20	STANDING COMMITTEE ON CHEMICALS & FERTILIZERS (2015-16) SIXTEENTH LOK SABHA

MINISTRY OF CHEMICALS AND FERTILIZERS
(DEPARTMENT OF CHEMICALS AND PETROCHEMICALS)

Functioning of autonomous institutions - Central Institute of Plastics Engineering Technology (CIPET) and Institute of Pesticide Formulation Technology (IPFT)

TWENTIETH REPORT

LOK SABHA SECRETARIAT

NEW DELHI

April, 2016/ Vaisakha, 1938 (Saka)

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Presented to Lok Sabha on 28 April 2016

Laid in Rajya Sabha on 28 April 2016

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April, 2016/ Vaisakha, 1938 (Saka)

COMPOSITION OF THE STANDING COMMITTEE ON CHEMICALS & FERTILIZERS (2015-16)

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3.	Shri Thangkhanlal Ngaihte	-	Sr. Committee Assistant

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the term of Dr. M.S. Gill, Member Rajya Sabha will expired w.e.f. 09.04.2016

INTRODUCTION

I, the Chairperson, Standing Committee on Chemicals and Fertilizers (2015-16) having been authorised by the Committee to submit the Report on their behalf, present this Twentieth Report on the subject 'Functioning of Autonomous Institutions - Central Institute of Plastics Engineering Technology (CIPET) and Institute of Pesticide Formulation Technology (IPFT)' of the Ministry of Chemicals and Fertilizers (Department of Chemicals and Petrochemicals).

2. The subject, 'Functioning of Autonomous Institutions - Central Institute of Plastics Engineering Technology (CIPET) and Institute of Pesticide Formulation Technology (IPFT)' has been taken up by the Committee on Chemicals and Fertilizers (2015-16) for examination and report. The Committee took oral evidence on the subject at their sittings held on 27.01.2016, 08.02.2016 and 17.02.2016.

3. The Report was considered and adopted by the Committee at their sitting held on 21 April, 2016.

4. The Committee wish to express their thanks to the officers of the Ministry of Chemicals and Fertilizers (Department of Chemicals and Petrochemicals) for furnishing the written replies and other material/ information and for placing their views on the subject before the Committee.

5. The Committee also place on record their appreciation for the valuable assistance rendered to them by the officials of the Lok Sabha Secretariat attached to the Committee.

6. For facility of reference and convenience, the observations / recommendations of the Committee have been printed in bold letters at the end of the Report.

New Delhi;
26 April, 2016
06 Vaisakha, 1938 (Saka)

Anandrao Adsul
Chairperson
Standing Committee on
Chemicals and Fertilizers

REPORT

CHAPTER – 1

INTRODUCTORY

There are two autonomous institutions under the Department of Chemicals and Petrochemicals, viz., Central Institute of Plastics Engineering and Technology (CIPET) and Institute of Pesticides Formulation and Technology (IPFT).

Central Institute of Plastics Engineering Technology (CIPET)

1.2 Central Institute of Plastics Engineering Technology (CIPET) has been set up by the Government of India in the year 1968 with the support of United Nations Development Programme (UNDP)/ International Labour Organization (ILO) to provide qualified Human Resources to the industry and to serve the plastics & allied industries and contribute towards sustainable growth of plastics industries across the country. CIPET has been mandated to focus on Academic, Technology Support Services and Research & Development (ATR) in the area of plastics Engineering & Technology & to meet the service requirement of plastics & allied industries.

Major aims & goals of CIPET are:

- To meet the human resource needs of the plastics industries (Skill India)
- To render Technology Support Services for the plastics industries
- To undertake Research & Development in the niche areas of Polymer Science & Technology.(Make In India)

1.3 CIPET is an ISO 9001:2008 QMS, NABL, ISO/IEC 17020 accredited premier national institution under the aegis of Department of Chemicals & Petrochemicals Ministry of Chemicals & Fertilizers, Govt. of India. CIPET's activities involve Skill Development, Technology Support, Academic and Research (STAR) for the growth of polymer & allied industries in the country. CIPET operates at 28 locations spread across the country with its Head Office at Chennai. These are:

High Learning Centres(HLCs) Chennai Ahmadabad Bhubaneswar Lucknow Kochi		Diploma Centres Amritsar Aurangabad Bhopal Guwahati Hyderabad Hajipur Haldia Jaipur Imphal Mysore Murthal Raipur
R&D wings Advanced Research School for Technology and Product Simulation (ARSTPS) at Chennai. Laboratory for Advanced Research in Polymeric Materials (LARPM) at Bhubaneswar.		
Specialized Centres		

Advanced Tooling and Plastics Product Development Centre (ATPDC), Madurai. Advanced Plastics Processing Technology Centre (APPTC), Balasore.		Plastic Waste Management Centre at Guwahati
Vocational Training Centre MCTI Campus,Bhubaneswar, Vijayawada (Andhra Pradesh), Baddi (Himachal Pradesh), Bhopal (Madhya Pradesh), Dharampur (Gujarat)		Polymer Data Service Centre, Gurgaon

CIPET centres have state-of-the-art infrastructure facilities for Design, CAD/CAM/CAE, Tooling &Mould Manufacturing, Plastics Processing, Testing and Quality Control to cater to the needs of plastics and allied industries.

Government of India has approved setting up 05 Centres of CIPET at Dharampur (Gujarat), Baddi (HP), Bhopal (MP), Vijayawada (AP) and Raipur (Chattisgarh) during 2015-16. Training activities have been started at these centres from May 2015 onwards.

1.4 The Committee had recommended earlier that CIPET should prepare an action plan for expansion of CIPET centres which may be set up near plastic parks and PCPIRs. When asked to mention any initiatives taken by the Department/CIPET in pursuance of this recommendation, the Department replied in writing as under:-

> "The Department / CIPET has taken initiative to establish the new CIPET Centres at Baddi (Himachal Pradesh), Vijayawada (Andhra Pradesh), Bhopal (Madhya Pradesh), Raipur (Chattisgarh) and Valsad (Gujarat) during 2015-16.
>
> Further, CIPET has submitted a new proposal to Govt. of India for establishment of 11 new Centres at Medak (Telangana) , Jaipur (Rajasthan), Jammu / Kashmir(J&K), Ranchi (Jharkhand), Chandrapur (Maharashtra), Dehradun(Uttarakhand), Bihar, Uttar Pradesh, Agartala (Tripura), Mumbai(Maharashtra), Bengaluru (Karnataka)."

1.5 When the Committee further asked for updated report on the progress made with respect to the setting up of new CIPET Centres, the Department replied in writing as under:-

> "The Expenditure Finance Committee (EFC) proposal for establishment of 11 new CIPET Centres has been firmed up by the Department of Chemicals & Petrochemicals with concurrence of Financial Advisor. The EFC note has been circulated for inter departmental consultations. After incorporation of comments and counter comments of the Department thereupon, the appraisal of the proposal shall be under taken by EFC under the chairmanship of Secretary, Department of Expenditure followed by approval of competent authority. This process may take up to 3 months. Ministry of Finance has to allocate required budget outlay as requisitioned by the Department to implement the scheme. The establishment of new Centres, as per present norms takes up to 3 years in case of de novo construction subject to availability of funds. "

1.6 When asked to give the latest position with regard to the setting up of CIPET centres at Vijayawada and Medak, the Department replied in writing as under:-

"Vijayawada (Andhra Pradesh):

- Govt. of Andhra Pradesh has accorded approval for establishment of CIPET Centre at Vijayawada and handed over 12.00 acres of land at Vijayawada – Nuzvid Highway for establishment of the centre.
- A temporary shed has been hired and commenced the skill training programs from 1st May 2015 onwards.
- As an interim arrangement, few machinery/equipment from CIPET Hyderabad centre were shifted and installed at the premises. CIPET has ordered machineries & equipments valuing at Rs.10.75 crores, which is expected to be delivered in 3 to 4 months. The Centre is conducting many skill development programs and awareness programs.
- Further, the Tribal Welfare Deptt (TWD), Govt of AP had allotted Youth Training Centre (YTC) established by TWD at Eluru, AP to CIPET for conducting skill development training programmes. The process of taking over of the centre is in progress.

Medak (Telangana)

As the approval from the Govt. of Telangana is still awaited, despite constant & continued follow-up, a request was submitted to the administrative Ministry to consider Raipur centre in place of Medak and establishment of Medak centre will be taken up in the next phase. The administrative Ministry had agreed for the proposal and accordingly the process for establishing the centre at Raipur is taken up in the first phase."

1.7 When asked to elaborate on the goal to meet the human resource needs of the plastics industries (Skill India) as stated above, the Departed replied in writing as under:-

"Keeping the "Skill India" mission of Govt. of India in view, following efforts have been made by CIPET under the guidance of Deptt. of Chemicals and Petrochemicals:

- Skill requirement of around 11.5 lakh manpower in plastics industries at various levels has been assessed through a detailed study involving industry.
- CIPET has stepped up its target to train 80,000 students during 2015-16 as against the achievement of 42,910 students during 2014-15.
- 5 new CIPET centres at Vijayawada, Valsad, Baddi, Bhopal and Dharampur have been set up and some new courses were introduced in diploma and Vocational Skill Training to achieve the increased target. The target set for 2016-17 is to train 1,00,000 students.
- Department has signed an MOU with Ministry of Skill Development and Entrepreneurship to expand skill development activities and resource mobilization for skill training for the sector.
- A dedicated Skill Development Cell has been set up in CIPET for regular interaction with industries and plan vocational courses.
- CIPET mobilizes student enrollment through participation in job fairs, employment exchange, local authorities, direct contact through student, alumni, publicity through newspapers, visits of officials etc. and identify suitable candidates for vocational courses.

