise Outlay

(Rs. in crore)

Sl. No.	Schemes	Original BE 2017-18	BE 2017-18 (after First Supplementary)	RE 2017-18
I	**Central Sector Schemes**			
1.	Assam Gas Cracker Project (AGCP)	0.01	100.01	100.01
2.	New Schemes of Petrochemicals			
	i. Plastic Parks	47.00	47.00	26.51
	ii. Centres of Excellence	0.00	0.00	0.00
	iii. National Awards	1.00	1.00	--
3.	Chemical Promotion & Development Schemes (CPDS)	1.99	2.00	@ 2.00
	Total of I	**50.00**	**150.01**	**128.52**
II	Other Central Expenditure			
1.	Secretariat	20.41	20.41	20.00
2.	Central Institute Of Plastic Engineering &Technology (CIPET)	68.08	68.08	68.08
3.	Institute of Pesticides Formulation Technology (IPFT)	9.16	9.16	7.50
4.	Hindustan Organic Chemicals Ltd.(HOCL)	24.61	384.87	384.87
5.	Bhopal Gas Leak Disaster (BGLD)	25.74	25.74	25.74
	Total of II	**148.00**	**508.26**	**506.19**
	Grand Total (I+II)	**198.00**	**658.27**	**634.71**

**Token provision is being kept in case RCE is provided by M/o Finance at a later stage.*

@ This includes provision of Rs. 80.00 lakhs for the National Awards Scheme.

 # This includes provision of Rs.90.00 lakhs for the National Awards Scheme.

Table – X : Expenditure 2016-17 & 2017-18

(Rs. in crore)

Sr. No.	Name of Scheme	BE 2016-17	RE 2016-17	Exp. 2016-17	% of Exp. w.r.t. RE	BE 2017-18	RE 2017-18	Exp. 2016-17 as on 31.12.2017	% of Exp. w.r.t. RE
I	**Central Sector Schemes**								
1	Assam Gas Cracker Project (AGCP)	0.02	0.01	0.00	0.00	100.01	100.01	100.00	99.99

2	New Schemes of Petrochemicals	48.00	48.00	33.84	70.50	48.00	26.51	10.80	40.74
3	Chemical Promotion & Development Schemes (CPDS)	5.00	1.99	1.26	63.32	2.00	@ 2.00	0.18	9.00
4	Chemical Weapons Convention (CWC)	1.01	*0.00	0.00	0.00	--	--	--	--
	Total of I	**54.03**	**50.00**	**35.10**	**70.20**	**150.01**	**128.52**	**110.98**	**86.35**
II	**Other Central Expenditure (Sectt/ BGLD/ ABs/PSUs)**								
1	Secretariat	16.87	17.97	17.06	94.94	20.41	20.00	14.45	72.25
2	Central Institute Of Plastic Engineering &Technology (CIPET)	57.67	57.67	57.67	100.00	68.08	68.08	59.58	87.51
3	Institute of Pesticides Formulation Technology (IPFT)	8.33	8.89	8.89	100.00	9.16	7.50	6.39	85.20
4	Hindustan Organic Chemicals Ltd. (HOCL)	25.01	24.61	24.61	100.00	384.87	384.87	384.87	100.00
5	Hindustan Insecticides Ltd. (HIL)	15.01	0.00	0.00	0.00	--	--	--	--
6	Hindustan Fluorocarbons Ltd. (HFL)	0.01	0.00	0.00	0.00	--	--	--	--
7	Bhopal Gas Leak Disaster (BGLD)	25.11	23.86	23.44	98.24	25.74	25.74	18.64	72.42
	Total of II	**148.01**	**133.00**	**131.67**	**99.00**	**508.26**	**506.19**	**483.93**	**95.60**
	Grand Total (I + II)	**202.04**	**183.00**	**166.77**	**91.13**	**658.27**	**634.71**	**594.91**	**93.73**

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Chapter – 4

PETROLEUM, CHEMICAL AND PETROCHEMICAL INVESTMENT REGIONS (PCPIRs)

Background

4.1. Four Petroleum, Chemical and Petrochemical Investment Regions (PCPIRs) are being implemented in the States of Andhra Pradesh (Vishakhapatnam), Gujarat (Dahej), Odisha (Paradeep) and Tamil Nadu (Cuddalore and Nagapattinam) to promote investment and industrial development in these sectors.

4.1.2 The PCPIRs were conceptualized in a cluster approach to promote Petroleum, Chemical and Petrochemical sectors in an integrated and environment friendly manner on a large scale. Government of India formulated the PCPIR policy in April, 2007 to give a boost to this sector.

4.1.3. Each PCPIR is a specifically delineated investment region having an area of about 250 sq. km (with around 40% of the area earmarked for processing activities). It is not mandatory for the State Government concerned to acquire the entire area comprising the PCPIR, but they have to notify the area under the relevant area planning and zoning law.

4.1.4. The State Governments concerned carry out Environmental Impact Assessment (EIA) and lead the project implementation. Government of India ensures the availability of external physical infrastructure linkages to the PCPIR including connectivity through Railways, Roads, Ports, Airports and Telecom etc. through Public Private Partnership projects to the extent possible. The Central Government also provides necessary funding to make such projects viable, in form of Viability Gap Funding (VGF), as well as budget support for creation of these linkages wherever required.

4.1.5. The policy provides that each PCPIR would have a refinery / petrochemical feedstock company as an Anchor Tenant.

4.1.6. The State Government notifies a nodal Department or agency for coordinating the linkages. A Management Body constituted by the State Government for each PCPIR, under the relevant legislation, is responsible for the development and management of the PCPIR.

4.1.7. Once fully established, these four PCPIRs are expected to attract investment of around Rs. 7.63 lakh crore. As per data available from State Governments, investments worth Rs. 1.83 lakh crore approximately have been made in these regions. The four PCPIRs are expected to generate employment for around 34 lakh persons. Around 2.93 lakh persons have been employed in direct and indirect activities related to PCPIRs.

4.1.8. The status of implementation and execution of these projects is as follows:

Indicator	**Gujarat**	**Andhra Pradesh**	**Odisha**	**Tamil Nadu**
Location/ Region	Dahej, Bharuch	Vishakhapatnam – Kakinada	Paradeep	Cuddalore-Nagapattinam
Date of Approval	Feb, 2009	Feb, 2009	Dec, 2010	July,2012
Date of MoA	07.01.2010	01.10.2009	03.11.2011	20.02.2014
Total Area (Sq. kms.)	453.00	640.00	284.15	256.83
Processing Area (Sq.kms.)	248.00	270.00	123.00	104.00
Anchor Tenant	ONGC Petro Additions Limited (OPaL)	Hindustan Petroleum Corporation Ltd. (Proposed)	Indian Oil Corporation Ltd. (IOCL)	Nagarjuna Oil Corporation Ltd. (NOCL)
Refinery / Cracker capacity in MMTPA	Cracker: Ethylene: 1.1 Propylene: 0.6	9.3 to 15 (expansion of existing refinery). 1.1 Ethane Cracker(yet to be finalized).	15 (Greenfield refinery)	12 (Refinery).
Anchor Project Status	Commissioned	Visakh Expansion underway. Greenfield Crackeryet to be finalized.	Commissioned in February, 2016	Construction work stalled since 2011.
Amount of approved infra. Projects (Rs. crore)*	NA	18,731.00	13,634.00	13,354.00
GoI share in form of VGF (Rs. crore)	80.50	1206.80	716.00	1143.00 (budgetary support-1500)

Total proposed investments (Rs. crore)*	50,000.00	3,43,000.00	2,77,734.00	92,500.00
Investments made (Rs. crore)*	85,928.00	43,744.00**	45,000.00	8,100.00
Projected employment (No.)*	8,00,000	11,98,000	6,61,354	7,37,200
Employment generated (No.)	1,32,000	1,08,692	38,000	13,950
Status of Master Planning notification	Development Plan sanctioned.	Field Studies, village level consultations completed. Preparation of Master Plan is in process	Preparation of Master Plan is in process.	Will be taken up after formation of PCPIR Management Board.
Status of EIA	Ministry of Environment, Forest and Climate Change has granted Environment and Coastal Region Zone (CRZ) clearance on 14.09.2017 for an area of 44445.18 hectare excluding forest land of 853.41 hectare for development of Gujarat PCPIR.	Environmental Clearances, EIA Studies, Collection of Data etc completed. Environmental Clearance will be initiated after finalization of Master Plan.	EIA Study is in process.	Will be taken up after formation of PCPIR Management Board.

* At the approval stage of the projects.

** Committed.

4.2 Status of Implementation of PCPIRs

4.2.1 Gujarat PCPIR:

- Gujarat PCPIR has been notified under the Gujarat Special Investment Region (GSIR) Act, 2009. It is strategically positioned to the east of Delhi-Mumbai Industrial Corridor (DMIC) and near the western coastline of India.

- The Gujarat Infrastructure Development Corporation (GIDC) has made an investment of around Rs. 16,059crore for infrastructure development in the PCPIR.

- The Anchor Tenant, viz. M/s ONGC Petro additions Ltd. (OPaL), has spent around Rs. 27,700crore on the project.

- Ministry of Environment, Forest and Climate Change has granted Environment and Coastal Region Zone (CRZ) clearance on 14.09.2017 for an area of 44445.18 hectare for development of Gujarat PCPIR.

4.2.2 Andhra Pradesh PCPIR:

- Special Development Authority (SDA) was formed by Government of Andhra Pradesh in May, 2008 to implement the PCPIR.

- AP PCPIR covers 6 existing SEZs. The committed investment in AP PCPIR is around Rs. 43,744 crore. Investment of Rs. 1873 croreappx. have been made on infrastructure development.

- Hindustan Petroleum Corporation Limited (HPCL) and GAIL have completed feasibility study for setting up of Cracker Complex at Kakinada SEZ in the PCPIR.

- Road, rail link, water supply, effluent treatment and marine outfall projects are under different stages.

4.2.3 Odisha PCPIR:

- Detailed Master Plan for industrial development of PCPIR area shall be prepared by PCPIR Authority. Industrial Development Corporation of Odisha

(IDCO) has selected a consultant for preparation of Master Plan of the region. Draft detailed Master Plan is expected in first half of 2018.

- Indian Oil Corporation's 15 MMTPA Refinery at Paradeep was commissioned in February, 2016. IOCL is setting up a 730 KTA Polypropylene Unit which is expected to be functional in first half of 2018.

- Detailed EIA is being undertaken by Environmental Protection Training and Research Institute (EPTRI). Ministry of Environment, Forest and Climate Change has already granted Terms of Reference (ToR) for carrying out the final report which is expected to be completed in 2018-19.

4.2.5 Tamil Nadu PCPIR

- An area of about 24,692 hectares in 45 villages of Cuddalore and Chidambaram Talukas of Cuddalore District and Sirkazhi and Tarangambadi villages of Nagapattinam district have been notified as PCPIR under the Tamil Nadu Town and Country Planning Act 1971 in January, 2016. Government of Tamil Nadu in its order dated 20.06.2017 has notified the PCPIR area as a Local Planning Area under the Tamil Nadu Town and Country Planning Act, 1971.

- Nagarjuna Oil Corporation Ltd. (NOCL) refinery was identified as anchor tenant. The construction work of the project has been stalled since "Thane" cyclone in December 2011.

- State Government is in the process of formation of TN PCPIR Development Authority under Tamil Nadu Town and Country Planning Act, 1971 and formation of TN PCPIR Management Board as a Special Purpose Vehicle.

- Upon formation of TN PCPIR Management Board, activity of preparation of Master Plan and Environmental Studies would be undertaken.

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Chapter – 5

NEW SCHEMES OF PETROCHEMICALS

Department of Chemicals and Petrochemicals is implementing the following three schemes under the National Policy on Petrochemicals:-

(i) Setting up of Plastic Parks
(ii) Setting up of Centres of Excellence in Polymer Technology
(iii) National Awards for Technology Innovation in Petrochemical and downstream Plastic Processing Industry

5.1 Setting up of Plastic Parks

5.1.1 The scheme aims at setting up of need based plastic parks, an ecosystem with state-of-the-art infrastructure and enabling common facilities through cluster development approach, to consolidate and synergize the capacities of the domestic downstream Plastic Processing Industry. The larger objective of the scheme is to contribute to the economy by increasing investment, production, export in the sector and also generation of employment.

5.1.2 Under the scheme, Government of India provides grant funding up to 50% of the project cost, subject to a ceiling of Rs. 40 crore per project. The remaining project cost is funded by the State Government or State Industrial Development Corporation or similar agencies of State Government, beneficiary industries and loan from financial institutions.

5.1.3 Plastic Parks in States of Madhya Pradesh, Odisha, Assam & Tamil Nadu are being set up under the Scheme of Plastic Parks. During the year under report till October 2017 the Department has released remaining part of the 1st installment of Rs.4.11 crore of Grant in Aid to Tamil Nadu Plastic Park bringing the total 1st instalment grants released to the Park to Rs 8 crore. Further, a sum of Rs 6.69 crore has been released as a part of 3rd instalment for Madhya Pradesh Plastic Park Development Corporation Ltd., (MPPPDCL), for setting up of a plastic park at Tamot village, Gohargunj Tehsil, Raisen District, Madhya Pradesh.

5.2 Setting up of Centres of Excellence (CoE) in Polymer Technology

5.2.1 The scheme aims at improving the existing petrochemicals technology and research in the country and to promote development of new applications in polymers and plastics. The Department has set up five Centres of Excellence (CoE) within the premises of reputed educational/research institutes:-

(i) National Chemicals Laboratory (NCL), Pune – CoE for Sustainable Polymer Industry through Research, Innovation & Training (CoE-SPIRIT);
(ii) Central Institute of Plastics Engineering & Technology (CIPET), Chennai – CoE for Green Transportation Network (GREET),
(iii) IIT, Delhi – CoE for Advanced Polymeric Materials,
(iv) CIPET, Bhubaneswar- CoE on Sustainable Green Materials, and
(v) IIT, Guwahati – CoE for Sustainable Polymers.

5.2.2 The CoE at Pune and CoE at CIPET, Chennai were approved during the 11th Five Year Plan and the remaining three CoEs were approved during the 12th Five Year Plan.

5.2.3 The assets created under CoE-SPIRIT at NCL, Pune have not only resulted in a boost to contemporary research in Polymer science, but also contributed to the training of several members of polymer industry and academia. In case of CoE- GREET at CIPET, Chennai and CoE on Sustainable Green Materials at CIPET, Bhubaneswar, the outputs are in terms of promoting academic, research and educational excellence through partnership between CIPET, India and University of Toronto, Canada and Michigan State University, USA. At IIT, Delhi and IIT, Guwahati, the resources and capabilities have been strengthened for furthering research activities in Advanced Polymeric Materials and Sustainable Polymers, respectively.

5.2.4 Government of India provides financial support to the extent of maximum of 50% of total cost of the project subject to an upper limit of Rs. 6 crore over a period of three years. The GoI grant of Rs. 6 crore has been released to the CoEs at Pune, Chennai and Bhubaneswar. An outlay of Rs. 2 crore has been provided for the scheme in the year 2016-17. The 3rdinstallment and final instalment of Rs. 2 crore has been sanctioned and released to IIT, Delhi in October, 2016. Thus the processes of funding of CoEs proposed in 11th and 12th Plan have been completed and the scheme is now extended up to 2020.

5.3 National Awards for Technology Innovation in Petrochemical and downstream Plastic Processing Industry

5.3.1 The Department is implementing an Award Scheme to provide incentive for meritorious innovations & inventions in various fields of petrochemicals and downstream plastics processing industry. Central Institute of Plastic Engineering and Technology (CIPET) is entrusted with the task of seeking and short listing nominations for the scheme. The Department has been providing grant-in-aid to CIPET each year for administering the award scheme.

5.3.2. The National Awards for Technology Innovation are given in various categories for innovation in Polymeric Materials, Polymeric Products, Polymer Waste Management and Recycling Technology and related areas. For the 7th National

Awards for Technology Innovation-2016-17, a total of 415 nominations were received, amongst whom 16 Winners and 7 Runners-up were selected and awarded by the Hon'ble Minister for (C&F) in a function held on 1st March 2017 in Vigyan Bhavan, New Delhi. These awards were given in eight categories and three sub-categories of Awards in each category, covering (i) individual/ team (ii) industry, and (iii) R&D institutions. The award prize money given for winners in each category for 7th National Award was Rs. 2 lakh.