- Besides, during XI Plan, CIPET has trained 1,16,638 students and has ambitious target to train 3,20,000 students during XII Plan. Therefore, CIPET plays a vital role in manpower development under "Skill India" project.
- CIPET apart from conducting long-term programs (Diploma, Degree and Post Graduate), also conducts short-term, vocational training and skill development programs for the benefit of unemployed / underprivileged youth and economically weaker Sections of the society with the support of Central Government / Ministry of Development of North Eastern Region (M-DONER), Ministry of Social Justice & Empowerment (MSJE), Directorate General of Employment & Training (DGET), NSDC's UDAAN Scheme through Ministry of Home Affairs, various State Governments / Departments and also conduct training programs sponsored by PSUs and private companies under CSR initiatives. CIPET also provides in-plant training / exposure for various schools / colleges students to have knowledge as industrial environment."

1.8 Regarding the aim to undertake Research & Development in the niche areas of Polymer Science & Technology, the Department furnished details of the efforts made in this regard, as under:-

"Initiatives have been taken by the R&D Laboratories of CIPET to develop indigenous technologies for Advanced Composite Materials to be used in defence and aerospace sectors in manufacturing of different products like Light weight aircrafts, Decking applications in Naval Ships, Structural Components, Adhesives etc.

The following research and development efforts have been made by CIPET to contribute towards "Make in India":

- Adhesives & Sealants: Indigenous technology development for adhesives & sealants with high temperature stability (>200°C); weld-free technology for cryogenic sensor interconnection.
- Foul release-corrosion resistant coatings: Coatings for marine & industrial applications.
- Packaging Sector: Development of biodegradable polymers for packaging of perishable goods as well as to reduce the carbon foot prints.
- Polymer electrolytes: Ion exchange membranes for Fuel Cells & Solar cells.
- Water treatment: Polymer membranes for water purification.
- Automobile sector: Use of renewable natural fiber reinforced composites for development of light weight & fuel efficient automotive components.
- Waste to Wealth: Value Addition and Recycling Strategies for E-Waste & Auto Waste as well as the Flyash generated from the Thermal power plants.
- Life Cycle Analysis of composites used in Defence applications.
- Technology Development for Fabrication of High Quality Polymer Microfluidic Devices.

The roadmap for future R&D projects in this context is as under:

- Elastomeric Heat Shielding Material (EHSM): Development of EHSM for protection of solid rocket motor casing during propellant firing.
- Biosensors: Devising a novel technology for easy detection of metabolite function in human body utilizing the potential of biopolymers.

- Gas separation: Development of polymer membranes with controlled permeation characteristics.
- Design and Development of Bone Scaffold for Tissue Engineering Applications using Rapid Prototyping Technique.
- Design and Development of Hip Joint Simulator for Total Hip Joint Replacement."

1.9 The Department of Chemicals and Petrochemicals provides Plan fund support to Central Institute of Plastic Engineering Technology (CIPET) for strengthening its Civil and Technical infrastructure facilities, Research and Development capacities and Academic and Training initiatives to fulfill the envisioned objectives and goals of CIPET.

1.10 Department monitors the progress of CIPET on continuous basis through Governing Council meeting, Review Meeting, Project Monitoring Committee meeting, etc. CIPET Head Office is located at Chennai which coordinate the various activities between Centres and monitors the progress of performance of Centres at regular intervals and through periodical review meetings.

Institute of Pesticide Formulation Technology (IPFT)

1.11 Institute of Pesticide Formulation Technology (IPFT), established in May 1991, is an autonomous Institution under the Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers, Government of India. The main objectives of the Institute as given in the Memorandum of Association are as follows :

- 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.

IPFT has a well defined Organizational Structure comprising of a Governing Body, chaired by Secretary DC & PC, which is the supreme decision taking body. Governing Body meets twice a year and takes critical policy decisions related to the Projects, Budget, Manpower and General Management of the Lab. For day-to-day financial and administrative control, the Institute has a Finance & Administrative Committee (F&AC) chaired by Financial Advisor, Ministry of Chemicals & Fertilizers. F & AC meets as and when required to clear the issues related to Finance and Administration of the Institute. A Research Advisory Board (RAB) comprising of renowned scientists from academia and industry

guides IPFT in selecting the R & D activities and periodically reviewing the progress of the R & D projects undergoing at the Institute.

The rationale behind setting up of IPFT by Department of Chemicals & Petrochemicals, Ministry of Chemicals & Fertilizers, Govt. of India is Development and Production of state-of-the-art user and environment friendly pesticide formulation technology and Promotion of efficient application technologies suiting the existing requirements of the newer formulations.

1.12 The aims and goals of the three divisions of IPFT are as follows :

Formulation Division

- Development and production of the state-of-the-art user and environment friendly new generation pesticide formulation technology.

Analytical Division

- To maintain NABL accreditation for pesticide analysis, pesticide residue analysis in food commodities & CWC compounds as per ISO 17025:2005.
- Study of quality control parameters of pesticide technical & their formulations for pesticide industries.
- Pesticide residue analysis in food commodities & soil samples from Govt. organizations & private companies.
- Analysis of chemical pesticide in bio-pesticides.
- To impart training to research scholars/scientists from Indian pesticide industries/Agriculture universities and foreign organizations.

Bioscience Division

- To evaluate different pesticide formulations developed by the Institute, for their commercial viability through bio-assay and field experimentation.
- To support the industries with its available testing facilities /consultancy as per MOA.
- To conduct research and development programme in area of applied entomology, plant pathology and weed science.
- Integration and collaboration with other research institute /organization in government and non-government sector.

CHAPTER 2

CENTRAL INSTITUTE OF PLASTICS ENGINEERING AND TECHNOLOGY (CIPET)

I. Budget and Financial Performance

When asked to provide details of the budgetary allocations made to CIPET during the last three years and the current year, the Department furnished the information in tabular form as under:-

CENTRAL INSTITUTE OF PLASTICS ENGINEERING & TECHNOLOGY, HEAD OFFICE, CHENNAI						
Budget Allocation						
						(Rs. in Crore)
Sl.No.	Particulars	2012-13	2013-14	2014-15	2015-16	Total
I	12th Plan Schemes					
1.	Establishment of ATPDC, Madurai	1.95				1.95
2.	Establishment of APPTC at Balasore	1.25				1.25
3.	Establishment of CBPST Kochi		5.55	6.90		12.45
4.	Research & Development in emerging areas	2.00	3.50	3.15		8.65
5	Creation of Civil & Technical Infrastructure for expansion of CIPET Centres	--	12.80	9.25	2.45	24.50
6.	Enriching Technical Infrastructure facilities & capabilities to meet industry needs	16.50	20.94	24.44		61.88
7.	Creation of Residential Accommodation to augment increase in intake capacity of the Existing & New Academic Programs	--	98.17	57.11	14.04	169.32
	Sub Total [A]	21.70	140.96	100.85	16.49	280.00
II	Mid Term Appraisal (MTA) Schemes					
1	Scheme for Enhancing the Capabilities in Academic Activities (Skill Development Training Programs) at CIPET Centres"	--	--	--	49.19	49.19
2	Scheme for Enhancing capabilities in Research activities at two R&D Centres and Technology Support Services at CIPET Centres"	--	--	--	42.00	42.00
	Sub Total [B]	16.50	119.11	81.55	91.19	91.19
	Grand Total [A+B]	**21.70**	**140.96**	**100.85**	**107.68**	**371.19**

2.2 A statement indicating the revised XII Five Year Plan proposals of CIPET is as under:-

XII Five Year Plan

Scheme-wise details:					**Rs. In Crore**
Sl No.	**Name of the Scheme**	**Fund allocated**	**Fund Received**	**Spent till date**	**Balance to be Received**
I.	**1. Establishment of New Centres ATPDC Madurai, APPTC Balasore & CBPST Kochi**	**15.65**	**15.65**	**15.65**	**NIL**
	2. Establishment of VTC Centres Baddi, Bhopal & Vijayawada	**60.15**	**18.51**	**--**	**41.64**
	3. Establishment of HLC cum VTC - Hyderabad	**25.00**	**--**	**--**	**25.00**
II	**R &D in Emerging Areas-**				

	PHASE - I	**8.65**	**8.65**	**8.65**	**NIL**
	PHASE -II	**33.00**	**16.00**	**1.31**	**17.00**
III	**Creation of Civil & Technical infrastructure**	**24.50**	**24.50**	**54.50**	**NIL**
IV	**Creation of Residential Hostel to augment increase in intake capacity of the Existing & New Academic Programs-**				
	PHASE - I	**169.32**	**169.32**	**169.32**	**NIL**
	PHASE- II	**123.45**	**30.68**	**7.92**	**92.77**
V	**Enriching Technical infrastructure facilities & Capabilities to meet industry needs -**				
	PHASE - I				
	PHASE II	**61.88**	**61.88**	**61.88**	**NIL**
		64.85	**26.00**	**29.38**	**38.85**
	Total	**586.45**	**371.19**	**318.61**	**215.26**

2.3 When the Committee enquired whether the budget allocated for CIPET is sufficient for the schemes, the Department replied that the budget allocation made for specific schemes is sufficient for implementation of the particular Scheme.