(Shri Ananth Kumar, Hon'ble Minister (Chemicals & Fertilizers and Parliamentary Affairs and Shri Mansukh L. Mandaviya, Hon'ble MoS (RTH, S & C&F) at 7th National Awards for Technology Innovation 2016-17 function.)

5.3.3 The 8th National Award proposes awards in six categories namely Development of New Polymers, New Applications of Polymers in various fields, New Polymer Processing Machines including Energy Efficiency, Innovation in Polymer Waste Management & Recycling , Green / Bio-degradable Polymer, Innovation in Packaging covering 22 sub-categories. Unlike the previous editions of awards, in the 8th edition the distinction of individual, industry and institutions as separate categories have been done away with focus on the innovation. Further the prize money for winners have been enhanced to Rs 3 lakhs, while for the first time the runners up have also been proposed to be given prize money of Rs 1 lakh each.

Further it has been decided to merge the Scheme of National Awards with the Chemical Promotion and Development Scheme.

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Chapter – 6

INTERNATIONAL CONVENTIONS AND TREATIES

Chemical Weapons Convention (CWC)

6.1 India is a signatory and party to the Chemical Weapons Convention (CWC), of the Organization for the Prohibition of Chemical Weapons (OPCW) with Head Quarters at The Hague, Netherlands. The Convention is a universal, non-discriminatory, multi-lateral, disarmament treaty which prohibits the development, production, stock-piling and use of chemical weapons and monitors its elimination in order to secure chemical weapons free world. India signed the treaty at Paris on 14th day of January 1993. India, pursuant to provisions of the Convention enacted the Chemical Weapons Convention Act, 2000. As on date, 192 countries are parties to the Convention. India was the First State Party to secure the distinction of chemical weapon free state Party by destructing all its stockpile of its chemical weapons amongst all State Parties of the Convention. The Department of Chemicals & Petrochemicals is the administrative department for CWC Act, 2000.

Rotterdam Convention

6.2 Rotterdam Convention on Prior Informed Consent Procedures (PIC) that entered into force on 24th February, 2004, is a legally binding instrument, which was adopted on 10th September 1998 by a Conference of Plenipotentiaries in Rotterdam. India acceded to the Convention on 24.05.2006.

6.3 The Convention seeks to promote shared responsibility and cooperative efforts among State Parties in the international trade of certain hazardous chemicals in order to protect human health and the environment from potential harm. It also seeks to contribute to the environmentally sound use of these hazardous chemicals by facilitating information exchange about their characteristics, providing for a national decision making process on their import and export, and by disseminating these decisions to the Parties. Each Party is required to designate a National Authority for performing the administrative functions required under the Convention. Department of Chemicals and Petrochemicals is the Designated National Authority (DNA) for industrial chemicals and Department of Agriculture and Co-operation is the DNA for pesticides.

6.4 There are a total of 50 chemicals listed in Annex III, 34 pesticides (including 3 severely hazardous pesticide formulations), 15 industrial chemicals, and 1 chemical in both the pesticide and the industrial chemical categories. The parties are required to communicate their import policy for these chemicals to the PIC Secretariat. The exporting Party has to provide the export notification to the importing Party in respect of banned or severely restricted chemicals in the importing country. The export notifications received from other Parties for industrial chemicals are examined by Department of Chemicals and Petrochemicals, being the DNA for industrial chemicals, and acknowledgment/ reply is sent to the DNA of the exporting country.

Stockholm Convention

6.5 The Stockholm Convention, ratified by India on 13.01.2006, is a global treaty to protect human health and environment from Persistent Organic Pollutants (POPs). POPs are chemicals that remain intact in the environment for long periods, become widely distributed geographically, accumulate in the fatty tissue of living organisms and are toxic to human beings and wildlife. POPs travel globally and can cause damage wherever they travel. The Convention that entered into force on 17th May, 2004, lays down that in its implementation, Governments will take measures to eliminate or reduce the release of POPs into the environment.

6.6 The Stockholm Convention seeks the elimination or restriction of production and use of all intentionally produced POPs (industrial chemicals and pesticides). The Convention also seeks the continuing minimization and wherever feasible, ultimate elimination of the releases of unintentionally produced POPs such as dioxins and furans. At present, twenty one chemicals are covered under the Stockholm Convention, of which use of DDT is restricted in India. Use of DDT is banned for agricultural purposes; it is produced in a restricted manner for use in vector control only, as India has obtained exemption for use of DDT for vector control.

6.7 Stockpiles and wastes containing POPs must be managed and disposed of in a safe, efficient and environmentally sound manner, taking into account international rules, standards and guidelines. Each country is required to develop a plan for implementing its obligations under the Convention. A Global Environment Facility (GEF) has been set up as an interim financial mechanism, to assist the developing countries in implementation of the Convention.

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Chapter – 7

BHOPAL GAS LEAK DISASTER

7.1 An industrial disaster occurred in the night of 2nd /3rd December, 1984 when Methyl Iso-cyanate (MIC), a lethal gas stored in two tanks of Union Carbide India Limited (UCIL)'s pesticide unit at Bhopal, leaked into the atmosphere causing thousands of deaths and injuring a large number of people. The State Government of Madhya Pradesh as well as the Central Government undertook immediate relief and rehabilitation measures, for the victims of the gas leak disaster and their families. Various relief measures are still continuing.

7.2 Adjudication of Compensation Claims

7.2.1 A large number of civil and criminal cases were filed against UCIL and its management in various Courts by individuals and groups. To ensure proper legal representation of the victims and settlement of their claims, the Government of India enacted the Bhopal Gas Leak Disaster (Processing of Claims) Act, 1985 and a Scheme there under.

7.2.2 The Hon'ble Supreme Court vide its orders and settlement dated 14th and 15th February, 1989 finally settled the litigation on the compensation amount payable to Bhopal Gas Victims. Under the settlement, the Union Carbide Corporation was directed to pay a compensation of US $ 470 million, which was deposited by the Company with the Registrar of the Supreme Court of India, in February 1989.

7.3 Original compensation

Under the provisions of the Bhopal Gas Leak Disaster (Processing of Claims) Act, 1985, the Office of the Welfare Commissioner, Bhopal Gas Victims, Bhopal was set up in 1985 for speedy disbursal of the compensation amount to the survivors and families of the victims of the gas leak disaster. The actual disbursement of the compensation started from November 1992. The Office of the Welfare Commissioner has disbursed a total amount of Rs. 1549.34 Crore as compensation in 5,74,391 awarded cases of claimants belonging to the categories of death, permanent disability, temporary disability, injury of utmost severity cases, minor injury, loss of property/ PSU and loss of livestock.

7.4 Pro-rata compensation

7.4.1 It was brought to notice in the year 2004 that an amount of approximately Rs. 1500 crore, had accumulated with the Reserve Bank of India on account of accrual of interest and exchange rate variation. The Supreme Court vide order dated 19thJuly, 2004 had directed the Welfare Commissioner to disburse the said amount, on pro-rata basis (in the ratio of 1:1 of original compensation) to the claimants whose cases had been settled. The distribution of pro-rata compensation commenced from 15th November, 2004, as per the directions of the Supreme Court. A sum of Rs. 1517.70 Crore as pro-rata compensation has been awarded in 5,63,090 cases till 30.11.2017.

7.4.2 There are about 11,335 cases in which the concerned legal heirs did not turn up. To settle such absent cases, the Office of the Welfare Commissioner had issued notification published in the local newspapers with the direction to attend the Claim Tribunals for settlement of Pro-rata compensation. Besides this, the list of absentees was also provided to NGOs working for the Bhopal Gas Victims, to trace the genuine claimants. The work of disbursal of pro-rata compensation is continuing.

7.5 Disbursement of Ex-gratia

7.5.1 After the reconstitution of the Group of Ministers (GoM) on Bhopal Gas Leak Disaster on 26.05.2010, the Government took certain decisions to provide further relief and rehabilitation to the gas victims. One major decision taken by the Government was to pay ex-gratia to the following categories of gas victims:

Categories of Ex-gratia payments to Gas victims

Category	Scale of Ex-gratia
Death	Rs.10 lakh (less amount already received)
Permanent disability	Rs. 5 lakh (less amount already received)
Injury of utmost severity	Rs. 5 lakh (less amount already received)
Cancer	Rs. 2 lakh (less amount already received)
Total Renal Failure	Rs. 2 lakh (less amount already received)
Temporary disability	Rs. 1 lakh (less amount already received)

7.5.2 An amount of Rs. 874.28 Crore has been approved by the Government for disbursement of ex-gratia by the Office of the Welfare Commissioner to an estimated 57694 gas victims in the above mentioned categories. The

applications / claims under the category of cancer/ TRF are still being received. The total number of cases for payment of ex-gratia as on 30.11.2017 are 63824. The Office of the Welfare Commissioner has commenced disbursement of ex-gratia to the Gas victims on 19.12.2010. A total number of 58982 cases were decided till November, 2017 and a total amount of Rs. 803.00 crore was awarded.

7.6 Action plan for the Rehabilitation of Bhopal Gas Victims

7.6.1 As part of the initial relief and rehabilitation measures, the Central Government provided financial assistance to the extent of Rs. 102 crore over a period of 4 years starting from 1985, for carrying out the rehabilitation related work.

7.6.2 Subsequently in the year 1990, the Central Government approved an Action Plan with an outlay of Rs.163.10 crore for medical, economic, social and environmental rehabilitation of the gas victims, the outlay for which was later revised upwards to Rs. 258 crore. It was decided that the outlay was to be shared between the Central Government and the State Government of Madhya Pradesh (GoMP) in the ratio of 75:25. The Action Plan was implemented from 1990 to 1999. The major component of the Action Plan was medical rehabilitation which included establishment of six full-fledged Gas Relief hospitals and also dispensaries for free treatment of gas victims. Further, Rs. 14.18 crore was provided by Government of India under Jawaharlal Nehru National Urban Renewal Mission (JNNURM), in April, 2006 for supply of piped drinking water to 14 localities around UCIL plant site where the ground water is not potable.

7.6.3 GoMP had submitted to Group of Ministers (GoM), in April 2008, a new Memorandum on New Plan of Action with an outlay of Rs. 982.75 crore for various rehabilitation measures to be taken for Bhopal Gas Victims. The Government, on the recommendations of the GoM, approved a sanction of Rs. 272.75 crore shared between the Central Government and GoMP in the ratio of 75:25 for implementation of New Plan of Action, 2010 for relief and rehabilitation of Bhopal Gas victims. The sanction of Rs. 272.75 crore was released by the Ministry of Finance, Department of Expenditure to the GoMP on 08/07/2010 'On Account' payment of Additional Central Assistance (ACA) for other projects (Grant Component) for State's Annual Plan 2010-2011.

7.6.4 GoMP is in the process of implementation of various rehabilitation schemes as approved in the New Plan of Action 2010. The GoMP has apprised that till July, 2017 , an amount of Rs. 130.29 crore has been utilized, out of allocated sum of Rs. 272.75 crore.

7.7 Social Rehabilitation:

7.7.1 An estimated 5000 Widows of Gas Victims are to be paid pension plan of Rs. 1000 per month for a period of five years, for which Rs. 30 crore has been allocated. Till July, 2017 , an amount of Rs. 25.43 crore has been disbursed as widow pension to 4,995 beneficiaries.

7.7.2 A sum of Rs. 40 crore was allocated for construction of free houses for 2500 families of gas victims residing around the UCIL factory. The GoMP apprised that the project regarding construction of houses for the gas victims at village Palasy (Bhopal) could not be executed due to strong resistance of local residents. An expenditure of Rs. 0.9925 crore has been made for DPR preparation etc at initial level before the commencement of work. GoMP is preparing a new scheme for providing houses to gas victims with the marginal money collected from the beneficiaries for the approval of Government of India.

7.8 Medical Rehabilitation

Most of the essential equipments for Gas Rahat Hospitals have been procured, installed and are functioning. The work of construction and renovation of Hospital buildings were completed. After that, permission has been accorded by the Government of India to GoMP to utilize the unspent balance fund of Rs. 17.23 crore under Medical Rehabilitation for execution of certain new items of work such as construction of Bone Marrow Transplant Centre and procurement of equipments at Kamla Nehru Hospital, Renovation of civil work for Modular OT tables for four Hospitals namely Indira Gandhi Women and Child Hospital, Khan Shakir Ali Khan Hospital, Jawaharlal Nehru Hospitals Bhopal and Kamla Nehru Hospital etc.

7.9 Economic Rehabilitation

For ensuring employment to gas victims, the GoMP has launched an entrepreneurship training Programme scheme with built-in employment opportunity. GoMP selected 21 institutes through a transparent procedure,

for providing training in different trades to the gas victims. The State Govt. has provided training to 12,355 gas victims under different trade. This programme was successful initially but could not achieve desired outcome later on. As the scheme is not attractive, the GoMP is considering a new proposal in the place of entrepreneurship training Programme scheme for the benefit of gas victims.

7.10 Environmental Rehabilitation

Out of Rs. 50 crore allocated for providing clean drinking water to the gas victims, GoMP utilized the entire fund for providing safe drinking water in Gas affected area.

7.11 Bhopal Memorial Hospital and Research Centre (BMHRC)

7.11.1 On directions of the Hon'ble Supreme Court, a Specialty Hospital named Bhopal Memorial Hospital and Research Centre (BMHRC) was established at Bhopal with money provided by Union Carbide Company, for free treatment of gas victims. The Hospital with super specialty facilities started functioning in July, 2000. The Hospital has 330 beds with facilities in 12 disciplines like Cardio Thoracic Surgery, Nephrology, Urology, Neurology, Neuro Surgery, Ophthalmology, Pulmonary Medicine, Psychiatry, etc. Eight mini units of Hospital have been set up in various gas-affected wards of Bhopal for the gas victims.

7.11.2 Initially, management of the hospital was overseen by a Trust named the Bhopal Memorial Hospital Trust (BMHT) under the Chairmanship of retired Chief Justice of India Shri A. M. Ahmadi. On the recommendations of the GoMP and as decided by the Government, the administration of BMHRC has been taken over by the GoI in the year 2010 and the Hospital is now administered by the Department of Health Research, Ministry of Health and Family Welfare.

7.12 Indian Council Medical Research (ICMR)- 31st Research Center

After the gas leak, Indian Council Medical Research (ICMR) had established a research center in Bhopal in 1984 and conducted epidemiological research and clinical studies. After publication of research papers in 1987 and 1994,

ICMR stopped its research work on 31.12.1994 and handed over the research center (Center for Rehabilitation Studies) to the Govt. of M.P. The Government, based on recommendation of the GoMP, decided that ICMR may resume its research on gas victims by establishing a full-fledged Research Centre in Bhopal. Accordingly, ICMR has established its 31st Research Center namely "National Institute for Research in Environmental Health (NIREH)" at Bhopal, on 11th October, 2010, for conducting research studies in identified areas including respiratory diseases, cancer, total renal failure, genetic disorders, second generation children related medical issues. ICMR as well as NIREH have been carrying out the research work on the health problems of the gas victims with exactitude and expeditiousness and ensuring disbursement of its benefit to the gas victims.

7.13 Environmental Remediation of the erstwhile Union Carbide India Ltd. (UCIL) Plant site

7.13.1 As per Union Cabinet's decision taken in the year 2010, the GoMP would be responsible for undertaking disposal of hazardous wastes and remediation of the erstwhile UCIL plant at Bhopal. As per cabinet's decision, an Oversight Committee was constituted in the Ministry of Environment, Forest and Climate Change to provide oversight and support to the GoMP in taking the necessary remedial actions. Hon'ble Supreme Court is seized with the issue of disposal of UCIL waste in the matter of SLP (Civil) No. 9874 of 2012 UoI Vs Alok Pratap Singh and Others. Ministry of Environment, Forest and Climate Change is complying with the orders issued by the Hon'ble Supreme Court then and there. As per the directions given by the Hon'ble Supreme Court, 10 MT of erstwhile UCIL waste was successfully incinerated at Common Hazardous Waste Incinerator at Pithampur, District Dhar, Madhya Pradesh by Central Pollution Control Board (CPCB) during August 13-18, 2015 .

7.13.2 For disposal of remaining 337 MT (approximate) of hazardous Bhopal gas waste lying at UCIL factory site, Bhopal, the Central Pollution Control Board (CPCB) has forwarded the draft Request for Proposal (REP) to the GoMP for inviting competitive open-bids for the project "Disposal of Remaining UCIL Waste" .The Detailed Project Report (DPR) on remediation of UCIL contaminated site as prepared by the GoMP was shared with CPCB for giving its assessment.

7.14 Curative Petition

On the direction of the Cabinet, a Curative Petition No. 345-347 was filed in December 2010 by Union of India V/s Union Carbide Corporation (UCC), USA, Dow Chemicals, USA and Others claiming enhanced compensation from UCC and/ or successor companies of UCC, by seeking a review of the Court's earlier judgment of 1989, settling the compensation amount at US $470 million. The compensation claimed in the Curative Petition is due to the difference between the number of cases assumed by the Hon'ble Supreme Court at the time of passing the orders for settlement in 1989 and the actual number of cases awarded by the Office of the Welfare Commissioner, Bhopal Gas victim, Bhopal. The petition also claims reimbursement of costs incurred by the Government of India for various rehabilitation measures for victims and the amount required for environmental remediation. The case is pending before the Hon'ble Supreme Court.

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Chapter -8

PUBLIC SECTOR UNDERTAKINGS

Assam Gas Cracker Project (Brahmaputra Cracker and Polymer Limited)

8.1 The Assam Gas Cracker Project (AGCP) initiated in pursuance of the Memorandum of Settlement signed between Central Government, All Assam Students Union (AASU) and All Assam Gana Sangram Parishad (AAGP) on 15th August 1985 has the objective of overall socio-economic development of the North East Region. A Joint Venture Company namely 'Brahmaputra Cracker and Polymer Limited (BCPL)' was incorporated and registered for implementation of the project on 8th January, 2007. Hon'ble Prime Minister of India laid the foundation stone of the project at Lepetkata, Dibrugarh, Assam on 9.4.2007. The Cabinet Committee on Economic Affairs (CCEA), in its meeting held on 18th April, 2006, approved the setting up of the Assam Gas Cracker Project (AGCP) at a project cost of Rs. 5460.61 crore. Under an equity arrangement, GAIL (India) Ltd. Is the main promoter with following shareholding i.e. GAIL: 70%, OIL: 10%, NRL: 10% and Assam Industrial Development Corporation (Government of Assam): 10%. It was decided that the feedstock for the project will be Natural Gas and Naphtha to be supplied, as per agreement, by Oil and Natural Gas Commission (ONGC) and Numaligarh Refinery Limited (NRL) respectively. The project would produce 2.20 lakh tones per annum (TPA) of High Density Polyethylene (HDPE)/Linear Low Density Polyethylene and 60,000 TPA Polypropylene (PP).

8.2 Due to time and cost overruns the Revised Cost Estimate (RCE-I) of Rs.8920 crore (on "as built basis") was approved by the Cabinet Committee on Economic Affairs (CCEA) on 16th November, 2011 with revised funding pattern consisting of Capital Subsidy of Rs. 4690 crore, Debt Rs.2961 crore and Equity Rs. 1269 crore to be completed by July, 2013 and commissioned by December, 2013. The total funds released as Capital Subsidy to BCPL upto 2013-14 were Rs.4690.00 crore.

8.3 However due to time overrun, foreign exchange fluctuations, price escalation, increase in statutory levies, BCPL proposed project cost Rs.9965 crore against the approved cost of Rs.8,920 crore (RCE-I), based on overall commissioning by December, 2015.

8.4 The Project was finally commissioned on 2nd January, 2016 and was dedicated to the nation by the Hon'ble Prime Minister, Shri Narendra Modi on 5th February, 2016.

8.5 The estimated increase of Rs. 1045 crore was proposed to be funded by capital subsidy of Rs. 549.45 crore, equity of Rs. 148.67 crore and debt of Rs. 346.88 crore. A draft PIB note containing the proposal of Revised Cost Estimate-II (RCE-II) was circulated to the concerned Ministries/Departments for their comments. The Ministry of Finance (Department of Expenditure) conveyed its comments vide OM dated 28.03.2016 stating therein that as the increase in cost estimate is within the limit of 20% and absolute increase is more than Rs. 100 crore, therefore the approval forum is Minister in charge of the Administrative Ministry and there is no need of approval by PIB. The Project Appraisal and Management Division, NITI Aayog also made a detailed appraisal of the project and endorsed the above view of Deptt. of Expenditure on the steps to be taken for further necessary action, i.e. appraisal of the project by FA and approval by the Minister-in-charge of the Administrative Ministry. As per comments of Ministry of Finance and NITI Aayog, the SS&FA, DCPC appraised the proposal. The Revised Cost Estimate (RCE-II) was approved by the Hon'ble Minister (C & F) in July 2016. Based on the approvals, Ministry of Finance was approached for allocation of Rs.549.45 crore as capital subsidy. Out of which, there has been an allocation of Rs.100 crore so far.

8.6 Soon after commissioning and stabilization, the plant operation got affected due to issues like inadequate supply of feedstock. All efforts are being made to enhance the capacity utilization. Various alternative measures have been taken for arrangement of feedstock and raw materials from other sources by BCPL for ensuring sustained operation of the plant. As a result, the capacity utilization has remarkably improved since February, 2017 and the company has been able to book cash profits. In the current financial year, the plant is operating with average capacity utilization of around 80% and in the month of August, the plant achieved more than 100% capacity utilization. The products are being marketed to the downstream industries in accordance with the marketing arrangement with GAIL and thirty-five consignment stockists were accordingly appointed across various locations in the country including the northeast.

HINDUSTAN ORGANIC CHEMICALS LIMITED (HOCL)

8.7 Hindustan Organic Chemicals Limited (HOCL) was incorporated on 12th December, 1960 as a Government company with the objective of setting up manufacturing capacities for chemicals / intermediates required for production of dyes, dyes – intermediates, rubber chemicals, pesticides, drugs and pharmaceuticals, laminates, etc. The company has two manufacturing units located at Rasayani (Maharashtra) and Kochi (Kerala). The Rasayani unit (Chemical Complex) started production from 1970-71 and the Kochi Unit (Phenol Complex) commenced production from 1987-88. The company has plants to manufacture phenol, acetone and hydrogen peroxide at Kochi unit and concentrated nitric acid and di-nitrogen tetroxide (N_2O_4) at Rasayani unit. HOCL is the sole manufacturer of N_2O_4 in India which is supplied to Indian Space Research Organisation (ISRO) for use in rocket launching programme. HOCL has a subsidiary company M/s Hindustan Fluorocarbons Limited (HFL) located at Rudraram, Telangana, details regarding which are given in para 8.15 to 8.21.

8.8 HOCL's authorised and paid up share capital is Rs.370 crore and Rs.337.27 crore [comprising Rs.67.27 crore equity and Rs.270 crore preference shares] respectively. 58.78% of the equity of the company (excluding preference shares) is held by the Govt. of India. HOCL is listed on the Bombay Stock Exchange (BSE).

8.9 Following globalization and liberalisation of the Indian economy in the early 1990's resulting in competition from international players, HOCL incurred losses for the first time in 1997-98. Due to continued losses leading to negative net worth by 2003-04, the company was referred to erstwhile BIFR in February, 2005. Based on the recommendations of Board for Reconstruction of Public Sector Enterprises (BRPSE), Govt. approved a revival package for the company on 9th March, 2006 providing (i) cash infusion of Rs.270 crore by way of preference share capital (redeemable) for repayment of high interest bonds, bank loans and implementation of VRS and (ii) continuation of Govt. of India guarantee of Rs.100 crore for full term of 10 years to be utilised to liquidate high cost debt. After implementation of the package, the company made nominal profits during 2006-07 and 2007-08 and came out of BIFR.

8.10 However, the company again suffered losses in 2008-09 and 2009-10 mainly due to recessionary trend in the market as an effect of global meltdown. Though it earned profit during 2010-11, the situation worsened thereafter with losses during 2011-12 and 2012-13 mainly due to withdrawal of anti-dumping duties on its main products phenol and acetone. In order to enable the company to tide over its liquidity problems, the Govt. on 1st August, 2013 approved postponement of redemption of Rs.270 crore preference shares issued to the Govt. of India (date of allotment 24.01.2008), which was due for redemption from 2011-12 onwards, to 2015-16 onwards. The Govt. guarantee of Rs.100 crore was also further extended up to August, 2017.

8.11 Further, Govt. guarantee of Rs.150 crore was provided to HOCL in July, 2014 for issue of bonds by the company for meeting its working capital requirement and payment of liabilities towards raw material suppliers, employee dues etc. This enabled the company to restore manufacturing operations at its Kochi and Rasayani units. However, the global fall in the prices of petroleum products at that time caused severe crash in the prices of Phenol and Acetone and the company faced difficulties in selling the products at profitable rates and generating adequate working capital. This has led to frequent shutting down of operations at both Kochi and Rasayani units thereby further aggravating the financial crisis of HOCL. Due to continuous losses and shortage of working capital, the company has not been able to pay regular salary and statutory dues to the employees since February, 2015.

Financial Performance

8.12 Financial performance of HOCL in terms of turnover and net profit / loss for the last 5 years and net worth as on 31.03.2017 are given below:

(Rs. in crore)

Year	Turnover	Net Profit / (Loss)
2012-13	624.19	(137.99)
2013-14	236.80	(176.85)
2014-15	167.19	(215.49)
2015-16	120.79	(173.91)
2016-17	158.21	(255.57)
	Net worth as on 31.3.2017: (-)Rs.969.93 crore	

8.14 During 2017-18 (up to September, 2017), the company achieved gross turnover of Rs.67.88 crore and net loss of Rs.50.58 crore, as per the provisional unaudited results. The low turnover and loss is due to the fact that most of the plants / operations of the company have generally remained shut down for several months due to acute shortage of working capital.

Restructuring plan for HOCL

8.14 The Government of India on 17.05.2017 has approved a restructuring plan for HOCL which involves closing down the operations of all the non-viable plants at Rasayani unit of HOCL except Di-Nitrogen Tetroxide (N_2O_4) plant which is to be transferred to ISRO on 'as is where is' basis, with about 20 acres of land and employees associated with the plant. The N_2O_4 plant is of strategic importance as it is the only indigenous source of N_2O_4 which is used as liquid rocket propellant by ISRO in the space launch vehicles. Financial implication of the restructuring plan is Rs.1008.67 crore (cash) which is to be met partly from sale of 442 acres HOCL land at Rasayani to Bharat Petroleum Corporation Ltd. (Rs.618.80 crore) and the balance (Rs.365.26 crore) through bridge loan from the Govt. The funds will be used to liquidate the various liabilities of the company, including payment of outstanding salary and statutory dues of employees and repayment of Govt. guaranteed bonds of Rs.250 crore. The bridge loan amount, along with other Govt. liabilities of the company, is proposed to be repaid to the Govt. from the disposal of remaining unencumbered land and other assets of Rasayani unit.Necessary action is being taken by the Department and HOCL for implementation of the restructuring plan.

HINDUSTAN FLUOROCARBONS LIMITED (HFL)

8.15 Hindustan Fluorocarbons Limited (HFL), a subsidiary company of Hindustan Organic Chemicals Ltd. (HOCL), was incorporated on 14.07.1983. It is located at Rudraram, District Sangareddy, Telangana. The company started production in the year 1987 and is engaged in the manufacture of Poly Tetra Fluoro Ethylene (PTFE) and of Chloro Di Fluoro Methane (CFM-22). PTFE is extensively used in chemical, mechanical, electrical and electronic industries and has strategic applications in defence and aerospace sectors. CFM-22 is used as a refrigerant gas and also as feedstock for production of PTFE.

8.16 Authorised and paid up share capital of HFL is Rs.21 crore and Rs.19.61 crore respectively. HOCL (Promoter Company) holds 56.40% of the equity share capital and balance is held by the public (39.11%) and Andhra Pradesh Industrial Development Corporation (4.43%). HFL is listed on the Bombay Stock Exchange (BSE).

8.17 HFL started making losses from its inception in 1987-88 resulting in erosion of its net worth and reference to BIFR in 1994. A rehabilitation package for HFL under the operating agency M/s IDBI was approved by BIFR on 03.12.2007. Total cost of rehabilitation package was Rs.19.28 crore and did not involve infusion of any Govt. funds. Following implementation of the rehabilitation package, HFL made marginal profits from 2007-08 to 2012-13. However, the company suffered loss of Rs.24.82 crore in 2013-14 mainly on account of provisioning for wage revision arrears of 1997 and 2007 and reduction in sales realization. During 2014-15, 2015-16 and 2016-17 also the company suffered losses of Rs.3.77 crore, Rs.11.11 crore, and Rs.4.89 crore respectively due to reduced sales realization. HFL continues to make losses and Net worth of the company is negative.

Financial Performance

8.18 Financial performance of HFL in terms of turnover and net profit/loss for the last 5 years and net worth as on 31.3.2017 are given below:

(Rs. in crore)

Year	Turnover	Net Profit / (Loss)
2012-13	44.48	0.95
2013-14	31.34	(24.82)
2014-15	32.75	(3.77)
2015-16	39.63	(11.11)
2016-17	38.06	(4.89)
	Net worth as on 31.3.2017: (-)Rs.68.56 crore	

8.19. During 2017-18 (up to September, 2017), the company has achieved gross turnover of Rs.19.27 crore and restricted its loss to Rs.0.62 crore, as per the provisional unaudited results.

8.20 For revival and growth of HFL, the company had taken steps to diversify into business of fluoro specialty chemicals and adopted the strategy of switching over from single product to multi-product facility to reduce dependency on

PTFE. However, due to commercial unviability of the products, HFL is currently selling HCFC-22 along with PTFE filled grades based on the market conditions.

Strategic Disinvestment of HFL

8.21 The Government on 27.10.2016 has given 'in principle' approval for strategic disinvestment of HFL with the parent company HOCL to exit the firm completely. The strategic disinvestment is being processed by the Department in accordance with the guidelines / instructions issued by the Department of Investment and Public Asset Management (DIPAM) from time to time. An Inter-Ministerial Group (IMG) chaired by Secretary (C&PC) has been constituted for selection of Transaction Adviser (TA) and Legal Adviser (LA), deciding qualification criteria, preparing PIM and EoI, etc. An Evaluation Committee under chairpersonship of AS &FA, M/o Chemicals & Fertilizers, has also been constituted for fixing reserve price, making recommendations for approval of strategic partner, bid amounts etc. Transaction Adviser and Legal Adviser have also been appointed by the Department and Asset Valuer appointed by HOCL for providing advisory services and managing the strategic disinvestment process. Requisite preparatory steps for strategic disinvestment of the company are presently under process.

HINDUSTAN INSECTICIDES LIMITED (HIL)

8.22 Hindustan Insecticides Limited (HIL) was incorporated in 1954 in New Delhi for manufacturing and supply of DDT (dichloro diphenyl trichloroethane) for Malaria Eradication Programme of Government of India. In the year 1957, the company set up a factory at Udyogmandal, Kerala, for manufacturing of DDT. HIL set up another factory in 1977 at Rasayani, Maharashtra, for manufacturing Malathion, an insecticide. The third manufacturing unit of the company was set up at Bathinda, Punjab, in 2003 by shifting its erstwhile Delhi factory. Rasayani and Udyogmandal Plants have both DDT and agrochemical manufacturing facilities while Bathinda has only formulations manufacturing and packaging facility. The company has 7 Regional Sales Offices across India and a wide network of dealers for marketing and distribution of its products.

8.23 Authorized and paid up share capital of HIL is Rs.100 crore and Rs.91.33 crore respectively. 100% of its shares are held by the Govt. of India.

8.24 HIL is the sole supplier of DDT to the National Vector Borne Disease Control Programme (NVBDCP) of the Ministry of Health and Family Welfare, Government of India. The Company diversified into agrochemicals in the late 1970s to ensure supply of quality pesticides at reasonable prices to the agricultural sector. Today it has a range of technical and formulation grade pesticides to meet the varied requirements of the farming community.

8.25 To further consolidate its position, HIL in 2012-13 ventured into seed production and marketing business. The company has been recognized as a nodal agency by the Ministry of Agriculture and Farmers Welfare for production and marketing of certified seeds for crops and vegetables. The company actively participated in seed production and supply of seed minikits high yielding varieties under National Food Security Mission (NFSM), National Mission on Oil Seeds and Oil Palms (NMOOP) and Mission on Integrated Development of Horticulture (MIDH) as National Level Seed Agency. Turnover from seed business during the financial year 2016-17 was Rs.52 Crore.