2.4 When asked to give in tabular form the financial performance of each of the CIPET centres in the country during the last three financial years (2012-13, 2013-14 and 2014-15) and the current year, the Department furnished the information regarding income and expenditure for the year 2012-13 to 2014-15 which are placed in **Annexure I to IV**.

The information regarding income/revenue generated for the year 2015-16 is as follows:-

Financial Performance of CIPET Centres Income / Revenue generated for the year 2015-16 (Upto Nov'2015)		
(Rs. in lakhs)		
SL.NO.	CENTRE	2015-16
1	Chennai	1110.45
2	Ahmedabad	1259.94
3	Bhubaneswar	1368.73
4	Lucknow	1130.48
5	Hyderabad	715.68
6	Hajipur	700.15
7	Bhopal	771.81
8	Jaipur	704.02
9	Mysore	357.58
10	Guwahati & PWMC Guwahati	527.05
11	Haldia	796.15

12	Murthal	747.95
13	Imphal	147.27
14	Balasore	264.87
15	Aurangabad	635.63
16	Amritsar	385.66
17	Madurai	282.41
18	CBPST, Kochi	206.65
19	New Centres (Baddi, Bhopal, Vijayawada)	100.00
	TOTAL	12212.48

2.5 When asked about the steps being taken to make CIPET Centres more profitable, the Department replied in writing as under:-

CIPET is an educational institution registered under Society's Registration Act conducting professional courses and skill development programs in polymer science & technology to develop human resources to meet the requirement of plastics and allied industries in the country.

CIPET's training programs are 80% practical and 20% theory oriented. CIPET's training programs are highly subsidized and the institute recovers a nominal fee by expending considerable amount on practical training. The operating and establishment cost of institute goes up every year due to inflation in cost of inputs on practical training and periodical increase in salaries & wages. The fees being collected from students are not hiked in tune with the increase in input cost and other overheads and the course fee is marginally revised upward once in three / four years.

Moreover, CIPET as a Non-Profit institution, has to survive on course fees from trainees and rendering technical services to the industries. The small revenues are earned due to various technical support services being rendered to polymer and allied industries across the country in the form of design & development of moulds and dies, processing of polymer products, testing, characterization, consultancy, inspection and providing CAD/CAM/CAE services to the industries. The institute is able to achieve thin margin after meeting its entire establishment and operating expenses.

In order to fulfill the Govt. of India's Mission on "Skill India", CIPET is ever expanding its activities by way of establishing new Centres in various States thereby providing training programs to the under-employed / under privileged / socially & economically weaker sections of the society and rendering technical services to meet the requirement of plastics & allied industries.

CIPET is striving for better revenue resources by undertaking more training programs, technical services and Research & Development activities in the field by signing MoUs with various Governmental, Public Sectors, NGOs, and international institutions & organizations. By expanding its activities, CIPET is trying to make the centres more profitable by assigning higher fiscal and physical targets on all CIPET

Centres in order to ensure improvement in overall financial performance. Steps are also being taken to increase the revenue of each CIPET Centre by undertaking more training programs and technical services.

II. Infrastructure and Hostel Facilities

2.6 The Department has informed that CIPET is spread over 28 locations all over India. When asked by the Committee, the Department elaborated on the various categories of CIPET centres and their specializations as under:-

"All CIPET centres are categorized as (i) High Learning Centre, (ii) Diploma Centres (OLCs), (iii) Vocational Training Centres, (iv) R&D Wings, (v) Specialized Centres, (vi) Polymer Data Service Centre. The aim and goals of these categories of centres are as under:

(i) High Learning Centres (HLC)

The aim of HLC is to provide training in UG/PG programs in the area of polymer science & Technology with the goal to develop supervisory & higher level manpower for the plastics & allied industries. These are located at Ahmedabad, Bhubaneshwar, Chennai, Kochi and Lucknow.

(ii) Diploma Centres / Other Learning Centres: (OLC)

To provide training in Diploma programs in the area of plastics Engineering & Technology in order to develop manpower in the non-supervisory level for the plastics & allied industries. These are located at Aurangabad, Amritsar, Bhopal, Guwahati, Hajipur, Haldia, Hyderabad, Imphal, Jaipur, Murthal, Mysore and Raipur.

(iii) Vocational Training Centres (VTC):

To provide training at Operator level to meet the skilled manpower requirements of plastics & allied industries. These are located at Vijayawada, Baddi, Valsad, MCTI-BBSR II and Bhopal-II.

(iv) R &D Wings:

To carryout research in Material & product development in the areas of polymers in order to support the plastics & allied industries to develop newer applications of polymers.(Make In India)

(v) Specialized Units:

To develop skilled manpower & to provide Technical support services in the area of Plastics Product development & advanced processing for the plastic & allied industries.

(vi) Polymer Data Service Centre: (PDS)

PDS center will act as a nucleus in providing required inputs which will ultimately ensure the sustainable development of Petrochemicals upstream and downstream polymer processing and allied industries."

2.7 When the Committee desired to know the details about the infrastructure available with each centre of CIPET in the country, the Department furnished the details in writing as under:-

"CIPET Centres in general have the following infrastructure:

(i) Academic buildings comprising Class rooms, Laboratories, Workshops, CAD/CAM/CAE Centre, R&D Laboratories, Training & Administrative Blocks, Library, Conference and Seminar Halls, Stores, Cafeteria.

(ii) Hostel buildings comprising boys / girls hostels, Mess facilities, Recreation and Reading, Students activity block, Gym facilities

(iii) Technical infrastructure in the form of conventional and advanced state-of-art machineries & equipments in Design, CAD/CAM, Processing, Testing and Tooling.

CIPET Centres in project stage viz., Vijayawada, Bhopal (VTC), Baddi and Valsad do not have Academic buildings, Hostel buildings and Technical infrastructure except few machineries / equipments. The Centres are functioning in rented sheds. All CIPET Centres have hostel facilities except CIPET Bhubaneswar (Campus II) and PWMC, Guwahati and the Centres in project stage as stated above.

2.8 Noting that CIPET is running various centres in rental buildings, the Committee enquired whether plans are being made for CIPET to have its own buildings. In reply thereto, the Director General of CIPET stated during evidence as under:-

"From the beginning, wherever CIPET has started, it is on 50:50 basis. The cost of plant and machinery is borne by the Government of India while the land and building is of the State Government. So, if the State Government gives some industrial shed also, we will convert it into dormitory and run it. Sir, if we take the money and request the CPWD to construct, they will take six years in place of six months. So, we are getting into that type of an issue. We will be wasting our time in that instead of taking classes. So, our submission to the hon. Members would be that if the State Government gives it straightaway to us, we do not mind managing the hostels, but bringing money and doing construction is a difficult task for us because we are working round the clock. We have a very limited faculty and ours is a self-sustainable organisation. We do not want to break a model by taking non-plan and becoming dependent on non-plan and then do not work. So, we have a culture we have already realized that we should stand self-sustainable."

2.9 Further, during evidence, the Director General of CIPET highlighted plans to address the issue of lack of hostel facilities as under:-

"Instead of starting a new building, if ITIs - lot of State ITIs are vacant – are vacant, we will use them instead of constructing a new building and again wasting our time. There are lot of State ITIs which are not running. We can take them and start it. Once we take an ITI in the campus, there will be a hostel also. So, everything can be done there. "

2.10 Regarding shortage of hostel facilities for students at CIPET Centres, representatives of CIPET/Department clarified during evidence as under:-

"Sir, the present status is that the hostels are not sufficient to keep all the students. Nowhere the hostels are sufficient because students are growing every day. So, it is not just possible for us to accommodate everybody in the campus. For us also, it is very difficult to manage the entire activities. So, outsourcing is a better option than managing it.

Secondly, it is a worldwide phenomenon that the hostel facility as compared to the total strength of students is very small. It ranges between five and seven per cent. Only five to seven per cent students are given hostels. Other students live in their own accommodation. This is the world standard.

We have taken 11 outsourcing hostels which accommodate about 3,000 students.

We do not have our own buildings. We are just taking it on rent and managing through the caterers and they are managing.

We have a small campus. As far as CIPET is concerned, we start in five or ten acres of land. We are not like other universities which have 100 or 1,000 acres of land. So, we cannot construct hostels. Then, there will be no playground and nothing. So, it is better to outsource and then manage. We have very limited manpower. Since we are self-sustainable, if we add on more manpower, it will be difficult for us to be self-sustainable also. This is another issue which we have.