8.26 In 2015-16, with a vision to become one stop shop for all the agricultural inputs needs of farmers, HIL further diversified into fertilizers business. It has been inducted by the Department of Fertilizers as an agency to import fertilizers. The company achieved a turnover of Rs.82 crore from supply of fertilizers during 2016-17.

Financial Performance

8.27 After implementation of revival package in 2006-07, HIL has been continuously posting profits. Financial performance in terms of turnover and net profit / loss for the last 5 years and net worth as on 31.3.2017 are given below:

(Rs. in crore)

Year	Turnover	Net Profit / (Loss)
2012-13	301.11	2.92
2013-14	330.35	1.84
2014-15	339.90	1.60
2015-16	334.75	1.83
2016-17	369.51	3.26
	Net worth as on 31.3.2017: Rs.96.81crore	

8.28 During current FY 2017-18 (up to September, 2017), the company has achieved turnover of Rs.95.07 crore and net profit of Rs.0.57 crore, as per provisional unaudited results.

Exports

8.29 The company achieved exports of Rs.3.43 crore in 2016-17 as against exports of Rs.28.66 crore in the preceding FY 2015-16. The decrease in export turnover in 2016-17 was due to delay in placement of orders by importer countries. For 2017-18, the company has already got orders for supply of DDT to some African countries amounting to approximately Rs. 30 crore.

New initiatives, projects and achievements of HIL

8.30 With a view to widen the product profile and reduce the company's dependence on DDT revenue, new initiatives and projects taken up / planned by HIL to diversify its operations are:

(i) During 2016-17, the company started commercial production of water soluble fertilizer (NPK 19:19:19) at Bathinda unit under the brand name 'HILGOLD'. The plant has capacity to manufacture 1800 MTPA. The company has also started the process of setting up manufacturing facilities for water soluble fertilizers at its Udyogmandal and Rasayani unit with capacity of 3000 MTPA.

(ii) HIL has signed MoUs with other public sector fertilizer companies namely National Fertilizers Limited (NFL), Rashtriya Chemicals and Fertilizers (RCF) and IFFCO for supply of neem coated UREA, DAP and NPK to HIL's business network across the country. The company has also entered into marketing tie-ups with Single Super Phosphate (SSP) manufacturers in the country for the supply of SSP to the company's business network.

(iii) The Company plans to set up a Long Lasting Insecticidal Nets (LLIN) manufacturing facility at its Rasayani Unit with an initial capacity of 50 lakh nets per annum under the UNIDO's project "Development and Promotion of Non-POP alternative to DDT" which is expected to become operational in 2018-19.

(iv) With Plan loan of Rs.11 crore provided by the Govt. of India in 2014-15, HIL is

setting up a plant at Udyogmandal unit (Kochi) to manufacture Pendimethalin, a herbicide mainly used to control grass / weeds in agricultural and horticultural crops. The plant is expected to become operational by January, 2018.

(v) The company carried out several training programs for farmers in 14 states of the country on safe and judicious use of pesticides and adoption of integrated pest management. For the first time, HIL also organized two international trainings / study tours for senior officials from Government of Afghanistan on seed production, marketing, certification etc. which was funded by the World Bank.

Group photograph with the delegates from Ministry of Agriculture, Irrigation and Livestock, Government of Afghanistan, who were given training by HIL.

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Chapter – 9

Autonomous Institutions

Central Institute of Plastics Engineering & Technology (CIPET)

9.1. GENERAL PROFILE

9.1.1 CIPET is an ISO 9001:2008 QMS, NABL, ISO/IEC 17020 accredited premier National Institution under the administrative control of Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers, Government of India. The institute was set up in 1968 at Chennai and completing 50 years' of its successful journey in 2018. Its main activities involve Skill Development, Technology Support, Academics & Research (STAR) for the growth of polymer & allied industries in the country. CIPET has 30 functional centres spread across the country which include 5 High Learning Centres (HLCs) at Ahmedabad, Bhubaneswar, Chennai, Kochi and Lucknow, 18 Diploma Centres / Vocational Training Centres (VTCs) at Amritsar, Aurangabad, Bhopal, Guwahati, Hajipur, Haldia, Hyderabad, Imphal, Jaipur, Murthal, Mysore, Raipur, Bhubaneswar, Baddi, Vijayawada, Gwalior, Chandrapur and Valsad, 3 specialized centres at Advanced Tooling & Plastics Product Development Centre (ATPDC) at Madurai, Advanced Plastics Processing Technology Centre (APPTC) at Balasore and Plastics Waste Management Centre (PWMC) at Guwahati, 3 R&D wings at Advanced Research School for Technology & Product Simulation (ARSTPS), Chennai, Advanced Polymer Design & Development Research Laboratory (APDDRL), Bengaluru and Laboratory for Advanced Research in Polymeric Materials (LARPM), Bhubaneswar and 1 Polymer Data Service Centre (PDS).

9.1.2 Apart from the above, 9 Centres of CIPET are in process of setting up at Medak (Telangana), Jaipur (Rajasthan), Srinagar (Jammu & Kashmir), Ranchi (Jharkhand), Dehradun (Uttarkhand), Bihar, Varanasi (Uttar Pradesh), Agartala (Tripura) and Mumbai (Maharashtra).

9.2 ACADEMIC PROGRAMS AND SKILL DEVELOPMENT PROGRAMS

9.2.1 Long Term Professional Skill Development Programs:

CIPET conducts 13 different long term training programs i.e. Diploma, Post

Diploma, Post Graduate Diploma, Undergraduate, Post Graduate and Ph.D. programs with different levels of entry qualifications. The long term programs offered by the institute are as follows:

- Diploma in Plastics Technology (DPT) (3 years)
- Diploma in Plastics Mould Technology (DPMT) (3 years)
- Post Diploma in Plastics Mould Design with CAD/CAM (PD-PMD)(1½ years)
- Post Graduate Diploma in Plastics Processing &Testing (PGD-PPT)(1½ years)
- Post Graduate Diploma in Plastics Testing & Quality Management (PGD-PTQM)
- B.Tech. (Plastics Engineering/Technology) (4 years)
- B.E./B.Tech. (Manufacturing Engineering/Technology) (4 years)
- M.Tech. (Plastics Engineering/Technology) (2 years)
- M.Tech. (Polymer Nanotechnology) (2 years)
- M.E. (CAD/CAM) (2 years)
- M.Sc.(Bio Polymer Science) (2 years)
- M.Sc.(Polymer Science) (2 years)
- M.Sc. (Tech.) in Material Science Engineering (5 years)

The Undergraduate and Postgraduate programs are offered at five High Learning Centres (HLCs) in affiliation with respective State Universities. In 2017-18 (as on December, 2017), 13,843 students were undergoing long term programs as against 13,992 students in the corresponding period of 2016-17.

9.2.2 Short Term Vocational Skill Development Training Programs:

CIPET conducts vocational skill development training programs in the entire gamut of Plastics Engineering & Technology. CIPET is offering 36 programs duly aligned with National Skill Qualification Framework (NSQF)in the field of Plastics starting from 16 hours duration to 1 year. These are aimed at enhancing skill and competency level of participants in the relevant domains of plastics. The broader range of programs offered by CIPET includes:

- Induction training programs
- Up-skilling and re-skilling programs
- Short term industry specific programs
- Tailor made programs for industries
- In - plant training for students from various colleges and universities.

Majority of the skill development programs are sponsored by various State / Central Government and agencies with the objective of uplifting the

living standards of unemployed and under employed youth through gainful employment in plastics & allied industries in India and abroad.

During 2017-18, CIPET targets to train to 80,000 candidates through Long term, short term and skill development programs as against 66,034 candidates trained during 2016-17. As such CIPET is a major contributor towards Skilling India initiative.

9.3 TECHNOLOGY SUPPORT SERVICES

9.3.1 CIPET is a pioneer institute in promoting the plastic industries through Technology Support Services in all the key areas viz., Design, CAD/CAM/CAE, Tooling, Plastics Processing, Testing and Quality assurance.

9.3.2 During the year 2017-18 (upto December 2017) 47,575 Technical support assignments were undertaken by CIPET which include job works, mould orders, testing assignments and consultancy services and significantly contributed towards 'Make in India'. Some of the important assignments undertaken under Technology Support Services are given below:

- Production of Bobbins for National Film Archives of India (NFAI), Govt. of India, Pune;
- HDPE Bottle for Maharashtra State Seeds Corporation Ltd (MAHABEEJ) Akola, Govt. of Maharashtra;
- Measuring Cups (PP) for Maharashtra Insecticides Ltd., (MIL), Akola, Govt. of Maharashtra;
- Rotational moulds for Astroturf Hockey Ball for M/s.3D Global Technologies Jalandhar;
- Helmet mould for M/s. Anand Shuttel Cock, Jalandhar;
- RO Water tank & Milk Cabinet for M/s Reliable Aqua Systems (P) Ltd., & M/s Suntech Industries, Jaipur;
- Junction Boxes for M/s Electronic Corporation of India Limited (ECIL) , Hyderabad;
- Moulds for production of HDPE Caps for M/s Emami Agrotech, Haldia;
- Moulds for production of Oil Cooler Caps for M/s. BEML Ltd., Engine Division, Mysore;
- Edible Bowl and Spoon Moulds for M/s Defence Food Research Laboratory (DFRL), Mysore;

9.3.3 Inspection services forms one of the important activities of CIPET which helps various organizations including Government Departments in quality certification of plastics products. During this period (upto December 2017), around 5900 Pre-Delivery Inspection (PDI) assignments were undertaken by different CIPET centres.

9.4 RESEARCH & DEVELOPMENT ACTIVITIES:

9.4.1 The two well established R&D wings of CIPET viz., (i) Advanced Research School for Technology & Product Simulation (ARSTPS) at Chennai and (ii) Laboratory for Advanced Research in Polymeric Materials (LARPM) at Bhubaneswar have been consistently contributing in applied research for industries since 2008-09.

9.4.2 Recently, Govt. of India has approved establishment of a R&D Wing at Bengaluru - Advanced Polymer Design & Development Research Laboratory (APDDRL)" at a total project cost of Rs.87.00 crore shared equally between Government of India and Government of Karnataka. The State Government has also sanctioned the project cost for establishment of R&D Center and allotted 5 acres of land. In addition to allotment of 5 acres of land for construction of permanent campus for APDDRL, Bengaluru, Government of Karnataka has allotted 17,760 sq ft. building premises at Peenya Industrial estate for immediate establishment of R&D and Testing Laboratories. Renovation and furnishing works of laboratories have been completed and the Centre has started functioning in the temporary premises.

9.4.3 During 2017-18 (upto December, 2017), major contributions / achievements of these three R&D wings were as follows:

1. No. of patents filed: 03
2. No. of research papers published: 62
3. No. of papers presented in International Conferences: 31

9.4.4 The major research & development projects undertaken are given below:

- Prototype Development of in vivo tested HDPE based biocompatible composite with HA/ Al2O3 Ceramic Fillers as Acetabular Cup for Total Hip Replacement for developing new material.
- Development of Indigenous Floating System for Installation of Solar PV Panels in Water bodies for solar power generation.

- Technology Development for Hospital Waste Management (HWM) to help in better management of hospital waste.
- Development of Polymer based Optoelectronic devices & its degradation studies for development of instrumentation.
- Development of Light Weight Polymer Components for Electric Vehicle to reduce the vehicle weight for improving the performance.
- Biodegradable Packaging - Perishable items for industry.
- Development of Conductive Composite Housing- M/s Bharat Electronics Limited (BEL), Panchkula for electronic devices.

9.5 FINANCIAL PERFORMANCE (UN-AUDITED)

9.5.1 During the financial year 2017-18, CIPET has generated an income of Rs.161.03 crore (upto December 2017) against the budgeted annual income of Rs.316.00 crore. During the same period, CIPET has incurred revenue expenditure of Rs.133.71 crore against the budgeted annual revenue expenditure of Rs.264.44 crore.

9.5.2 During last few years, CIPET's civil & technical infrastructure facilities have been strengthened which has culminated in ensuring consistent growth in all the domains of plastics engineering & technology viz., Academic, Technology and Research & Development. CIPET has been operating on self-sustainable mode since 2008-09 onwards.

9.6 MAJOR EVENTS:

9.6.1 An Indian Delegation led by Shri Mansukh L. Mandaviya, Hon'ble Minister of State for Transport & Highways, Shipping, Chemical & Fertilizers along with DG, CIPET and other senior officials of Department of Chemicals & Petrochemicals, CIPET visited Argentina & Brazil during 14th to 24thApril, 2017 and signed MoUs with Sao Paulo State University (UNESP), Brazil and University of Buenos Aires (UBA), Argentina for bilateral cooperation. Deliberations were held with counterpart Ministers and Industry Associations of these countries for promotion of chemical & petrochemical industry, PCPIRs and to facilitate collaboration between CIPET and UBA, Argentina and UNESP, Brazil in the area of academics & research in polymer sector.

9.6.2 Foundation stone of CIPET, Ranchi was laid jointly by Shri Ananth Kumar, Hon'ble Minister of Chemicals & Fertilizers & Parliamentary Affairs, Government of

India and ar, Hon'ble Minister for Chemicals & Fertilizers and Parliamentary Affairs, Government of India and Shri Manohar Lal, Hon'ble Chief Minister, Haryana in the presence of senior officials and other dignitaries on May 15, 2017.

9.6.3 Foundation stone of CIPET, Gwalior was laid jointly by Shri Ananth Kumar, Hon'ble Minister for Chemicals & Fertilizers and Parliamentary Affairs, Government of India and Hon'ble Chief Minister of Madhya Pradesh, Shri Shivraj Singh Chouhan in the presence of senior officials and other dignitaries on June 6, 2017.

9.6.4 Memorandum of Understanding (MoU) was signed between ONGC Petro additions Limited (OPaL), Vadodara, Gujarat and CIPET on 10.05.2017 for (a) Establishment of OPaL – Product Applications & Research Centre (PARC) at Dahej with state of art facilities to cater to the needs of quality assessments and industrial needs (b) NABL Accreditation of PARC and Central Laboratory at Dahej, (c) Training of OPaL's manpower (d) Providing technical support services in the areas of testing, processing, tooling and (e) Research & Development activities in emerging areas & support for development of new materials.

Foundation stone of CIPET, Ranchi was laid jointly by Shri Ananth Kumar, Hon'ble Minister of Chemicals & Fertilizers & Parliamentary Affairs, Government of India and Shri Raghubar Das, Hon'ble Chief Minister, Jharkhand on 15.05.2017

Boys and Girls Hostel of CIPET, Murthal was jointly inaugurated by Shri Ananth Kumar, Hon'ble Minister of Chemicals & Fertilizers & Parliamentary Affairs, Government of India and Shri Manohar Lal, Hon'ble Chief Minister, Haryana on 15.05.2017

Signing of MoU between CIPET and UBA, Argentina at Buenos Aires on 17th April, 2017 in presence of Shri Mansukh L. Mandaviya, Hon'ble Minister of State for Transport & Highways, Shipping, Chemical& Fertilizers

Foundation stone of CIPET, Gwalior was laid jointly by Shri Ananth kumar, Hon'ble Minister for Chemicals & Fertilizers and Parliamentary Affairs, Govt. of India and Hon'ble Chief Minister of Madhya Pradesh – Shri Shivraj Singh Chouhan on 06.06.2017.

Signing of MoU between OPaL, Vadodara and CIPET for establishment of PARC at Dahej and for providing technical support services in the areas of testing, processing and tooling.

9.7 Implementation of Offical language – Hindi

9.7.1 Shri Ananth Kumar, Hon'ble Minister for Chemicals & Fertilizers and Parliamentary Affairs, Government of India presented "Rajbhasha Excellence Award" to Prof. (Dr.) S. K. Nayak, Director General, CIPET in the meeting 'Hindi Salahakar Samati' of Ministry of Chemicals & Fertilizers organized at Bengaluru on 01.07.2017.

9.7.2 Hindi Pakhwada / Hindi Diwas :

Hindi Pakhwada was organized at all CIPET Centers from 14th September to 28th September, 2017. During the event, several programs viz. Hindi speaking, Hindi Writing, Quiz Competitions, Essay and Debate competitions were held. Hindi Diwas was celebrated on 14th September, 2017 at all CIPET Centres.