.....opening of hostels is very important because the students get additional facility. But the capital expenditure required for this is very high. So, this limit the capacity of the Government to open new centres because if we do not provide hostels, let us say, then half of the cost is saved and we can instead of opening 10 centres open 20 centres. So, there is a view that instead of having hostel facilities with all centres, we may think in terms of opening more centres, reduce the capital cost and students will get the accommodation for themselves. It is because the moment a centre is opened, infrastructure comes up on its own. So, this is another issue which is under consideration of the Ministry. "

2.11 When the Committee desire to know the updated details about 10 new hostels under construction, the Department replied in writing as under:-

"The construction of hostels at 10 CIPET Centres has been initiated in which some have been completed and remaining are in progress. There is no delay in construction of hostels. The details of status of construction, time frame, etc. are furnished below:-

Status of Construction of Hostel facilities at 10 CIPET Centres						
Sl. No	Name of the State & CIPET Centre	Hostel for Boys/Girls	TIME FRAME (From date of award of work)	Date of Initiation of work.	Status of Construction (Anticipated date of Completion)	Reasons for Delay
1	Rajasthan Jaipur	Boys /Girls	15 months	30.08.2014	Completed (19.11.2015)	No delay
2	West Bengal Haldia	Boys /Girls	15 months	15.12.2014	11.03.2016	Construction Under progress as per schedule and there is no delay.
3	Gujarat Ahmedabad	Boys /Girls	18 months	06.03.2015	05.09.2016	
4	Haryana Murthal	Boys /Girls	16 months	06.04.2015	11.08.2016	
5	Odisha Bhubaneswar -II	Boys /Girls	12 months	21.08.2015	31.08.2016	
6	Odisha Bhubaneswar -I	Boys /Girls	12 months	14.08.2015	31.08.2016	
7	Tamil Nadu Chennai	Girls	15 months	01.08.2014	Completed (23.11.2015)	In process
		Boys	15 months	21.05.2015	31.08.2016	
8	Maharashtra Aurangabad	Boys /Girls	16 months	17.02.2016	30.06.2017	
9	Andhra Pradesh Hyderabad	Boys /Girls	16 months	15.02.2016	30.06.2017	
10	Uttar Pradesh Lucknow	Boys /Girls	16 months	15.02.2016	30.06.2017	

III. Academic Programmes and Placements

2.12 When the Committee desire to know details of the various academic programmes being offered by each of the CIPET centres in the Country, the Department replied in writing as under:-

> CIPET offers various long term programmes viz. UG/PG courses in Science/Engineering/Technology, Diploma, Post-diploma and Postgraduate Diploma courses in plastics and allied field.
>
> CIPET also offers short term vocational skill development programmes (VSTP) for the duration up to 6 months to enhance the employability of trainees
>
> The list of courses offered at various CIPET centres are listed in **Annexure - V.**

Long term Programmes

2.13 As per the Department, details of Long-Term courses offered by CIPET with duration and eligibility are as follows:-

Sl. No	Course Abbreviation	Course Name	Duration	Eligibility
1	DPT	Diploma in Plastics Technology	3 years	10th standard Science
2	DPMT	Diploma in Plastics Mould Technology	3 years	
3	PGD-PPT	Postgraduate Diploma in Plastics Processing and Testing	1½years	B.Sc. with Chemistry as on the subjects
4	PGD-PTQM	Postgraduate Diploma in Plastics Testing & Quality Management	1½years	
5	B.Tech (PE/PT)	B.Tech (Plastics Engineering/ Technology)	4 years	HSC with Mathematics, Physics & Chemistry
6	B.Tech(ME/MT)	B.Tech (Manufacturing Engineering/ Technology)	4 years	
7	M.Tech(PE/PT)	M.Tech (Plastics Engineering/ Technology)	2 years	B.E./B.Tech./B.Sc., Engg. (4 years) in Mechanical / Chemical / Production / Polymer / Plastics Engineering / Technology (or) M.Sc. in Polymer Science / Chemistry with polymer specialization.
8	M.Tech (PNT)	M.Tech (Polymer Nanotechnology)	2 years	B.E./B.Tech. (4 years) in Mechanical, Plastics Engineering / Technology / Polymer / Chemical (or) M.Sc., in Polymer Chemistry / Polymer Science / Physics / Chemistry with valid GATE score.
9	M.E.(CAD/CAM)	M. E CAD/CAM	2 years	B.E./B.Tech. (4 years) in Mechanical / Automobile / Manufacturing / Production / Industrial / Mechatronics / Marine / Aeronautical
10	M.Sc. Tech (MSE)	M.Sc. (Tech) in Materials Science Engineering	5 years	HSC with Mathematics, Physics & Chemistry
11	M.Sc. (PS)	M.Sc. Polymer Science	2 years	B.Sc. Degree in any branch with Chemistry as one of the subjects
12	M.Sc. (BPS)	M.Sc. Bio Polymer Science	2 years	

2.14 When asked to provide the number of students who have enrolled in the long term training programmes in last three years, the Department furnished the information in a tabular form as under:-

Sl. No	Year	No. of students Enrolled
1	2013-14	11494

2	2014-15	12629
3	2015-16	13376

2.15 As per the Department, the details of the numbers of students who have completed the long term programmes in the last three years are as follow:-

Sl. No	Year	No. of students completed (Qualified)
1	2012-13	3210
2	2013-14	2418
3	2014-15	2340

2.16 When asked to give details regarding admission procedures being followed by CIPET for long term courses, the Department replied as under:-

Admission Procedure for Long-Term courses (Diploma/PG programs)

- Advertisement for admission will be released in newspapers on all India basis during first week of March every year
- Admission to all CIPET Diploma & Post Diploma and Post Graduate Diploma and M.Sc.Tech. courses will be carried out through CIPET Joint Entrance Examination (CIPET-JEE) .
- Selection will be based on Performance in Entrance Exam and Academic record of qualifying examination.
- CIPET reserves quota for SC/ST, OBC (NCL) candidates and physically challenged as per Govt. of India norms.
- For degree and postgraduate degree courses the admission is done as per the norm of affiliating Universities

2.17 On the issue of admission criteria for various courses offered by CIPET, the Director General of CIPET had further clarified during evidence as under:-

"Regarding the programmes that you have asked, as I showed you just now we have different types of programmes. For different types of programmes, different admission procedures are there. There are programmes which are high end programmes, like the B.Tech, M.Tech, and Ph.D. These programmes are strictly as per the university guidelines. If it is Lucknow, then it is Lucknow University; if it is Chennai, then it is Anna University; if it is Bhubaneswar, then it is Biju Pattnaik University; if it is Cochin, it is Cochin University of Science and Technology. They do the entire admission procedures. They select and give it to us. We have no role to play in that. They pay their fees and join the course. There is no fund for them to support them, except SC/ST and OBC, who get it directly.

As far as diploma programmes are concerned, an all-India entrance examination is conducted on-line. It is in the month of June. The advertisement for that comes in all leading newspapers across the country in all languages. Then, an entrance examination is conducted because there is a tough competition to take admissions to these courses. They pay their course fees, which is highly subsidised. Even if our course is not reimbursable, they come forward because they know if I complete this course I am definitely getting a job. So, he takes loan. Mostly poor students come. We have ensured, the Department has ensured, the Governing Council has ensured that the course fees is highly subsidised. If we spend almost Rs. 1 lakh per semester

per student on the raw material and the machine and the power consumption, he pays only Rs. 12,000. So, it is highly subsidised.

2.18 When asked about the acceptability of degrees/diplomas being offered by CIPET in the plastics and other industries in the country as well abroad, the Department replied in writing as under:-

"CIPET Diplomas and degrees are well accepted by the plastics and allied industries for employment nationally and internationally. The Diplomas and degrees awarded by CIPET are also well recognized for higher studies by state Departments of Technical Education and Universities across the country."

Short-term Courses and Vocational Programmes

2.19 When the Committee asked for the centre-wise details of CIPET's short term and Vocational Skill Training Programmes (VSTP), the Department replied in writing as under:-

"All CIPET centres are conducting various skill development training programs sponsored by various central / state government / agencies as well as under CSR initiatives in developing employment opportunities especially for underprivileged / unemployed youth to fulfil the skilled manpower requirement of plastics and allied industries. The list of short term vocational skill development training courses are given below:-

1. Injection Moulding Machine Operations (IMMO)
2. Film Extrusion Machine Operations (FEMO)
3. Pipe & Profile Extrusion Machine Operations (PPEMO)
4. Blow & Operations (BRMO Roto Moulding Machine)
5. Plastics Recycling Machine Operations (PRMO)
6. FRP Products Manufacturing Operations (FPMO)
7. Plastics Sacks Machine Operations (PSMO)
8. Testing & Quality Control for Plastics Materials & Products (TQC)
9. Maintenance of Plastics Processing Machinery (MPPM)
10. Plastics Mould Manufacturing (PMM)
11. Advanced Plastics Mould Manufacturing (APMM)
12. CNC Lathe Programming & Operation for Plastics Industries (CNC-L)
13. CNC Milling Programming & Operation for Plastics Industries (CNC-M)
14. Plastics Product and Mould Design (PPMD)
15. Machine Operator – Plastics Processing (MO-PP)
16. Machine Operator – Injection Moulding (MO-IM)
17. Machine Operator – Blow Moulding (MO-BM)
18. Machine Operator – Plastics Extrusion (MO-PE)
19. Machine Operator – Plastics Recycling (MO-PR)
20. Machine Operator – Plastics Sacks (MO-PS)
21. Machine Operator – Tool Room (MO-TR)
22. Machine Operator – CNC Lathe (MO-CNC-L)
23. Machine Operator – CNC Milling (MO-CNC-M)
24. Maintenance of Machinery (MM)
25. CAD/CAM/CAE using Pro-E / Unigraphics / Moldflow / CATIA
26. Computer Hardware & Networking,
27. Electrical Maintenance,

28. Advanced Machine Maintenance & Industrial Automation."

2.20 On the matter concerning skills development training courses offered by CIPET, the Director General of CIPET had explained during evidence as under:-

> "As regards skill development six-month programmes, these are supported by different Government agencies, public sector undertakings, including the course materials, hostel accommodation, etc. In this case, different centres at different zones continuously advertise in local papers and they are all free courses. Those who have completed 8th or 9th Standard become Operators. Suppose it is West Bengal, then Haldia will advertise continuously. There is always mentioned in the website, please join such and such course. They join those courses. They study for four months. Out of six months, four months they study and two months they do internship in the industry. We do not keep them. While they do the internship, the industry does not allow him to go back. Out of 20, they will keep 10 and the rest 10 will go to other industries. So, the placement takes place like that."