9.7.3 Rajbhasha Inspection by Ministry:

Rajbhasha Inspection of CIPET centres was carried out by Department of Chemicals and Petrochemicals on 25th& 26th September, 2017.

Institute of Pesticide Formulation Technology (IPFT)

9.8 INTRODUCTION :

Institute of Pesticide Formulation Technology (IPFT) located at Gurgaon, Haryana, is a registered Society under the Societies Registration Act - 1860 under the Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers, Government of India. IPFT is the only Institute of its kind devoted to the development of state-of-the-art user and environment friendly new generation pesticide formulation technology. The Institute has established a healthy rapport with the Indian agrochemical industries and has been able to successfully transfer technologies for safer, efficient and environment friendly formulations. IPFT is also helping the industries in data generation as per CIB/RC guidelines for bioefficacy, phytotoxicity and pesticide residue analysis for both agriculture and house hold formulations. IPFT undertakes both in-house and external funded R & D projects.

9.9 OBJECTIVES OF THE INSTITUTE :

- Development and production of the state-of-the-art user and environment friendly new generation pesticide formulation technology.
- Promotion of efficient application technologies suiting the existing requirements of the newer formulations.
- Information dissemination of safe manufacturing practices, quality assurances, raw material specification and sources.
- Analytical and consultancy services.
- Fostering the improvement in the qualification and usefulness of pesticide scientists working in the agrochemical area.
- Continuing education through specialized training for pesticide personnel.

9.10 **Purpose to Setup :**

Pesticides in pure chemical form (technical grade) cannot be applied directly because of very high toxicity and complex physico-chemical properties. The technical grade pesticides are converted into a ready to use state (formulation), in which they can be diluted with water and small quantity may be homogeneously distributed over large target area. The formulated products are suitably applied by practical methods to produce desired efficacy on the target pests.

To minimize the risks and disadvantages of conventional formulations, IPFT was set-up to develop various user & environment friendly new generation pesticide formulations and related activities for safety of user, farmers and environment. IPFT is the only Institute of its kind in the country for helping the Indian Agrochemical Industries in the field of pesticide formulations development.

It has emerged as a reputed institute among the pesticide formulation and analytical R & D centres of India. IPFT has always been at the forefront of developments in pesticide formulations and analytical technologies.

9.11 MAJOR ACHIEVEMENTS :

9.11.1 Research & Development

i. Development & transfer of technology of WDG formulation of HYTC- Bio fertilizer- The technology of Water Dispersible Granules formulation (WDG) of High Yield Technology –Chitin (HYTC) bio-fertilizer has been successfully developed and transferred to agrochemical industry. The developed formulation is suitable for soil application and adding into irrigation water. The formulation readily disperses in water and improves availability of nutrients to roots of the plants. Compared to existing powder product, it is easy to pack, transport and apply in the agricultural fields. The formulation at lower doses than base powder provides better crop growth results.
ii. Mosquito coil : Plant extract and synergist based mosquito repellent coil formulation for protection from adult mosquito.
iii. Surface spreading oil : Oil based formulation for aquatic larvae control application
iv. Development and Promotion of Non-POPs alternatives to DDT- The aim of UNIDO sponsored project is to introduce bio- and botanical pesticides

and locally appropriate cost-effective and sustainable alternatives to DDT as first step for reduction and eventual elimination of dependency on DDT, ensuring food safety, enhancing livelihood and protecting human health and environment. The Neem based mosquito coil and repellent cream process successfully standardized at laboratory scale and we are in the process of optimising the parameters for pilot scale level scale-up of these two formulations.

In-House R&D Work

v. Experimental work for developing neem oil micro-emulsion gel-Formulation composition of micro-emulsion gel was optimized by optimizing different formulation parameters for achieving specifications and desired bio-efficacy. Different surfactant combinations and co-surfactants were used to prepare the formulation for solubilisation of active ingredient in bulk aqueous medium.

vi. Studies on botanical synergist-Experiments were conducted for extraction of synergist using different solvents for characterization of active constituents. For characterization of constituents, extracted from botanical synergist were analysed by GC-MS. Lab trials were conducted for checking the bio-efficacy of various extracts against mosquito larvae.

vii. Method development for simultaneous determination of Imazamox and Imazathapyr in Soybean by HPLC.

viii. Method development for determination of Glyphosate by HPLC with Post Column Derivatization.

ix. Method development and validation for determination of Gibberellic Acid in Chilli by LC-MSMS.

x. Method development and validation for determination of Tricyclazole in Paddy grain, straw and field soil by GC-MSMS.

xi. Under the project entitled 'Development and Promotion of Non-POPs alternatives to DDT', the developed neem coil formulation was evaluated for its bio efficacy against Aedes aegypti. The insect population maintained under standard laboratory condition and male-female ratio stabilized under different physiological/ nutritional condition along with optimum

temperature 26±2 °C and 65±10 °C RH. Different compositions of neem and other botanicals based cream was evaluated for testing the repellency of the developed formulations. Under the recipe development activity for the optimization of composition, the testing of Neem kernel powder (Azadirachta indica) along with synergistic botanical adjuvant Kiker powder (Prosopis juliflora) against mosquito larvae at different concentration were conducted under the standard laboratory conditions.

xii. The antagonistic activity of various plant based resource viz. Azadirachtaindica, ocimumsanctum, curcuma aromatic, Prosopis juliflora, Cympogon citratus, cedrus deodara was also tested against the pathogenic fungus, sclerotinia sclerotium under standard laboratory conditions.

xiii. Continuation of NABL Accreditation of IPFT :-
IPFT is continuing to be an accredited Laboratory by National Accreditation Board for Testing & Calibration Laboratories (NABL) as per ISO/IEC–17025 (2005) for the analysis of pesticides and their formulations, pesticide residues in food matrices and CWC related chemicals. The Re-assessment of the laboratory was held during March 25-26, 2017 and the accreditation of the Lab is valid until 23.04.2019.

xiv. **Signing of MoU :-**

IPFT signed MoU with Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers, Govt. of India for performing various activities as per mandate of Institute.

xv. **Programmme Study Centre for "Post Graduate Diploma in Analytical Chemistry (PGDAC)" :-**

IPFT continued to be an IGNOU Programmme Study Centre for "Post Graduate Diploma in Analytical Chemistry (PGDAC)" for 2017–18.

xvi. **GB Meeting :-**

The 35th Meeting of the Governing Body of IPFT was held on 20th July, 2017 under the Chairmanship of Secretary DC & PC.

9.11.2 **Publications**

Research

- Stabilization of azadirachtin in neem oil using prosopis juliflora (leguminoceae) as a botanical synergist, Ranju Sharma, Kumari Richa, Anjali Prabha, Arpana Kumari and Phool Kumar Patanjali, International Research Journal of Natural and Applied Sciences, Volume 4, Issue 7, July 2017

- Efficacy of Waste biomass based Tablet Formulation for Cockroach control , Saurabh Dubey, Megha Pant, Neeraj Kumar, Phool Kumar Patanjali, Waste and Biomass Valorization, 2017 (accepted)

- Control of dengue mosquito. Gulsan,Nusrat,Phool kumar Patanjali, International Journal of Mosquito Research.

- Monitoring of multiclass Pesticide Residue in farmland soil from different districts of Haryana, S. Mishra, V. D. Deotale, M.A. Pande, M.K. Singh, S. Alam, B.S. Shehrawat, Lalitesh Kumar Thakur & S.K. Raza, Agriculture Research Journal, 54(1), 2017, 47-52

- Formulation and bio-efficacy of emulsifiable concentrates of Pongammia pinnata and Jatropha curcas seed oils against Plant Pathogens" -International Journal of ChemTech Research 2017(accepted).

- Pesticide residue analysis in seasonal fruits from Charkhi- Dadri, Jhajjar and Gurgaon Districts of Haryana, India, Savita Sharma, Akriti Agarwal and Lalitesh Kumar Thakur, International Journal of Institutional Pharmacy and Life Sciences 2017(accepted).

- Melia azedarach seed oil EC formulation and evaluation of its antifungal activity against Rhizoctonia solani and Sclerotium rolfsii pathogens, Rajmani Prajapati, Lalitesh Kumar Thakur & Upma Singh, Advances in Bioresearch, 8(5), 2017, 141-147

- Seed oils are natural source of Bio-Pesticides, Rajmani Prajapati, Akriti Agawal, Lalitesh Kumar Thakur & Upma Singh, World Journal of Pharmaceutical and Life Sciences, 3(8), 2017, 157-165.

- Utilization of Bio-botanicals formulation for intensive crop pest management and safe guarding public health. P.Bhandari, Brijesh Bisht, Neha Bhatt and P.K.Patanjali 2017 National Symposium on Innovations in Horticulture: Production to consumption. September 14-17, G.B.P.U.A.T ,Pantnagar ISBN :978-81-935237-1-1.Pg.45

9.11.3 Patents Filed/granted.

i. Attractant gel trap for controlling mosquito – application No. 201711037491

9.12 Progress of Ongoing/Completed Research Project.

i. Project Title :- Development and Promotion of Non-POPs alternatives to DDT -(Sponsored by: United Nations Industrial Development Organization UNIDO)

Date of Sanction of Project: 22-12-2016
Date of completion of Project: 31-12-2019

Objectives of the Project:

The project aim is to introduce bio- and botanical pesticides and locally appropriate cost-effective and sustainable alternatives to DDT as first step for reduction and eventual elimination of dependency on DDT, ensuring food safety, enhancing livelihood and protecting human health and environment.

Progress/achievements:

The following process steps were standardized at laboratory scale and we are in the process of optimising the parameters for pilot scale level scale-up of these two formulations.

- **Mosquito Coil:** - Blending of Raw materials, Dough Preparation, Coil preparation by extrusion, Air drying/oven drying 50-55 C in tray drier.

- **Repellent Cream:** - Mixing all the raw materials by emulsification using high shear mixer along with viscosity optimization.

After producing these two formulations at pilot scale level, the quality parameters will be checked and bio-efficacy evaluation process as per CIB protocol will be initiated for registration with Central Insecticide Board.

ii. **Project Title** : -

Monitoring of Pesticide Residues in Vegetables of different parts of India sponsored by Ministry of Agriculture- Every month approximately 60 samples of fruits, vegetables (farm gate, organic & mandi), cereals, milk & water were collected from Faridabad, Rohtak & Palwal, three districts of Haryana. Samples were processed & analysed by sophisticated instruments like GC (ECD), GC(FPD) & GC-MS. Analysis data were compiled & the reports were sent to project co-ordinator by second week of every month.

Out of total 420 samples during 2017-18, 86.0 % of samples were found without pesticide residue. 11.0 % of the samples were found with pesticide residues while 3.0 % of them were found with pesticides above maximum residue limit (MRL).

9.13 Sponsored Projects :

IPFT continued to work on the sponsored projection "Monitoring of Pesticide Residue in various Crops" sanctioned by ICAR, Ministry of Agriculture, Govt. of India - Every month approximately 60 samples of fruits, vegetables (farm gate, organic & mandi), cereals, milk & water were collected from Faridabad, Rohtak & Palwal, three districts of Haryana. Samples were processed & analysed by sophisticated instruments like GC (ECD), GC(FPD) & GC-MS. Analysis data were compiled & the reports were sent to project co-ordinator by second week of every month.

9.14 Industry Sponsored Projects :

i. Provided consultancy services to M/s. Entovest, Turkey and Sulphur Mills ltd,Mumbai.

ii. Studies on the Residue of Chlorothalonil 75% WP in Groundnut sponsored by M/s. Krishi Rasayan Exports Pvt. Ltd.

iii. Studies on the Residue of RJKP 1505 in Sugarcane (Three locations, two seasons study)sponsored by M/s Atul Ltd.

iv. Studies on the Persistence of RJKP 1505 in Sugarcane sponsored by M/s. Atul Ltd.

v. Studies on the Persistence of RJKP 1505 in Soil (four agroclimatic zones)

and water (three pH) sponsored by M/s. Atul Ltd.

vi. Studies on the Persistence and Residues of Gibberellic Acid 0.45% SL in Chilli (samples received from two locations)sponsored by M/s. Krishi Rasayan Exports Pvt. Ltd.

vii. Studies on the Residues of Tricyclazole75% WP in Paddy sponsored by M/s. Krishi Rasayan Exports Pvt. Ltd.

viii. Studies on the Residues of Imazamox 35% + Imazathapyr 35% WG in Soybean(samples received from second season study)sponsored byM/s. Parijat Industries Pvt. Ltd.

ix. Forty projects were sponsored by the Pesticide Industries for Bio-efficacy and phytotoxicity studies of various new pesticide formulations like Emamectin Benzoate 5% SG, Tebuconazole 25.9%, Azoxystrobin 23%SC, Difenoconazole 25% EC,WCPL ST, AKJ 20 , Oxyfluorfen 23.5% EC ,2,4 D ethyl ester,Paraquat dichloride 24% SL Diuron, Atrazine sponsored by various aro-chemcial Industries were tested against insect and pests species as per central Insecticide Board guidelines . Study of aluminium phosphide tablet for control of stored grain pest in wheat was also conducted to analyze the effectiveness of Aluminium phosphide in controlling the Rhyzopertha dominica. The phytotonic effect of Gibberellic Acid ,a plant growth regulators was analyzed by seedling dip technique and the effect of treatment was analyzed on vegetative growth characters viz. average plant height (mm), No. of Primary lateral branches/plant days to 50% flowering, period for fruit maturity fruit size (Length and girth) number of fruits per plant and average fruit weight.

x. One hundred Fifty one (151) samples from various industries were analysed for particle size distribution.

xi. One hundred ninety (190) Samples of vegetables, soil and water have been received for pesticide residue analysis from Directorate of Horticulture, Govt. of Haryana

9.15 SKILL DEVELOPMENT / TRAINING :

IPFT is conducting Skill Development and Training Courses for various stakeholders in Chemical/ Agrochemical sector. Some of the courses offered at IPFT are:

Basic Techniques of Pesticide Formulations; QA/QC of pesticides and their formulations; pesticide application technology; pesticide residue analysis; basic principles of GC, HPLC, GC-MS, GC-MS/MS, LC-MS/MS; Advanced Training on GC, HPLC, GC-MS, GC-MS/MS, LC-MS/MS, Biotech application in biological pesticides, laboratory and field evaluation of new molecules and pesticides for agriculture and public health sectors; and integrated pest management. IPFT contributes towards farmers field fays and farmers meetings with significant impact under development of rural agriculture and intensive crop management. Research scholars/ students/ executives from Indian universities/ pesticide industries come to IPFT for taking training on above areas. Recently Scientists from Nepal took training on "Development of Neem based formulations for agricultural and public heath applications" during 17th -19th August, 2017.

9.16 WORKSHOP / CONFERENCE / SEMINAR ORGANISED :

Sl. No.	*Name of the Conference/Workshop*	*Place*	*Date*
1.	INDO-US Workshop on Security of Dual Use Agrochemicals (Improving Security at Vulnerable Locations in the Agrochemical Supply Chain)	NASC Complex, Pusa, New Delhi	01.08.2017

9.17 CONSULTANCY SERVICES :

IPFT has been offering Consultancy Services to various Agrochemical Industries from time to time on various aspects related to Pesticide Manufacturing and Establishment of QA/QC Laboratories.

9.18 AWARENESS AND EXTENSION ACTIVITIES :

IPFT has been creating awareness and doing extension activities for farmers through the following activities:

- Identifying and adopting villages for educating the farmers in Pesticide Application Technologies.
- Conducting survey and obtaining feedback on latest pests problems.
- Educating farmers about organic farming and propagating the use of indigenous techniques/ traditional knowledge.

- Conducting workshops for judicious use of pesticide through Krishi Vigyan Kendras (KVKs).
- Participation in various Krishi Melas, Conferences, Agriculture Exhibitions etc.

9.19 RAJBHASHA ACTIVITIES :

- Bilingual Covering letters were used with the letter of technical and scientific nature. Formats of Bills/ Test reports were prepared in bilingual form.
- IPFT have its own bilingual website.
- Annual report 2016-17 was printed bilingually.
- IPFT is a member of Town Official Implementation Committee (TOLIC), Gurgaon.
- The letters received in Hindi were replied in Hindi only.
- Codes, Manuals, Forms, Procedural literature are in bilingual form.
- IPFT employee Mr. Sudeep Mishra, Scientist (Analytical) participated and won second prize in Hindi essay competition organised by TOLIC on 30.1-2017.