2.21 When the Committee desired to know any initiatives taken by the Department regarding the setting up of dedicated skills training centre to meet the demands of the chemicals sector, the Department replied in writing as under:-

> "The focus of CIPET's activities is to impart skill training to meet the demand of petro-chemical/ plastics industry. So far as a dedicated skill training institute for chemicals sector is concerned, the Department is exploring the possibilities of engaging Institute of Pesticide Formulations and Technology (IPFT) for the same.

2.22 On the need to give priority to vocational skills development programme in all centres of CIPET which the Committee emphasized to the Department, the Department stated in writing as under:-

> "In continuation to the observations of the Committee, CIPET has taken more efforts and given priority to conduct the short-term and vocational skill development training programmes. As the result, CIPET has the target of training 80,000 students for the year 2015-16 and during the period April - December 2015, 42743 candidates were trained."

2.23 When asked to give details regarding admission procedures being followed by CIPET for short term courses, the Department replied as under:-

> Admission process for conducting Short-term vocational skill development will be done as per the requirement of the sponsoring agencies. The applications will be scrutinized by the selection committee constituted and the suitable candidates will be selected.

2.24 When asked to give details of the scholarships being provided to the economically weaker students during the last three years and the number of students being benefitted by such scholarships, the Department replied as under:-

> "The Government of India does not pay any scholarship to students of CIPET. However, scholarships are being provided to economically weaker students by State Government and funding agencies. The details of candidates who benefitted are furnished below:

Sl. No	Course	No. of candidates benefited		
		2012-13	2013-14	2014-15
1	Vocational and Skill development training programs	1701	1381	3878

2.25 When the Committee desire to know how many students have enrolled in Short Term and Vocational Skill Training Programme (VSTP) programmes, the Department replied in writing as under:-

> "For current year 2015-16 (upto November 2015), 24367 candidates have enrolled in the short term and vocational skill development training programmes and the candidates are undergoing training."

2.26 When asked to give details of the number of students who have completed the Short Term and Vocational Skill Training Programme programmes for last three years, the Department replied in writing as under:-

> The year-wise break-up of the students completed the short-term vocational skill development training programmes conducted by CIPET for the last three years are as follows:

S. No.	Year	No. of students completed training
1	2012-13	26277
2	2013-14	28498
3	2014-15	30281

2.27 According to the Department, more than 80% of students have found placement nationally and internationally after completing the Short Term and Vocational Skill Training Programme courses.

2.28 As per information furnished by the Department, the number of students who have found placement nationally and internationally after completing the long term courses being offered by CIPET for last three years as below:

	No. of Students placed		
Year	2012-13	2013-14	2014-15
National	2892	2169	1694
International	Nil	32	47

2.29 When asked to provide the number of employments generated, the number of Skill development Training Centres at CIPET centres, the student - teacher ratio, the number of hostels indicating the number of students accommodated in the hostels for each CIPET centres, the Department replied as under:-

> "The employment generated through Vocational Training Centres (VTCs) during 2014-15 is provided in the following table.
>
> The student – teacher ratio for:
> STC and diploma courses - 20:1
> Degree courses - 15:1
> Postgraduate degree courses - 12:1

Sl. No.	Centre Name	Employment (In VTCs)	No. of Hostels	No. of students accommodated
1	Ahmedabad	1146	3	324
2	Amritsar	1080	5	204
3	APPTC, Balasore	1020	4	237
4	ATPDC, Madurai	2180	1	156
5	Aurangabad	1170	3	345
6	Bhopal	1420	3	373
7	Bhubaneswar-I	1140	12	688
8	Bhubaneswar-II	2420	7	632
9	Chennai	2016	6	515
10	Guwahati	583	2	253
11	Hajipur	1124	3	334
12	Haldia	1140	6	885
13	Hyderabad	1126	3	250
14	Imphal	200	7	213
15	Jaipur	2840	1	210
16	Kochi	320	4	80
17	Lucknow	1040	3	150
18	Murthal	1620	3	331
19	Mysore	840	2	175
20	PWMC, Guwahati	220	-	-
Total		24645	78	6355

NB: (*) Due to lack of adequate hostel facilities, students have been accommodated in hired hostels

New VTC at Baddi, Valsad, Vijayawada, Medak Bhopal have been providing skill development training from May 2015 and courses are under progress.

2.30 On the Committee's query whether the Department/CIPET is planning a separate and dedicated university to cater to the chemicals/petrochemicals industry, the Secretary of the Department stated during evidence as under:-

> "I would just like to point out that earlier there was a move to establish such a kind of university, but after a prolonged discussion with CIPET faculty and CIPET management, it was decided not to proceed further for various reasons. After establishing a university, the spread out centres across the country become very unmanageable. A university is best functioning when you have a university and then the campus around it. Here, we are spread across the country. The management of centres through one university would have become very difficult. What is there now is that there is a centre in Lucknow and the Lucknow University is right there to manage the academic affairs of that centre. Similarly, the Chennai University is there to manage the affairs of the centre in Chennai. So, the Ministry had thought about it, but later on after a detailed discussion and deliberation, it was not pursued further."

2.31 Emphasizing the need to encourage entrepreneurship development programmes, the Committee had suggested to the Department that a separate Entrepreneurship Development Cell may be constituted for it. In this regard, the Department replied in writing as under:-

> "CIPET has included EDP skills in the curriculum as a part of program to encourage the students for entrepreneurship development and motivate for entrepreneurship/self-employment. In addition to that, CIPET has created a separate Vocational Training Cell for coordinating at Head Office and Centre-level for conducting skill development training programmes as well as Entrepreneurship development programmes. During the current year 2015 – 16, CIPET centres have

received the sanction orders from different sponsoring agencies to conduct Entrepreneurship programmes."

IV. Technology Support Services & Polymer Data Services

2.32 When asked to elaborate on how the industries benefitted from the CIPET centres in the country, the Department furnished the information in writing as under:-

"The following benefits have been provided / extended by CIPET Centres to Plastics and allied industries in the country

1. Providing Skilled Manpower: CIPET provides trained / skilled manpower from operator to supervisory level personnel, who can readily work in the industry due to hands on practical training provided by CIPET.

2. Rendering Technical Support Services: The CIPET Centres provide one-stop solution for all the needs of plastics & allied industries and support the industries in resolving their technical issues. Further, CIPET undertakes job orders / high precision machining to ensure the complex part of the manufacturing. The various services offered to the industries are -

(i) *Design, CAD/CAM/CAE and Tool Room* – Design & Fabrication / Development of moulds namely Injection moulds, Blow moulds, Compression moulds, Transfer mould; Product Development; Mold Flow Analysis; Failure Analysis; Product / Mold Design Validation; Reverse Engineering; Rapid Prototyping; Plastics Product Design; Precision Metal Component Development.

(ii) *Processing* – Conversion of plastic raw materials into finished products by using Injection Molding (Micro Processor / All Electric machines); Extrusion process Stretch Blow Molding; Single and Multilayer Film Extrusion; Transfer & Compression Molding process; Blending and Compounding; FRP / Composite Products; Recycling of Plastic Waste, etc.

(iii) *Testing, Quality Control and Inspection Services* - Testing of plastic materials and products as per National and International standards; Testing of Biodegradability as per ASTM, ISO standards; Micro-biological studies on plastics products through Sterility Lab; Third party inspection services for plastics & allied products for Quality Assurance; Technology Audit & Assessment of plastics based industry

(iv) *Consultancy on Plastic Projects* – CIPET renders consultancy services through material development for specific products; Development for Compounds; Turnkey consultancy on Tool Room/Processing Units/Testing Lab; Plastics Sector Survey on Technical aspects etc.

CIPET acts as catalyst in developing new entrepreneurs in the field by providing all technical details and also assist in preparing the project reports, hand holding of the new entrepreneurs by offering the infrastructure available at CIPET at nominal charges till they stabilize their market and establish their own set-up.

3. Skill up gradation through Vocational Training Programs and providing skilled operators to plastics / allied industries: CIPET supports the plastics industries by providing skill up gradation training to the employees of the industry and make them more productive and technically sound with newer technologies introduced in the field. CIPET also imparts vocational training

to the school drop outs and unemployed youth and they are employed in the plastic industries.