9.20 SWACH BHARAT MISSION

A. Under "Swachh Bharat Mission", every month following activities conducted in IPFT during 2017-18(upto December, 2017) :

(a) Daily Cleaning of Admin Block
(b) Daily Cleaning of Laboratory Building
(c) Daily Cleaning of washrooms and urinals
(d) Daily Cleaning of lawns and approach roads
(e) Cleaning of water storage tanks on monthly basis.
(f) Cleaning of roads nearby areas i.e. on NH-8, Udyog Vihar etc.

B. Observance of Cleanliness Drive (Forthnights) – from 16th August, 2017 to 31st August, 2017 is as under :

During this period, following activities conducted by IPFT in the Industrial Area i.e. Udyog Vihar :

i. Cleanliness drives in and around factory premises was done by a team of Institute's employees.
ii. Director, IPFT delivered a talk on International Labour Day and observance of cleanliness drive.

iii. Cleaning and inspection of sanitary facilities for workers in factories was done by team of the Institute's employees.
iv. Awareness Programme for Industrial Human Resources was organized.

During this period, following activities conducted in the Premises of IPFT :

i. Mass Pledges on Swachh Bharat taken by all Officers and Staff of IPFT.
ii. Old Records/Files were identified for weeding.
iii. Cleaning activities within the premises was done.
iv. Identified scrap materials for disposal.
v. A talk on "Awareness Programme on Swachh Bharat" was organized.

9.21 PHOTO GALLERY

(a) IPFT celebrated International Yoga Day on 21.06.2017 :

b) Shri Rajeev Kapoor, Secretary (C&PC) visited IPFT on 20.07.2017 :

(c) IPFT organized INDO-US Workshop on Security of Dual Use Agrochemicals (Improving Security at Vulnerable Locations in the Agrochemical Supply Chain) on 01.08.2017 :

(d) IPFT conducted Swachhta Pakhwada – 2017 during 16-31 August, 2017 :

Chapter – 10

Promotional Activities & Major Events

10.1 Advancements in Polymeric Materials: APM-2017

10.1.1 Central Institute of Plastics Engineering and Technology (CIPET) has been organizing International Conference on "Advancements in Polymeric Materials (APM)" in their High Learning Centres since 2010. This is the most important conference organized by the institute every year which brings together the national / international Scientists, Academicians and Industrialists on a single platform to exchange experience on new developments and advancements in the field of polymeric materials. The event promotes awareness about rapidly advancing technology and provides a common platform to take stock of the current state of polymer research and education.

10.1.2. 8th International Conference on "Advancements in Polymeric Materials, APM-2017" was held in Bengaluru, Karnataka and organised by Advance Research School of Technology and Product Simulation (ARSTPS), Chennai in association with Advanced Polymer Design and Development Research Laboratory (APDDRL), Bengaluru (R&D wings of CIPET) from February 11-13, 2017. The theme for APM 2017 was "Marching towards smart products with Multifunctional Material".

10.1.3. About 600 Scientists, Academicians, Industrialists and budding researchers from within the country and across the globe attended the event. Eminent Professors and Scientists from more than 15 countries delivered lectures during the Conference.

(Hon'ble Minister Chemicals and Fertilizers Shri Ananth Kumar and Hon'ble MoS (RTH,S,C&F) Shri Mansukh L. Mandaviya along with other dignitaries lighting the lamp during inauguration of APM 2017 at Bengaluru)

10.2 India Chem Gujarat 2017

10.2.1 To promote the Indian chemical Industry, Department of Chemicals and Petrochemicals, Government of India and Federation of Indian Chambers of Commerce and Industry (FICCI) have jointly been organizing the "India Chem" series of events.

10.2.2 5th edition of India Chem Gujarat 2017 was organized during 20-22nd September, 2017 at Mahatma Mandir, Gandhinagar, Gujarat. The event was inaugurated by Shri Vijay Rupani, Hon'ble Chief Minister of Gujarat in presence of Shri Ananth Kumar, Hon'ble Minister for Chemicals and Fertilizers, Shri Mansukh L Mandaviya, Hon'ble Minister of State for Chemicals and Fertilizers, Shri Rajeev Kapoor, Secretary, Department of Chemicals and Petrochemicals and other dignitaries. About 535 delegates participated in the India Chem Gujarat 2017.

10.2.3 Highlights of India Chem Gujarat 2017 Conference

- Theme: Speciality Chemicals: Way to go for Chemical Industry
- Included a CEOs Forum on Speciality Chemicals industry Chaired by the Secretary (C&PC) was held on 20th September 2017 at Ahmedabad
- Panel Discussion on theme "Speciality Chemicals: Way to go for Chemical Industry"
- Symposium on "Sound Logistics and Infrastructure as enabler of Chemical Industry
- Symposium on "Feedstock for facilitating Speciality Chemical Industry
- Symposium on "Making Gujarat a Global Speciality Chemicals Hub".
- FICCI Chemicals and Petrochemicals Awards 2017 held on 21st September, 2017 at Gandhinagar, Gujarat. The Awards were distributed by Shri Mansukh L Mandaviya, Hon'ble Minister of State for Chemicals & Fertilizers to various categories of chemical and petrochemical sectors

10.3 India Chem 2018

10.3.1 The 10th edition of India Chem 2018, would be organized during 4-6th pOctober, 2018 at Bombay Exhibition Centre, Mumbai jointly by the Department of Chemicals and petrochemicals and FICCI.

10.3.2 Chemical industry in India is a diversified industry, covering more than 80,000 commercial products. The chemical industry is the mainstay of industrial and agricultural development of the country and provides building blocks for several downstream industries such as textiles, papers, paints, soaps, detergents, pharmaceuticals, vanish etc.

10.3.3 The most important objective behind organizing the India Chem series is to highlight the investment possibilities in the country's chemical industry and give a fillip to "Make in India" initiative of the Government of India. Leading companies from all over the world predominantly from Iran, China, Japan, United Kingdom, Spain, USA, Germany, Italy, Brazil, Turkey and South East Asian countries are participating as exhibitors, delegates and visitors

10.3.4 With initiatives like "Make in India" program gaining steam, investments, innovation and infrastructure are going to be the major thrust areas for chemical industry. GST reform will also give boost to the chemical industry by lowering the transaction cost and avoiding cascading effect on the taxes. The initiatives like setting up a full functional Single Window System for clearances (SWIFT), reforming labour laws, easing the land acquisition rules coupled with "Make in India" and GST, are expected to propel Indian chemical industry forward.

10.4 Highlights of India Chem:

- International participation from China, Japan, Iran, Germany, Turkey, Vietnam are expected
- Participation of PCPIR States: Gujarat, Andhra Pradesh & Odisha
- Buyers delegation from South America, USA,CIS, West Europe, Middle East and South East Asian Countries and many more to join
- Over 20,000 Business visitors from India and abroad expected
- Over 300 Indian and International exhibitors expected
- Buyer Seller meet by CHEMEXCIL
- Over 30 top CEOs from India and abroad will be deliberating at International Conference
- Make in India Pavilion

10.5 An Interaction Session Cum Workshop with delegates from Chemicals & Petrochemicals Industry association was held under the chairmanship of

Secretary (C&PC) on 07.11.2017 at Hotel Samrat, New Delhi. Interaction Session and Workshop has been organized to have views of industry and industry associations on several issues which are affecting the sector and also to deliberate on the initiatives which should be taken for its sustained growth. The workshop was held in 3 Sessions and issues relating to Draft National Chemical Policy, Environmental regulation including health, safety and security aspects and FTA and Pre-budget proposals were discussed in different Sessions. Representatives from various Chemical and Petrochemical Industry Associations; Indian Institute of Foreign Trade; Department of Commerce; Ministry of Environment Forest & Climate Change and Central Pollution Control Board actively participated in the event.

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Chapter – 11

GENERAL ADMINISTRATION

ORGANISATIONAL SET UP OF THE DEPARTMENT

11.1 The main activities of the Department are policy making, sectoral planning, promotion and development of chemical and petrochemical industries. The administrative and managerial oversight of Public Sector Undertakings engaged in the manufacture of various chemicals and petrochemicals, as well as Autonomous Bodies engaged in these sectors are some of the other major functions of the Department.

11.2 The Department is headed by a Secretary to the Government of India who is assisted by an Additional Secretary & Financial Adviser, one Senior Economic Adviser, two Joint Secretaries, one Deputy Director General and one Chief Controller of Accounts (Organisation chart at Annexure III).

EMPLOYMENT OF SCHEDULED CASTES/ SCHEDULED TRIBES/ PHYSICALLY HANDICAPPED IN THE MAIN SECRETARIAT OF THE DEPARTMENT

11.3 The status of employment of Scheduled Castes/ Scheduled Tribes/ Physically handicapped in the Secretariat of the Department, as on 31.12.2017 is as under:-

Group	Total No. of posts	Scheduled Castes	Scheduled Tribes	Physically Handicapped
A	36	6	0	0
B	80	9	2	0
C	81	14	3	1
TOTAL	197	29	5	1

11.4 Officers in Group 'A' include officers on deputation from All India Services and Central Services, officers on Cadre posts from Indian Economic Service and Indian Statistical Service, officers belonging to Central Secretariat Service and Technical posts of the Department. Appointments to posts in Group B and C

are made by the Department of Personnel & Training, Department of Official Language and Ministry of Statistics & Programme Implementation.

RECORD MANAGEMENT

11.5 The Parliament has enacted "The Public Records Act, 1993" to regulate the management, administration and preservation of public records of the Central Government. The Central Government has also made rules to carry out the provisions of the Act. In terms of the provisions contained in Section 6(1) of the Act, the Under Secretary in-charge of General Administration has been nominated as Records Officer in the Department. The Record Room of the department is located in Udyog Bhawan.

USE OF HINDI IN OFFICIAL WORK

11.6 To ensure compliance with the statutory provisions and Presidential Orders on the Official Language Policy of the Government in the Department and also in its' attached and subordinate offices, there is a Hindi Section. The work of the Hindi Section is supervised by Assistant Director (OL) under the overall guidance of Senior Economic Adviser.

11.7 Hindi Pakhwada was organized in the Department from 15th to 30th September 2017. During this period, five competitions of Hindi Essay writing, Noting and Drafting, Translation, Hindi Poetry and Hindi Essay writing exclusively for MTSs were held. A total of 20 participants were awarded prizes worth Rs 38,000/-.

11.8 Hindi Advisory Committee meeting was held on 1st July, 2017 at Bengaluru under the chairmanship of Hon'ble Union minister of Chemical & Fertilizers. Official Language awards for excellent work in Implementation of official Language were given to HIL, CIPET & HOCL. Updated Chemicals & Petrochemicals Shabdawali was also launched by the Hon'ble Union minister in the meeting.

11.9 Two meetings of the Departmental Official Language Implementation Committee under the Chairpersonship of Senior Economic Adviser were held on 7th June, 2017 and 27th October 2017. The progress made in the use of Hindi in the department was reviewed in these meetings and suggestions for further improvement were adopted for implementation.

11.10 During the year 2017, the First Sub Committee of Committee of Parliament on Official Language inspected the Central Institute of Plastics Engineering and Technology, Guwahati office on 24.10.2017.

11.11 Official Language Inspection of 4 CIPET Centres viz Kochi, Hyderabad, Mysore and Madurai was jointly conducted by Senior Economic Advisor on 25th September 2017. A workshop was organised by CIPET on 26th September, 2017 in Mangalore, Karnataka on "Implementation of Official Language Policy at Office level" to address the challenges in the implementation of Official Language provisions and improvements thereupon. Senior Economic Advisor, DCPC, as Chief Guest of the both the events suggested measures for improvement in implementation of Official Language in the office of CIPET.

Smt. Ranjana Kale, Senior Economic Advisor, DCPC during Hindi Workshop at Mangalore

11.12 Two Hindi workshops were also organised in the department. The first workshop on 'Use of simple and easy Hindi in official work' was organised on 21st April, 2017 and the second one on 'Use of Computers in Hindi' was organised on 30th August, 2017. Thirty Officers/Officials were provided training in these workshops.

11.13 Most of the documents like Annual Report, Performance Budget, Demand-for-Grants, Parliament Questions & Assurances, Papers relating to standing committee and report of Comptroller and Auditor General, Cabinet notes, papers of updating the departmental website were issued in bilingual form as

per the Section 3(3) of the Official Language Act, 1963. All letters received in Hindi were replied to in Hindi as per the Rule 5 of the Official Language Rules, 1976. Efforts were made to progressively increase the use of Hindi in day-to-day official work as set out in the Annual Programme of the Department of Official Language.

11.14 During the year, Quarterly Progress Reports were compiled on the basis of the inputs received from different Sections of the Department and were sent to the Department of Official Language for inclusion in their database. Reports received from Attached and Subordinate Offices were reviewed and deficiencies found therein were suggested for rectification.

Activities of the Vigilance Set up

11.15 The Department has a Chief Vigilance Officer (CVO) of the rank of Joint Secretary to look into the complaints against the employees of the Department as well as Board Level Officers of the Public Sector Undertakings (PSUs) and organizations under its administrative control. The CVO is assisted by a Director, Under Secretary and a Vigilance Section.

11.16 'Vigilance Awareness Week' was organized during the period 30th October, 2017 to 4th November, 2017 with the theme "My Vision - Corruption Free India". All the PSUs and Autonomous Organizations under the administrative control of the Department also organized 'Vigilance Awareness Week'. Secretary (C&PC) administered the pledge to all Group 'A' officers of the Department in his chamber on 30th October, 2017. Section Officers administered the pledge to all other officials in their respective Sections. Pledge was also taken by officers/officials of PSUs/ Autonomous Organizations under the administrative control of this Department.

11.17 A one day training programme on vigilance matters was organized by this Department at Institute of Secretariat Training & Management (ISTM), New Delhi on 1st November, 2017 for all the officers/officials dealing with vigilance matters of this Department as well as PSUs.

GENDER EQUALITY

11.18 In compliance with the Supreme Court judgment laying down Guidelines to be

followed for prevention of sexual harassment of women employees at work place, the Department has constituted an Internal Complaints Committee (ICC) for redressal of complaints relating to sexual harassment of women. The Committee is functional since June 2002. The present Committee is headed by the Senior Economic Advisor. Based upon suggestions made by members in the meeting of the Committee held on 16th December, 2016 , following activities were undertaken:

i. Constitution of the ICC was recirculated in the department.
ii. Complaints box was put for the convenience of women employees.
ii. Gender sensitization workshops were organised.

11.19 The Department organised two workshops on 'Sexual Harassment of Women at Work Place (Prevention, Prohibition and Redressal) Act, 2013', to sensitize its officers and staff on such matters. The workshops were conducted on 05.12.2017 and 07.12.2017.

RIGHTS OF PERSONS WITH DISABILITIES

11.20 Department of Chemicals & Petrochemicals follows the guidelines issued by the Government of India from time to time regarding rights of persons with disabilities. Efforts are made to fill up posts suitable for persons with disabilities as per guidelines of Ministry of Social Justice & Empowerment.

11.21 Department of Chemicals & Petrochemicals is the cadre controlling authority in respect of 06 Technical posts in Group 'A', 5 posts of Staff Car Driver, 2 posts of Sr. Gestetnor Operator, 1 post of Dispatch Rider and 48 posts of Multi Tasking Staff (MTS) in Group 'C'.

11.22 All efforts are made that persons with disabilities have easy access to the physical environment and other facilities and services. The Information and Facilitation Centre of the Department has been set up specifically on the ground floor in Shastri Bhawan enabling easy and obstacle free accessibility for such persons. Senior officers of the Department are available to attend to the problems of persons with disabilities.

OBSERVANCE OF 'SWACHHTA PAKHWADA'

11.23 The Department observed 'Swachhta Pakhwada' during 16th – 31st August, 2017. During the 'Swachhta Pakhwada', various swachhta activities like special cleanliness campaign in common areas in Shastri Bhawan etc were undertaken. An Essay writing competition on the subject 'Cleanliness is key to healthy life (Swachhta swasth jeevan ki kunji hai)', in both English and Hindi, was organized in the Department on 28th August, 2017. A large number of officers/officials participated in the Essay writing competition and the best three Essays were awarded prizes of Rs. 3000, Rs. 2000 and Rs.1000 respectively.