4. Research and Development – undertaking various R&D projects for the benefit of plastics industry: The research labs of CIPET supports the plastics industries by taking up the projects of indigenization, newer material/application development in the field, development of newer technologies required for the plastics industries and transfer the same for the benefit and growth of the plastic industries in the country. CIPET fulfills / supports the Govt. of India mission through Make in India. The R&D wings of CIPET have been taking up assignments pertaining to 'Make in India' initiative leading to development of indigenous technologies. The major research projects which have the capacity and potential to contribute to major breakthrough in science and technology are:

(i) Colour improvement of flyash for value added applications

(ii) Development of a formulation from plastics recovered from waste electrical and electronic equipments (WEEE)

(iii) Natural fiber reinforced polypropylene composites for light weight automotive applications.

2.33 The Department has further informed that there is an increase in trend and demand for Technical support services (TSS) by about 11% increase during the year 2014-15 as compared to 2013-14. The number of Technical services provided by CIPET in the last three years is given below:

Sl. No.	Year	No. of Assignments undertaken
1.	2012-13	40,396
2.	2013-14	41,119
3.	2014-15	45,692
4.	2015-16 (upto Nov.'15)	80,000* (35,186)

*-Target

2.34 Regarding the functions and activities under taken by Polymer Data Service (PDS),a wing of CIPET, in the country, the Department furnished the following information:-

"Polymer Data Services act as nodal agency for marketing and provide research base relating to Polymer industry by generating, compiling verifying, stabilizing, coordinating and analyzing data for information of industry. This is an interlink and platform for plastics industries to exchange information, promote innovation, share best practices, help in taking business decisions and guide new entrepreneurs to set up plastic industry. About 10,000+ industries across India are registered with PDS Web portal and efforts are made to further strengthen the data base.

PDS has organized Technical Seminars to propagate the "Positive Attributes of Plastics & its Waste Management" at various locations across the country. PDS also organized the 5th National awards for Technology Innovation (2014-15) in February 2015 and also the work is in progress for 6th National Award for 2015-16, which is scheduled to be held on 20th January, 2016 at New Delhi. A monthly e-news journal "POLeNEWS" was introduced in May 2015 & it contains information about the recent

development in plastics/polymer industries, manpower requirement, tender information's, up-coming events/exhibitions/information about CIPET programmes."

V. Plastic Waste Management Centres (PWMCs)

2.35 When asked to give details about the various Plastic Waste Management Centres (PWMC) of CIPET in the country and their objectives, the Department replied in writing as under:-

CIPET has established a Model Plastic Waste Management Centre at Guwahati and it has started functioning since August, 2009. The centre has state-of-the-art technical infrastructure facilities like mechanical recycling plant, waste to oil conversion facilities and also conducts skill development training programmes in the areas of plastics recycling & waste management as well as render Technology Support Services for converting plastics waste into value added products.

The PWMC centre has been established with the following objectives:

- Protecting the environment by recycling plastics waste in the North-Eastern Region, manpower development through training in the field of plastics recycling technology.
- To promote cost effective recycled plastics material grades for variety end-use applications
- To create business and employment opportunities from waste to wealth concept in tackling the issue of plastics waste disposal and to act as a "Centre of Excellence" in Plastics Waste Management in the country.

2.36 When asked to give details about the contribution made by PWMC in reducing Plastic Wastes, the Department replied in writing as under:-

- CIPET PWMC has conducted various workshops & seminars and also associated with various organizations / NGOs for public awareness on Plastics waste management.
- The Centre has taken the initiative by imparting knowledge of plastics waste & segregation of solid waste plastics etc. by visiting various dump yards in Guwahati & nearby areas.
- At district level, PWMC has collected various plastics waste materials from Nalbari district, Assam through the Office of Deputy Commissioner. PWMC Guwahati is already in contact with various NGOs in the districts like Jorhat, Dibrugarh, Dimapur (Nagaland) etc. for converting waste plastics into useful plastics granules.
- The Chemical Recycling Plant empowered with another two Mechanical Recycling plants in PWMC is on the way towards distinction.

2.37 When the Department's view was sought regarding the Committee's earlier recommendation for preparing a blueprint on setting up PWMCs, the Department replied in writing as under:-

"Ministry of Environment, Forest & Climate Change (MoEF&CC), in exercise of the powers conferred by Environment (Protection) Act, 1986, has formulated Plastic Waste (Management and Handling) Rules 2011. These rules define different parameters of Plastic Waste Management (PWM). The Rule 6(C) states that the

municipal authority shall be responsible for setting up, operationalisation and coordination of the waste management system and for performing the associated functions. Therefore, the issues relating to PWM fall within the domain of MoEF&CC. However, DCPC has acted as facilitator and prepared Approach Paper for effective PWM. The Department, after holding extensive Inter-Ministerial consultations and discussion with industry associations, has formulated a draft Paper on Plastic Waste Management. The Paper contains effective and specific action points to realize the goals of the 'Swachh Bharat Abhiyaan'. It also discusses the recycling of plastic waste and steps for ameliorating the condition of workers involved in this task.

To implement the above issue of PWM, DCPC has prepared PWM Programme after holding inter-ministerial consultation with the following three components.

- Entrepreneur Development Programme (EDP)
- Establishment of shredding facility
- Technology up-gradation of existing plastic recycling units

The above programme has been taken up with Ministry of Urban Development (MoUD), the nodal Ministry for coordination with urban local bodies for Implementation of this initiative. The MoUD had written to Municipal Commissioners of the concerned cities advising them, for imparting training to Rag pickers under the 'Swachh Bharat Abhiyan' in recycling and processing of plastic waste and developing entrepreneurship in collaboration with CIPET.

In view of the forgoing, as the Plastic Waste Management Rules 2011 are administered by MoEF&CC, the management of Plastic Waste are to be dealt with by them, whereas PWM Programme is to be handled by MoUD which is the nodal agency for coordination with urban local bodies. The Department through CIPET provides technical support in this regard."

2.38 The Committee desired to know about collaborative mechanisms, if any, that are are evolved between Department of Chemicals and Petrochemicals and local municipal authorities to utilize CIPET's expertise in the field of Plastic Waste Management.(PWM) for checking urban pollution and asked for an updated report on the proposed PWMC in Delhi. In reply thereto, the Department stated as under:-

"The Department of Chemicals and Petrochemicals has prepared PWM Programme after holding inter-ministerial consultations, and the same has been taken up with Ministry of Urban Development (MoUD), the nodal Ministry for implementation of this initiative. The MoUD had written to Municipal Commissioners of the concerned cities advising them, for imparting training to Rag pickers under the 'Swachh Bharat Abhiyan' in recycling and processing of plastic waste and developing entrepreneurship in collaboration with CIPET. DCPC is holding meetings with the MoUD in this regard. CIPET and the Department of Chemicals & Petrochemicals made efforts for allotment of 10 acres of land in Delhi. However, the Government of Delhi could not provide the required land and hence the proposal could not be taken up."

2.39 When the Committee asked whether the Department is planning to open PWMC in other parts of the country, the Department replied that at present there is no proposal to open PWMC in other parts of the country.

2.40 When enquired by the Committee regarding the Department's position with regard to the Committee's earlier recommendation for setting up more PWMCs, the representatives of the Department/CIPET clarified during evidence as under:-

> "The PWMC is a model centre and not a full-fledged manufacturing unit. We are an academic institute. We will have a model centre which will train people. The basic objective of PWMC is for training the students and recycling technology and also a model plant which people can use. These technologies are already available with us. Anybody will start to set up a PWMC. CIPET can give all its technical support to set up. So, CIPET can encourage if a private fellow does that and we support fully to set up the plant.
>
> ....It is a kind of show piece in a sense that we are trying to establish this as a concept that this kind of centres can be established and plastics can be recycled. We are hoping that others will look at this centre, look at the facilities and try to emulate it and set up their own private facilities for processing of plastic. This is only a kind of concept model which others are suppose to follow.

VI. Research & Development (R&D) Activities

2.41 As per the Department, the details of the Research and Development being undertaken by each of CIPET centres are as follows:-

> "The R&D wings viz., ARSTPS, Chennai and LARPM, Bhubaneswar undertakes Research & Development works in Conducting Polymers, Synthesis, Blends, Composites & Nanocomposites, Rapid prototyping, CAD/CAM/CAE, Reverse engineering etc.
>
> - CIPET's R&D laboratories have undertaken 40 projects from various Govt. agencies like DBT, OIDB, DeitY, CSIR, ISTP-GITA, DST, DCPC, FIST, IGCAR as well as leading Industries like M/s Boeing, USA, M/s Sabic, M/s DuPont, M/s ICG Specialty Chemicals, Netherlands, M/s Octal Chemicals, Dubai, M/s 3BRD, Chandigarh, M/s Royal Enfield, Chennai, M/s CVRDE, Chennai, – M/s. National Institute of Ocean Technology, Chennai, M/s. Rane Group of companies, R&D Centre, Chennai, M/s Dorma India Pvt. Ltd.,Chennai, M/s. KRAMSKI Stamping and Molding India Pvt. Ltd., Germany, M/s. ZF Wind Power Limited, Germany, M/s Lucas Tvs Ltd. etc.
>
> Major research activities of R&D laboratories include,
>
> - Centre of Excellence on Sustainable Green Materials,
> - Centre of Excellence on Sustainable Green Materials (CoE)
> - Bio-based composites for automobile applications**(**CoE**)**
>
> In addition CIPET has undertaken various projects in Packaging Sector, Energy Security, Adhesives & Sealants, Composite Preforms & Foul Release-corrosion resistant Coatings, Elastomeric Heat Shielding Material (EHSM), E-waste Recycling, Health care technology.
>
> - The R&D wings have earned credentials in the form of ~62 nos. of International Publications and 05 nos. of patented technologies in the areas of Natural Fiber based Composites, Nanocomposites and Blends. ARSTPS has filed 14 nos. of Patents & 13 nos. of Design Registration.

2.42 The two 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 carried out following activities during 2015-16 (up to December 2015):

- 01 Patent was filed and Book chapter thereof has been published through international publishers.
- 41 research papers have been published in leading International Journals.
- 12 Papers have been presented in International Conferences.

2.43 When asked to give details of performance of the two dedicated R&D wings viz. (i) Advanced Research School of Technology and Products Simulation (ARSTPS) at Chennai, (ii) Laboratory for Advanced Research in Polymeric Materials (LARPM) at CIPET Bhubaneswar, the Department furnished its reply in writing as under:-

> "The R&D wings, LARPM and ARSTPS conduct research in the field of Polymer Science & Technology viz., Biopolymers, Blends, Composites & Nanocomposites, E-waste Recycling, Conducting Polymers, Synthesis, Coatings & Adhesives, Water Purification, Renewable Energy, Rapid Prototyping, CAD/CAM/CAE, Reverse Engineering etc.
>
> LARPM and ARSTPS have undertaken more than 60 research projects and many consultancies from various Govt. agencies and leading Industries in and around the country. These assignments were completed successfully such as, automobile hinges, gas guiding components, eco-friendly hangers, bio-packaging and cutlery items from bio-based composites & nanocomposites, electronic meter cover and smart chargers from recycled e-waste and flexible as well as rigid tiles filled with flyash.
>
> With the giant leap in space technology, 'Indigenization' and 'Make in India', both LARPM and ARSTPS have received many assignments from major PSUs like Hindustan Aeronautics Ltd., Bharat Electronics Ltd., Hindustan Shipyard Ltd., Naval Research Board, Defence Research and Development Organization, Tear Smoke Unit etc. in different areas.
>
> These R&D wings have generated ~300 nos. of International Publications in high impact factor journals and National/International Conferences, 05 patented technologies and 13 design registrations apart from developing 22 Nos. superior talents through Ph.D programmes."

2.44 When asked how CIPET plan to spread awareness regarding usage of sustainable green materials to protect the environment, the Department replied in writing as under:-

- CIPET, with its expertise would be organizing seminars and workshops on broad areas of Bio-based Systems and their Applications with expert lectures from eminent scientists and researchers.
- Furthermore, CIPET also has taken initiatives in transferring prospective technologies to interested industries thereby attempting to replace conventional materials with eco-friendly green products. The applications focused include automobile, coatings, adhesives and other structural components.

2.45 According to the Department, About 5% of CIPET revenues have been invested in R&D activities. In this regard, the Committee desired to know whether there are plans to increase the investment share on R&D. In reply thereto, the Department stated as under:-

"With the objective of strengthening existing R&D activities in the niche areas of plastics and polymers and to cater to the need of technical workforce to upgrade the quality of research, the Department of Chemicals and Petrochemicals is providing plan funds assistance under the scheme for "Research and Development in Emerging Areas". Total plan assistance of Rs. 33.63 crore has been provided to CIPET in 11th and 12th Plan so far, to strengthen resources, capabilities and facilities at these institutions for long term viability and sustainability of research activities.

At the mid-term appraisal of plan scheme, additional plan fund assistance of Rs. 33.00 crore is being provided for strengthening of R&D Centres viz. LARPM & ARSTPS through establishment of new scientific laboratories and undertaking R&D activities in the new areas of Polymeric materials and Composites for defence applications, Energy Resources, Health Care, Plastic waste management, Adhesive and coating sciences, Designing, Simulation and prototyping, 3D printing Technologies and Micro fluidic Devices. In addition, the current proposal for sitting up of 11 new centres of CIPET across the country, inter-alia, include establishment of Advanced Polymer Design & Development Research Laboratory at Bengaluru with a cost of Rs.87 crore. Hence, requisite resources and financial support is being ensured by the Department to keep the investment share on R&D in CIPET to the optimum.

2.46 Arguing that research and development (R&D) is a very essential concept in the 'Make in India' mission, the Committee enquired if there is a plan to increase the share of R&D from only five per cent. To which the Director General of CIPET replied that "it is very insufficient".

VII. Major Events, Conferences and interaction with International Institutions

2.47 When asked about details of the MOUs signed by CIPET on various aspects with the industry, the Department replied in writing as under:-

"CIPET has signed 08 MoUs with Industries on various aspects and 16 MoUs with world renowned Universities / Institutions for collaborative research projects; faculty/students exchange programs and formulation of standards and specifications. The details of MoU signed are given below:

- M/s Hindustan Aeronautics Ltd., (HAL), Bengaluru
- M/s Bharat Electronics Ltd., (BEL), Bengaluru
- M/s SABIC Bengaluru
- M/s Bharat Heavy Electronics Ltd., (BHEL), Hyderabad
- M/s Essa Vyasa Technologies Pvt. Ltd., (ETPL), Hyderabad
- M/s IDMC, Gujarat
- M/s ITC, Bengaluru
- M/s Boeing India, Bengaluru

MoU signed with International Universities:

CIPET has signed MoUs with the following renowned Universities / Institutions for collaborative research projects; faculty / students exchange programs and formulation of standards and specifications.

- *Unesp, Brazil*
- *Shanghai University, China*
- *Hannam University, South Korea*

- *Kyung Hee University, South Korea*
- *The Institute of Biopolymers and Chemical Fibres Lodz, Poland*
- *The CIATEQ, A.C. Advanced Technology Centre*
- *University of Toronto (UoT), Canada*
- *Michigan State University (MSU), East Lansing, USA*
- *Penn State University, Pennsylvania, USA*
- *University of Massachusetts (UMass), Lowell, USA*
- *ASTM International, Philadelphia, USA*
- *Massachusetts Institute of Technology (MIT), USA*
- *University of Guelph, Canada*
- *European bio-plastics and international Biodegradable products Institute, Europe*
- *European Higher Institute for the Enterprise and its Techniques (ISEETECH), Metz-France*
- *M.V. Lomonosov Moscow State University, Moscow, Russia*

Further, there are some proposals for new MoUs to be signed in the near future. The proposed MoUs are given below:

- MoU with Ordnance Factory Board, (OFB) to provide Technical Support Services for indigenization of defence products, latest technology in the Polymer materials & production system.
- MoU with Institute of Wood Science and Technology (IWST), Bengaluru for collaborative work on developing the appropriate technologies for manufacturing, processing and product development of Wood plastic Composite(WPC) and similar composite materials.
- MoU with Holoflex Pvt. Ltd, Kolkotta for the Development of Toughened PLA Based Filament for 3D Printing.

2.48 When asked to give details of Conference/Seminar/Exhibitions being conducted by CIPET in the last three years, the Department replied in writing as under:-

I International Conference conducted by CIPET on Advanced Polymeric Materials (APM):

S. No.	Year	Date & Venue	Theme
1.	2013	March 01 – 03, 2013, at CIPET Lucknow	Innovation in Polymeric Materials and Product Development
2.	2014	February 14 - 16, 2014 Bhubaneswar	Exploring the hidden potential of polymeric materials
3.	2015	February 20-22, 2015 Bengaluru	Marching towards Smart Product Design & Engineering

II Technical Seminars conducted by CIPET:

S. No.	Year	No. of Technical Seminars	Topic of the Seminar	Places where the Technical Seminar conducted	Details of Conference / Seminar
1	2013-14	06	Plastics Recycling & Waste Management	Amritsar, Indore, Trichy, Surat, Ajmer, Kochi	750 participants in each technical Seminars

2	2014-15	06	Creating Awareness about Positive Attributes of Plastics & Waste Management	Vijayawada (AP), Sirsi (Karnataka), Jaipur (Rajasthan), Ahmedabad (Gujarat), Ooty (Tamilnadu), Aurangabad (Maharashtra)	1100 participants benefited in each technical Seminars.

III International Plastics Expositions (IPLEX) organized by CIPET:

S. No.	Year	Date & Venue
1.	2013	27th to 30th June, 2013 Chennai convention centre
2.	2014	August 8 – 11, 2014 Chennai Trade Centre, in Hyderabad
3.	2015	25-27th September, 2015 Bengaluru

Poly India 2013:

Poly India 2013 - 2nd International Exhibition was organized by CIPET / Administrative Ministry in association with FICCI from 25th to 27th April, 2013 at Chennai, wherein international delegates, Ministry officials and other dignitaries from State, Central Govts., and plastics fraternities participated in this mega event.

Workshop on Leadership & Motivation (January 2015):

CIPET organized Workshop on "Leadership and Motivation" for the Sr. Officials of Deptt. of C&PC, PSUs and institutes under Ministry of Chemicals & Fertilizers during January 16-17, 2015 at Lavasa, Maharashtra. The program was conducted by senior faculty from Indian Institute of Management (IIM) – Ahmedabad.