11.24 During the 'Swachhta Pakhwada', the PSUs/ Autonomous Bodies under the administrative control of the Department undertook activities like cleaning of offices/ factories/ labs/ toilets/ premises, organizing awareness programmes, quiz competitions/ workshops in schools, conducting rallies, distribution of pamphlets, displaying posters on cleanliness in villages etc.

11.25 The Department observed 'Swachhta hi Sewa' during 15th September – 2nd October, 2017. Cleanliness related activities were undertaken in the Department as well as in all its PSUs/ Autonomous Bodies.

OBSERVANCE OF 'QAUMI EKTA WEEK (NATIONAL INTEGRATION WEEK)'

11.26 The Department observed 'Qaumi Ekta Week' (National Integration Week) during 19th - 25th November, 2017. An Essay Writing Competition on the topic "Cultural Unity of India" was organized on 23rd November, 2017 which is observed as Cultural Unity Day, in which officers/ officials of the Department participated. The best three essays were awarded prizes of Rs. 3000, Rs. 2000 and Rs. 1000, respectively. A poetry competition on the topic 'Linguistic Harmony of India' was also organized to observe Linguistic Harmony Day which is observed on 21st November, 2017. In the department this competition was held on 27th November, 2017 for officers and staff members in the department. The best three poems were awarded prizes of Rs.3000, Rs. 2000 and Rs. 1000, respectively.

CONSTITUTION DAY

11.27 The country observed 'Constitution Day' on 26th November, 2017. As 26th November, 2017 (Sunday) being a Government holiday, the Department observed 'Constitution Day' on 27th November, 2017. 'Premable' to the Constitution was read out by all officers and staff members of the Department.

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Annexure

Annexure – I

PRODUCT-WISE INSTALLED CAPACITY & PRODUCTION MAJOR CHEMICALS

(Figures In 000' MT)

Major Groups / Products	Installed Capacity			Production					Percentage growth	
	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17	2015-16	2016-17
1	2	3	4	5	6	7	8	9	10	11
ALKALI CHEMICALS										
SODA ASH	2951	3031	3086	2438	2392	2462	2583	2613	4.92	1.18
CAUSTIC SODA	3019	3102	3297	2376	2392	2443	2504	2594	2.50	3.62
LIQUID CHLORINE	2243	2289	2439	1673	1697	1720	1715	1801	-0.31	5.01
Total	**8214**	**8422**	**8822**	**6487**	**6481**	**6625**	**6802**	**7009**	**2.67**	**3.04**
INORGANIC CHEMICALS										
Aluminium Fluoride	25.60	143.92	25.60	9.80	7.31	6.70	5.40	6.73	-19.47	24.71
Calcium Carbide	112.00	112.00	112.00	44.70	66.39	70.98	78.78	87.18	10.98	10.67
Carbon Black	559.00	559.00	578.00	452.44	447.67	404.02	406.41	444.35	0.59	9.34
Potassium Chlorate	3.00	3.00	3.00	0.61	0.34	0.59	0.68	0.45	14.97	-33.88
Titanium Dioxide	76.05	76.05	82.50	64.02	52.14	50.14	52.78	47.88	5.25	-9.28
Red Phosphorus	1.68	1.68	1.68	0.48	0.56	0.69	0.75	0.89	8.68	17.84
Hydrogen Peroxide	137.95	137.95	137.95	116.43	89.40	107.45	113.79	97.25	5.91	-14.54
Calcium Carbonate	292.35	282.35	282.35	209.65	217.20	232.18	233.12	236.88	0.40	1.61
Total	**1207.63**	**1315.95**	**1223.08**	**898.12**	**881.01**	**872.75**	**891.70**	**921.60**	**2.17**	**3.35**
ORGANIC CHEMICALS										
Acetic Acid	192.28	192.28	177.43	156.48	160.73	160.56	157.17	159.61	-2.11	1.55
Acetic Anhydride	100.92	100.92	148.30	52.91	53.28	87.15	80.85	93.84	-7.24	16.07
Acetone	47.82	47.82	49.46	50.54	42.80	37.05	28.58	25.98	-22.87	-9.09
Phenol	77.13	77.13	79.68	79.81	65.93	59.92	46.39	42.26	-22.58	-8.89
Methanol	474.30	474.30	474.30	374.53	359.93	254.91	307.26	209.83	20.54	-31.71
Formaldehyde	413.25	413.25	411.30	266.61	263.80	275.36	268.29	255.95	-2.57	-4.60
Nitrobenzene	103.80	103.80	103.80	72.41	74.46	83.70	76.51	69.72	-8.59	-8.87
Maleic Anhydride	23.15	23.15	24.15	2.76	2.63	2.48	2.92	3.20	17.35	9.91
Pentaerythritol	15.40	15.40	16.72	11.73	11.40	11.49	12.18	13.46	5.94	10.55
Aniline	60.10	60.10	60.10	41.05	40.09	48.23	40.62	34.47	-15.77	-15.14

(Figures In 000' MT)

Major Groups / Products	Installed Capacity			Production					Percentage growth	
	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17	2015-16	2016-17
1	2	3	4	5	6	7	8	9	10	11
Chloro Methanes	211.75	211.75	216.75	161.35	188.55	197.74	214.03	220.71	8.24	3.12
Isobutylbenzene	3.75	3.75	3.75	2.27	1.94	6.63	6.08	4.30	-8.35	-29.18
ONCB	30.00	30.00	30.00	16.69	13.74	15.41	16.82	16.13	9.12	-4.11
PNCB	30.00	30.00	30.00	24.87	22.14	24.40	27.06	26.96	10.91	-0.37
MEK	5.00	5.00	5.00	0.00	2.19	2.49	3.72	4.02	49.12	8.12
Acetaldehyde	183.51	183.51	172.01	32.26	65.39	76.27	79.66	67.77	4.45	-14.92
Ethanolamines	10.00	10.00	10.00	3.45	8.73	7.05	11.20	13.76	58.77	22.95
Ethyl Acetate	389.63	439.63	479.83	170.48	235.36	305.26	382.39	327.94	25.27	-14.24
Menthol	33.05	33.65	33.65	15.74	15.80	19.70	18.34	17.45	-6.93	-4.85
Ortho Nitro Toluene	16.40	16.40	16.40	14.20	11.14	10.68	12.31	11.74	15.29	-4.67
Total	**2421.25**	**2471.84**	**2542.63**	**1550.12**	**1640.03**	**1686.48**	**1792.34**	**1619.11**	**6.28**	**-9.67**
PESTICIDES AND INSECTICIDES										
D.D.T.	6.34	6.34	3.60	3.19	3.64	3.87	2.79	3.63	-28.02	30.14
Malathion	3.80	3.80	2.60	3.05	2.55	1.71	2.04	2.24	19.26	10.01
Dimethoate	5.65	5.65	5.65	1.17	0.73	0.81	1.36	1.43	69.11	5.14
D.D.V.P.	3.68	10.68	13.92	3.48	4.64	4.41	5.52	6.66	25.20	20.71
Quinalphos	2.80	2.80	2.80	1.01	1.00	1.35	1.74	1.88	29.35	8.04
Monocrotophos	12.84	12.24	13.18	9.93	9.59	8.25	4.27	6.97	-48.24	63.24
Phosphamidon	3.20	3.20	3.20	0.29	0.06	0.02	0.05	0.13	200.00	184.44
Phorate	10.63	11.63	11.63	7.67	7.01	5.75	6.85	6.62	19.15	-3.37
Ethion	4.02	4.02	4.02	1.92	1.33	0.94	1.51	1.60	61.75	5.94
Endosulphan	0.00	0.00	0.00	11.49	1.35	0.00	0.00	0.00		
Fenvalerate	2.10	2.10	2.10	0.81	0.55	0.48	0.75	0.51	56.78	-31.82
Cypermethrin	14.49	15.69	15.69	7.21	10.41	7.78	9.26	8.59	19.09	-7.29
Acephate	11.86	16.58	18.25	16.49	17.11	15.76	14.51	17.97	-7.95	23.85
Chlorpyriphos	34.10	34.20	36.36	8.72	6.05	7.52	9.54	9.88	26.93	3.53
Triazophos	3.90	3.90	3.90	1.75	0.78	0.93	0.99	1.00	6.77	0.60
Lindane	0.33	0.33	0.33	0.00	0.00	0.00	0.00	0.00		
Temephos	0.50	0.25	0.25	0.12	0.13	0.20	0.25	0.00	23.15	-100.00
Deltamethrin	0.58	0.63	0.63	0.68	0.47	0.52	0.52	0.51	0.00	-0.97
Alphamethrin	0.33	0.35	0.51	0.55	0.57	0.54	0.56	0.75	3.31	32.74
Profenofos Technical	12.85	14.60	14.90	4.60	6.41	5.01	7.18	7.64	43.29	6.44

(Figures In 000' MT)

Major Groups / Products	Installed Capacity			Production					Percentage growth	
	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17	2015-16	2016-17
1	2	3	4	5	6	7	8	9	10	11
Pretilachlor Technical	1.40	2.84	2.56	1.18	1.65	1.93	2.22	1.88	14.94	-15.34
Lambda Cyhalothrin	0.00	0.60	0.60	0.21	0.29	0.43	0.55	0.47	27.93	-13.21
Phenthoate	0.90	0.90	0.90	0.59	0.59	0.96	1.24	1.40	29.11	12.72
Permethrin Tech	2.04	1.80	1.80	0.65	1.41	1.04	1.39	1.70	33.40	22.01
Imidacaloprid Tech	2.63	2.63	2.78	0.13	0.39	0.23	0.94	0.56	315.42	-40.62
Captan & Captafol	4.73	4.73	3.85	0.72	0.92	0.56	1.12	2.38	100.00	112.50
Ziram(Thio Barbamate)	0.65	0.65	0.70	0.66	0.73	0.55	0.60	0.58	9.34	-3.18
Carbendzim (Bavistin)	0.98	0.98	0.98	0.59	0.43	0.34	0.31	0.36	-9.71	15.64
Mancozab	69.76	71.56	71.56	26.05	43.46	45.30	57.82	61.40	27.66	6.19
Hexaconazole	0.50	0.50	0.50	0.43	0.47	0.44	0.58	0.59	30.61	2.95
Metconazole	0.75	0.75	0.75	0.36	0.50	0.63	0.70	0.61	12.32	-13.53
2, 4-D	22.00	22.00	22.00	12.60	15.03	15.44	17.90	11.62	15.98	-35.07
Butachlor	0.50	0.50	0.50	0.29	0.20	0.18	0.04	0.00	-78.69	-100.00
Ethofumesate Technical	1.65	1.25	1.65	0.82	1.14	1.22	1.01	0.62	-16.68	-38.95
Thiamethoxam Technical	3.00	3.00	3.10	1.49	1.63	3.12	3.31	1.66	6.19	-49.89
Pendimethalin	2.00	2.00	2.00	0.00	0.00	1.03	1.71	2.26	65.09	32.34
Metribuzin	0.75	0.75	0.75	0.00	0.00	0.24	0.74	0.52	204.10	-30.05
Triclopyr Acid Tech	0.30	0.30	0.30	0.30	0.10	0.21	0.20	0.19	-2.91	-4.50
Isoproturon	6.25	6.25	6.25	3.68	2.53	4.05	2.35	2.43	-42.13	3.45
Glyphosate	9.26	9.26	9.26	4.86	5.25	6.12	8.48	9.81	38.53	15.69
Diuron	0.05	0.05	0.33	0.23	0.31	0.14	0.07	0.12	-49.26	76.81
Atrazin	0.50	0.50	0.50	0.25	0.66	0.65	1.24	1.20	89.72	-3.15
Zinc Phosphide	1.10	1.32	1.32	0.86	0.89	0.60	0.65	1.31	7.12	101.70
Aluminium Phosphide	3.90	3.90	3.90	2.82	3.14	4.16	4.47	5.07	7.40	13.52
Dicofol	0.15	0.15	0.09	0.05	0.08	0.05	0.07	0.11	60.87	44.59
Total	**269.74**	**288.15**	**292.44**	**143.92**	**156.17**	**155.42**	**179.38**	**186.83**	**15.41**	**4.15**

(Figures In 000' MT)

Major Groups / Products	Installed Capacity			Production					Percentage growth	
	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17	2015-16	2016-17
1	2	3	4	5	6	7	8	9	10	11
DYES AND PIGMENTS										
Azo Dyes	20.06	20.30	20.30	13.96	12.10	12.72	13.46	10.59	5.89	-21.32
Acid Direct Dyes (Other Than Azo)	45.08	45.08	44.90	20.36	19.00	17.58	19.00	17.23	8.13	-9.35
Disperse Dyes	55.21	55.21	55.21	28.72	29.44	28.26	29.21	29.56	3.35	1.21
Fast Colour Bases	0.50	0.50	0.50	0.09	0.04	0.02	0.01	0.01	-26.32	-42.86
Ingrain Dyes	1.61	1.61	1.61	0.69	0.98	0.58	0.51	0.44	-10.94	-14.42
Oil Soluble (Solvent Dyes)	3.77	3.77	3.77	2.02	2.64	2.31	2.26	1.80	-2.21	-20.21
Optical Whitening Agents	37.30	37.30	37.30	15.02	14.14	18.17	23.74	22.94	30.62	-3.33
Organic Pigment	64.16	74.28	79.83	56.35	51.77	44.46	68.67	76.89	54.46	11.98
Pigment Emulsion	5.53	5.53	5.53	5.89	5.22	6.48	7.34	9.64	13.30	31.42
Reactive Dyes	159.57	159.57	180.82	76.88	83.38	87.60	95.42	89.47	8.92	-6.24
Sulphur Dyes (Sulphur Black)	3.00	3.00	3.00	8.58	7.02	6.58	7.57	9.38	14.97	24.03
Vat Dyes	2.98	2.98	2.98	1.94	1.69	1.38	1.60	1.77	15.98	10.71
Solubilised Vat Dyes	0.13	0.13	0.13	0.04	0.03	0.03	0.02	0.03	-18.52	45.45
Food Colours	1.13	1.13	1.13	0.36	0.36	0.25	0.62	0.66	146.43	5.96
Napthols	0.90	0.90	0.90	0.07	0.04	0.00	0.00	0.00	0.00	
Inorganic Pigments	16.302	17.682	18.054	13.93	13.06	13.14	14.18	14.82	7.87	4.53
Total	**417.22**	**428.96**	**455.95**	**244.87**	**240.88**	**239.53**	**283.60**	**285.23**	**18.40**	**0.58**
Total Major Chemicals (I toV)	**12357.65**	**12546.72**	**12554.81**	**9107.85**	**9395.71**	**9441.07**	**9628.17**	**9632.23**	**1.98**	**0.04**

Note:-Some Pesticides producing units supply combined installed Capacity.

Annexure – II

PRODUCT-WISE INSTALLED CAPACITY & PRODUCTION OF MAJOR PETROCHEMICALS

(Figures In 000' MT)

Major Groups / Products	Installed Capacity			Production					Percentage growth	
	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17	2015-16	2016-17
1	2	3	4	5	6	7	8	9	10	11
A : BASIC MAJOR PETROCHEMICALS										
I : SYNTHETIC FIBRES / YARN										
1. Polyester Filament Yarn (PFY) ($)	2791	2820	2762	1878	1811	2179	2179	2201	0.01	1.01
2. Nylon Filament Yarn (NFY) ($$)	20	23	25	22	24	32	37	41	14.80	9.81
3. Nylon Industrial Yarn (NIY) ($$)	61	61	61	95	104	101	95	104	-5.63	9.16
4. Polypropylene Filament Yarn (PPFY)($$)	**8**	**4**	**4**	**6**	**6**	**5**	**3**	**3**	**-32.55**	**-2.11**
Sub Total Yarn (1+2+3+4)	**2880**	**2908**	**2851**	**2001**	**1945**	**2317**	**2315**	**2349**	**-0.10**	**1.48**
5. Acrylic Fibre (Inc. Dry Spun) (AF)	107	107	107	75	94	90	106	95	18.13	-9.90
6. Polyester Staple Fibre (PSF)	1170	1170	1170	974	1010	1021	1040	1056	1.80	1.57
7. Polypropylene Staple Fibre (PPSF)	32	32	32	8	23	25	27	25	6.36	-9.18
8. Polyester Staple Fibrefil (PSFF)	87	69	69	51	56	57	51	54	-10.90	5.09
9. Polyester Industrial Yarn (PIY)	22	22	22	15	15	17	15	16	-7.25	6.17
Total Synth. Fibre / Yarn	**4298**	**4307**	**4251**	**3124**	**3144**	**3527**	**3554**	**3595**	**0.75**	**1.16**
II : POLYMERS										
1. Linear Low Density Polyethylene (LLDPE)	No separate Capacity			1012	1037	910	1205	1318	32.33	9.44
2. High Density Polyethylene (HDPE)	No separate Capacity			1177	1195	1156	1317	1520	13.96	15.40
LLDPE/HDPE (Combined) ($$$)	**2735**	**3135**	**3135**	**2189**	**2232**	**2066**	**2522**	**2838**	**22.06**	**12.55**
3. Low Density Polyethylene (LDPE)	160	160	160	187	190	184	200	202	8.48	0.86

(Figures In 000' MT)

Major Groups / Products	Installed Capacity			Production					Percentage growth	
	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17	2015-16	2016-17
1	2	3	4	5	6	7	8	9	10	11
4. Polyestyrene(PS)	462	472	472	290	270	281	309	311	9.75	0.90
5. Polypropylene (PP)	4016	4456	4456	3507	3740	3615	4284	4253	18.52	-0.72
6. Poly Vinyl Chloride(PVC)	1423	1423	1493	1257	1367	1330	1438	1462	8.08	1.64
7. Expandable Polystyrene (EX-PS)	109	122	123	81	77	81	86	97	6.83	12.27
Total Polymers	**8905**	**9768**	**9839**	**7509**	**7876**	**7558**	**8839**	**9163**	**16.95**	**3.67**
III : SYNTHETIC RUBBER										
1. Styrene Butadiene Rubber (SBR)	271	271	271	8	12	57	125	167	118.00	34.08
2. Poly Butadiene Rubber (PBR)	114	114	114	77	81	108	114	117	5.95	2.78
3. Nitrile Butadiene Rubber (NBR)	25	25	25	0.10	1	0.38	0.39	0.35	3.68	-10.15
4. Ethyl Vinyl Acetate (EVA)	15	15	15	11	11	6	2	0	-62.48	-100.00
Total Synthetic Rubber	**425**	**425**	**425**	**96**	**105**	**172**	**242**	**285**	**40.76**	**17.91**
IV : SYNTHETIC DETERGENT INTERMEDIATES										
1. Linear Alkyl Benzene (LAB)	547	547	547	455	406	411	377	447.645	-8.12	18.68
2. Ethylene Oxide (EO)	140	140	140	172	191	185	188	216.063	1.62	14.74
Total Synth. Detergent Intermediates	**687**	**687**	**687**	**627**	**597**	**596**	**566**	**664**	**-5.09**	**17.36**
V : PERFORMANCE PLASTICS										
1. ABS Resin	128	128	140	91	102	107	117	118	9.06	0.66
2. Nylon-6 & Nylon 66	23	28	28	19	20	21	21	22	3.35	0.47
3. Polymethyl Methacrylate (PMMA)	4	4	4	3	2	1	1.47	0.29	40.21	-80.59
4. Styrene Acrylonitrile (SAN)	136	136	148	80	88	89	99	99	11.16	0.57
5. PET Chips/ Polyester Chips	2169	2199	2140	1487	1460	1362	1453	1549	6.68	6.59
6. PTFE (TEFLON)	20	20	20	11	12	11	9	12	-22.95	34.08
Total Performance Plastics	**2479**	**2514**	**2479**	**1691**	**1685**	**1591**	**1700**	**1799**	**6.86**	**5.82**

(Figures In 000' MT)

Major Groups / Products	Installed Capacity			Production					Percentage growth	
	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17	2015-16	2016-17
1	2	3	4	5	6	7	8	9	10	11
TOTAL BASIC MAJOR PETROCHEMICALS										
(I+II+III+IV+V)	**16794**	**17702**	**17682**	**13047**	**13406**	**13443**	**14900**	**15506**	**10.83**	**4.07**
B : INTERMEDIATES										
I : FIBRE INTERMEDIATES										
1. Acrylonitrile (ACN)	41	41	41	33	37	34	2	0	-94.25	-100.00
2. Caprolactum	120	120	120	99	85	87	86	87	-0.87	0.77
3. Mono Ethylene Glycol (MEG)	1153	1153	1153	1061	1069	1001	1159	1110	15.76	-4.18
4. Purified Terephthalic Acid (PTA)	3753	3753	3753	3494	3477	3755	3432	3391	-8.61	-1.20
Total Fibre Intermediates	**5069**	**5070**	**5071**	**4692**	**4674**	**4884**	**4687**	**4597**	**-4.04**	**-1.92**
II : BUILDING BLOCKS										
OLEFINS										
1. Ethylene	3783	4283	4233	3315	3346	3192	3727	4022	16.78	7.90
2. Propylene	4268	4746	4746	3741	3988	3869	4457	4425	15.18	-0.71
3. Butadiene	433	433	433	235	236	239	343	347	43.44	1.14
Total Olefins	**8484**	**9462**	**9412**	**7290**	**7570**	**7301**	**8528**	**8794**	**16.80**	**3.13**
AROMATICS										
1. Benzene	1566	1566	1566	1048	1031	1094	1333	1332	21.77	-0.04
2. Toluene	258	288	288	108	120	108	116	127	7.01	9.53
3. Mixed Xylene	898	898	898	200	248	215	269	296	25.28	9.91
4. Ortho-xylene	420	420	420	444	412	462	500	445	8.01	-10.94
5. Paraxylene	3132	3132	3132	2360	2264	2758	3266	108	18.44	-96.69
Total Aromatics	**6274**	**6304**	**6304**	**4161**	**4075**	**4638**	**5484**	**2308**	**18.23**	**-57.91**
TOTAL INTERMEDIATES										
(I+II)	19828	20837	20783	16143	16319	16823	18698	15699	11.15	-16.04
C : OTHER PETRO-BASED CHEMICALS										
1. Butanol	26	26	26	14	5	4	11	12	163.62	12.50
2. C4-Raffinate	292	292	292	395	393	365	429	437	17.56	1.99
3. Di-Ethylene Glycol	85	85	85	103	107	101	114	108	13.15	-5.25
4. Diacetone Alcohol	10	10	10	3	0	0	0	0		

(Figures In 000' MT)

Major Groups / Products	Installed Capacity			Production					Percentage growth	
	2014-15	2015-16	2016-17	2012-13	2013-14	2014-15	2015-16	2016-17	2015-16	2016-17
1	2	3	4	5	6	7	8	9	10	11
5. Ethylene Dichloride (By Product)	593	593	593	316	278	285	277	283	-2.79	1.88
6. 2-Ethyl Hexanol**	55	55	55	50	20	14	44	46	219.71	2.66
7. Epichlorohydrine	0	0	0	11	0	0	0	0		
8. Iso-Butanol	3	3	3	2	1	1	2	2	176.75	5.71
9. Isopropanol (IPA)	70	70	70	70	76	75	71	72	-5.08	1.81
10. Methyl Methacrylate (MMA)	4	4	4	3	3	3	2	1	-34.32	-76.33
11. Phthalic Anhydride (PAN)	349	349	349	254	264	292	306	296	4.89	-3.17
12. Propylene Oxide (PO)	36	36	36	30	33	37	26	29	-30.10	14.65
13. Propylene Glycol (PG)	20	20	20	15	14	16	14	16	-16.00	19.75
14. Polyvinyl Acetate Resin	17	17	17	0	0	0	0	0		
15. Vinyl Acetate Monomer (VAM)	30	30	30	0	0	0	0	0		
16. Vinyl Chloride Monomer (VCM) (By Product)	541	541	541	669	735	718	791	791	10.14	0.07
17. Polyol	114	142	142	42	40	52	72	79	38.65	9.64
18. PBT	0	*	*	0	0	1	1	1	-0.40	20.96
19. Polycarbonate	0	*	*	0	0	0	0	0	3.05	-8.88
Total Other Petro-based Chemicals	**2250**	**2279**	**2280**	**1989**	**1982**	**1977**	**2175**	**2192**	**10.04**	**0.75**

($) : Includes capacity of all the units producing PFY, NFY, NIY and PPFY under broadbanding as Synthetic Filament Yarn : * Inclues capacity with Nylon 6, 66

($$) : Independent capacity of units producing only NFY, NIY and PPFY.

As the capacities of these products are also included in Synthetic Filament yarn, capacity utilisation can not be worked out.

($$$) : Combined capacity to produce both LLDPE and HDPE and hence capacity utilisation can not be worked out. However production is independent.

(** : Combined capacity of 2-EH, Butanol & Iso Butanol is given under 2 - EH)

Annexure III

HAZARDOUS CHEMICALS UNDER ROTTERDAM CONVENTION

{Total -50 chemicals, 34 are pesticides (including 3 severely hazardous pesticide formulations), 15 industrial chemicals and 1 chemical in both the pesticide and the Industrial chemical categories.}

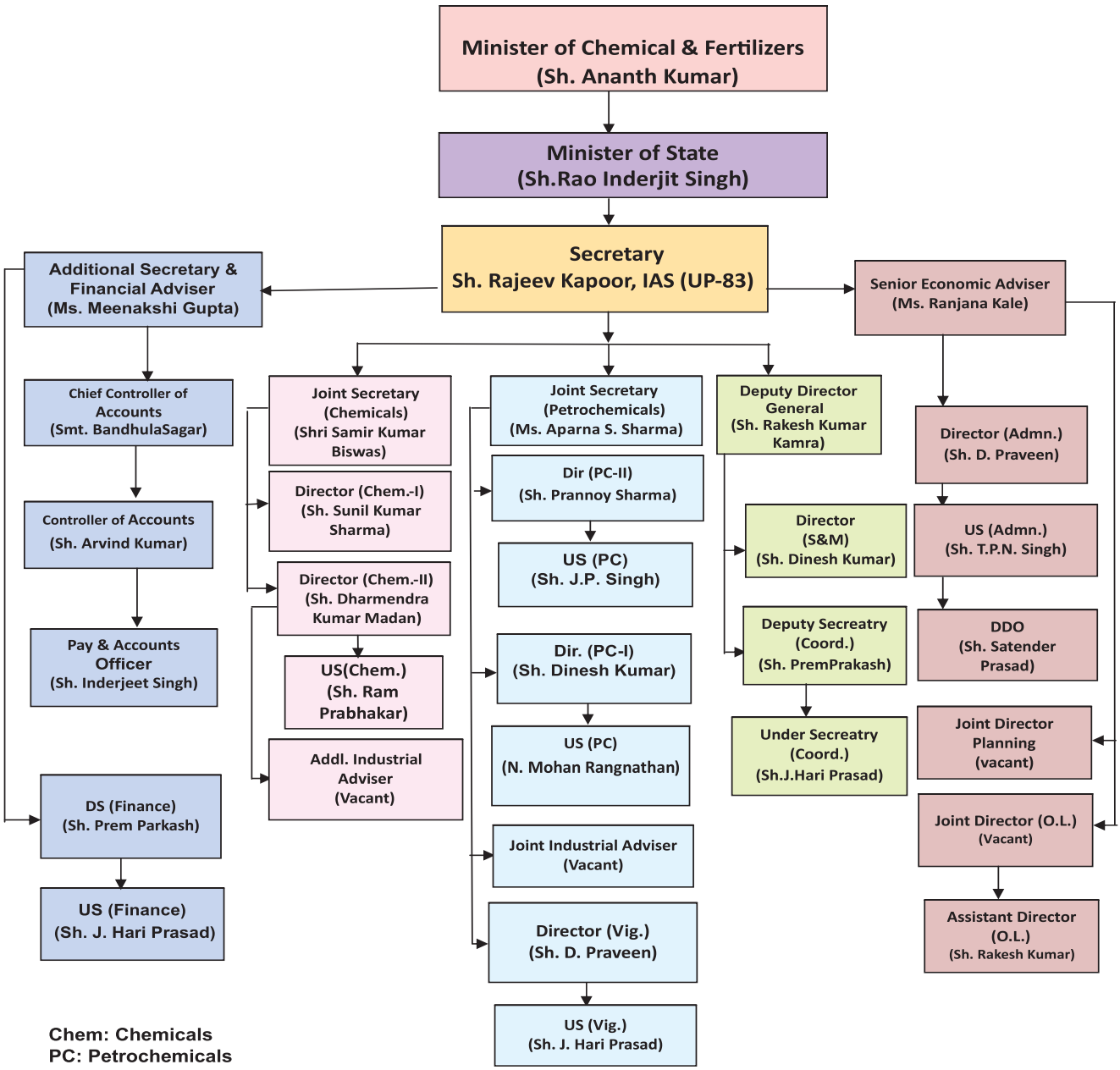
S. No.	Category	Category
1	**2,4,5-T and its salts and esters**	**Pesticide**
2	**Alachlor**	**Pesticide**
3	**Aldicarb**	**Pesticide**
4	**Aldrin**	**Pesticide**
5	**Azinphos methyl**	**Pesticide**
6	**Binapacryl**	**Pesticide**
7	**Captafol**	**Pesticide**
8	**Carbofuran**	**Pesticide**
9	**Chlordane**	**Pesticide**
10	**Chlordimeform**	**Pesticide**
11	**Chlorobenzilate**	**Pesticide**
12	**DDT**	**Pesticide**
13	**Dieldrin**	**Pesticide**
14	**Dinitro-ortho-cresol (DNOC) and its salts (such as ammonium salt, potassium salt and sodium salt)**	**Pesticide**
15	**Dinoseb and its salts and esters**	**Pesticide**
16	**1,2-dibromoethane (EDB)**	**Pesticide**
17	**Endolsulfan**	**Pesticide**
18	**Ethylene dichloride**	**Pesticide**
19	**Ethylene oxide**	**Pesticide**
20	**Fluoroacetamide**	**Pesticide**
21	**HCH (mixed isomers)**	**Pesticide**
22	**Heptachlor**	**Pesticide**
23	**Hexachlorobenzene**	**Pesticide**
24	**Lindane (gamma-HCH)**	**Pesticide**
25	**Mercury compounds including inorganic mercury compounds, alkyl mercury compounds and alkyloxyalkyl and aryl mercury compounds**	**Pesticide**
26	**Methamidophos**	**Pesticide**
27	**Monocrotophos**	

28	Parathion	Pesticide
29	Pentachlorophenol and its salts and esters	Pesticide
30	Toxaphene (campheclor)	Pesticide
31	Tributyltin compounds	Industrial Chemical/ Pesticide
32	Trichlorfon	Pesticide
33	Dustable powder formulations containing a combination of : benomyl at or above 7 per cent, carbofuran at above 10 per cent, thiram at or above 15 per cent	Severely hazardous pesticide formulation
34	Methyl-parathion (Emulsifiable concentrates (EC) at or above 19.5% active ingredient and dusts at or above 1.5% active ingredient)	Severely hazardous pesticide formulation
35	Phosphamidon (Soluble liquid formulations of the substance that exceed 1000 g active ingredient/l)	Severely hazardous pesticide formulation
36	Actinolite Asbestos	Industrial
37	Anthophyllite Asbestos	Industrial
38	Amosite Asbestos	Industrial
39	Crocidolite Asbestos	Industrial
40	Tremolite Asbestos	Industrial
41	Commercial octabromodiphenyl ether (including Hexabromodiphenyl ether and Heptabromodiphenyl ether)	Industrial
42	Commercial pentabromodiphenyl ether (including tetrabromodiphenyl ether and pentabromodiphenyl ether)	Industrial
43	Perfluorooctane sulfonic acid, perfluorooctane sulfonates, perfluorooctane sulfonamides and perfluorooctane sulfonyls	Industrial
44	Polybrominated biphenyls (PBBs)	Industrial
45	Polychlorinated biphenyls (PCBs)	Industrial
46	Polychlorinated terphenyls (PCTs)	Industrial
47	Short-chain chlorinated paraffins (SCCP)	Industrial
48	Tetraethyl lead	Industrial
49	Tetramethyl lead	Industrial
50	Tris (2,3-dibromopropyl) phosphate	Industrial

Annexure-III

ORGANISATIONAL CHART OF DEPARTMENT OF CHEMICALS & PETROCHEMICALS

(As on 09-01-2018)



Chem: Chemicals
PC: Petrochemicals
Vig: Vigilance
O.L: Official Language
Coord : Coordination
S&M : Statistics & monitoring

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