CHAPTER 3
INSTITUTE OF PESTICIDES FORMULATION TECHNOLOGY (IPFT)

I. Physical Infrastructure and Facilities

The 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 technology 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 household formulations. IPFT undertakes both in-house and external R & D projects.

3.2 Aims and Objectives:

- 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.

3.3 IPFT has a well-defined Organizational Structure comprising of a Governing Body, chaired by Secretary DC & PC, which is the supreme decision taking body. Governing Body meets twice a year and takes critical policy decisions related to the Projects, Budget, Manpower and General Management of the Lab. For day-to-day financial and administrative control, the Institute has a Finance & Administrative Committee (F&AC) chaired by Financial Advisor, Ministry of Chemicals & Fertilizers. F & AC meets as and when required to clear the issues related to Finance and Administration of the Institute. A Research Advisory Board (RAB) comprising of renowned scientists from academia and industry guides IPFT in selecting the R & D activities and periodically reviewing the progress of the R & D projects undergoing at the Institute.

IPFT consists of three major scientific divisions namely, Formulation Division, Bioscience Division and Analytical Division.

Formulation Division :-The division has the expertise and facilities to develop new generation pesticide formulations and modification of conventional formulations. The division has been working on various projects sponsored by the pesticide industry. It is aimed to produce and promote user and environment friendly pesticide formulations in the country. More than fifty technologies have been developed and transferred to large and medium scale pesticide industries in India and abroad. The division undertakes developmental work involving the following formulation technologies:-

- Suspension Concentrates
- Water Dispersible Granules
- Controlled Release Formulations
- Concentrated Emulsions
- Microemulsions
- Spreading Formulations

- Suspo - emulsions
- Micro and Nano encapsulation
- Gel and Tablet Formulations
- Bio-botanical Pesticide Formulations

Analytical Division:-The Analytical Division is the core division associated with all the activities of the institute. The laboratory is fully equipped with the state of the art analytical instruments such as GC, HPLC, GC-MS, LC-MS/MS and UV-VIS Spectrophotometer for undertaking the analysis of pesticides, their formulations and residues in various matrices. This division is a recognized/certified testing laboratory of the Bureau of Indian Standards (BIS) for pesticide formulations as per IS specifications. In December, 2008, the Division has been granted accreditation as per ISO/IEC–17025 (2005) which is being maintained. This division also participates in the international Proficiency Tests conducted by the Organization for Prohibition of Chemical Weapons Convention (OPCW). The division is also one of the twenty five laboratories participating in ICAR sponsored project on "Monitoring of Pesticide Residue at National Level".

Bio-Science Division:- The major thrust of the division is to evaluate different pesticide formulations developed by the Institute, for their commercial viability through bio-assay and field experimentation. The division is also actively engaged in developing registration data packages for the pesticide industry for their new formulations thorough sponsored projects. The division is recognized by CIB/RC for generating data on bio-efficacy parameters of the pesticides and their formulations.

The Institute carries out in-house, grants-in-aid and industry sponsored projects. IPFT is working on the following R & D projects sanctioned by the Department of Chemicals & Petrochemicals for the XII five year plan period.

a) Development of User & Environment Friendly Water Dispersible Granule Formulations of Highly Toxic, Broad Spectrum & effective Pesticides to reduce their Toxicity for Continuation of Use and Prevention from Ban
b) Development of Mass Production Technique and Formulation for Baculoviruses
c) Management of Termite by Integrated Approach and Indigenous Technologies
d) Magnetic core-shell nano particles based extraction coupled with Gas/Liquid Chromatography – Tandem Mass Spectrometry for trace level analysis of pesticides
e) Pesticide formulation from Plant Extract and their Bio-efficacy studies

Besides the above in–house projects IPFT is also working on the following sponsored projects sanctioned by other funding agencies:-

a. Development of recyclable catalytic systems based on nano-particles and nano-particulate assemblies for the treatment of toxic effluent generated from Indian pesticide industries (Sponsored by the OPCW)
b. Formulation development and application of *Gibbagotrianthema* as mycoherbicide against *Trianthemaportulacastrum L.* weed in kharif crop. Pathogenicity tests have been completed and mass rearing of pathogen is in progress (Sponsored by Department of Science & Technology).
c. Monitoring of Pesticide Residue in various crops (Sponsored by ICAR, Ministry of Agriculture, Govt. of India).
d. Development and evaluation of synthetic pesticides / botanical based formulations for long lasting impregnation in military uniforms, bednets and paints (Sponsored by DRDO)

3.4 The following infrastructure is available with IPFT :

A two storeyed Administrative Building.

A three storeyed Lab Building.
11 Acres of Land owned by HIL for conducting Field Trials on various crops.
Equipments required for undertaking R & D projects

3.5 When asked whether the existing infrastructure are sufficient to carry out the programmes of IPFT, the Department replied as under:-

"The present infrastructure is sufficient for the existing activities. However, it is proposed to get a Building in the same campus for a GLP Certified lab and Agriculture Lands in Haryana, Maharashtra and Orissa for conducting Field Trials of pesticide on various crops in three different climatic conditions as per the requirements of CIB/RC."

3.6 Regarding the proposed plan to get a Building in the IPFT Campus at Gurgaon for a GLP Certified Lab and Agriculture Lands in Haryana, Maharashtra and Orissa for conducting Field Trails of pesticide on various crops in three different climatic conditions as per the requirements of CIB/RC, the Department furnished an updated information as under:-

(A) **Good Laboratory Practice (GLP)** embodies a set of principles that provides a framework within which laboratory studies are planned, performed, monitored, recorded, reported and archived. These studies are undertaken to generate data by which the hazards and risks to users, consumers and third parties, including the environment, can be assessed for pharmaceuticals (only preclinical studies), agrochemicals, cosmetics, food additives, feed additives and contaminants, novel foods, biocides, detergents etc.

GLP helps assure regulatory authorities that the data submitted are a true reflection of the results obtained during the study and can therefore be relied upon when making risk/safety assessments.

With the passage of time, most of the Regulatory Authorities are insisting on the submission of data produced in a GLP Certified Laboratory.

IPFT is already generating Non–GLP data on Bioefficacy, Phytotoxicity, Pesticide Residue and Shelf life studies for Indian Agrochemical Industries for submission to Central Insecticide Board (CIB) for registration as CIB has yet not mandated the submission of data generated in a GLP Certified Laboratory (except Toxicological Data). However, it is expected that sooner or later CIB is also going to follow the internationally accepted norms for the submission of data generated in a GLP Certified Laboratory.

Keeping the futuristic requirements in mind initiatives have been taken to establish a GLP Certified Laboratory at IPFT. As a first step, IPFT has already submitted an application to CIB/RC for getting recognition for data generation on the following :

(a) Analysis of Physico-Chemical Properties
(b) Generation of Analytical Report
(c) Identification & Quantification of Identifiable Impurities
(d) Shelf Life Data

The actions being undertaken are as follows :

(a) Writing of SOPs for the above
(b) Creation of infrastructure and facilities for undertaking the above tests

After completion of above mentioned activities, an application for GLP certification will be submitted to National GLP Compliance Monitoring Authority (NGCMA),

Department of Science & Technology (DST) which will conduct a Pre-inspection followed by a full inspection before granting GLP Certification. It is a long process and is expected to take almost a year to complete the process. The target date is March 2017.

(B) Agriculture Lands in Haryana, Maharashtra and Orissa :

(ii) Need of Agriculture Lands in Haryana, Maharashtra and Orissa for conducting field trials of pesticides on various crops in different agro-climatic regions as per the requirement from CIB/RC.

(iii) As IPFT is the only Research Institute apart from ICAR Institutes and State Universities which is being recognized and authorized for data generation and conduction field evaluation studies on various new or existing molecules/ pesticide in INDIA.

(iv) In recent years, due to sharp increase in pesticide industry, international business and collaborations and pesticide import, there has been sharp increase in the demand to conduct the bio-efficacy studies as this study is the basic essential platform for registration of pesticide in India.

(v) IPFT has received more than 150 projects for North location (i.e North Agro climatic Zones) testing on bio efficacy testing .The increased number of projects has contributed significantly to the revenue generation in IPFT and also provided the employment to the agricultural graduates.

(vi) To fulfill the need of increasing number of projects in field, IPFT should have additional agriculture land.

(vii) As per CIB guidelines, three different agro –climatic zones and each pesticide group to be tested in preferred largely crop grown area only.

(viii) Today, Indian Industry and global investor's needs simultaneous testing in different agro–climatic zones therefore IPFT also need centers/additional agricultural land to fulfill and combat the pressure of new investor's for the registration of pesticides in India.

(ix) Major Agriculture Product/Pesticide companies who have been regular clients and are in regular benefit since last ten years are as follows :

1. M/s Gharda Chemicals Ltd.
2. M/s Syngenta India Ltd.
3. M/s Bayer Crop Science
4. M/s Excel Crop Care Pvt. Ltd.
5. M/s Insecticides India Ltd.
6. M/s Isagro Ltd.
7. M/s Jai Shree Rasayan Udyog
8. M/s Plant Protection Ltd.
9. M/s Krishi Rasayan Ltd.
10. M/s Coromandel
11. M/s Crystal Phosphate Ltd.
12. M/s Faith Innovation Ltd.
13. M/s Multiplex India Pvt. Ltd.
14. M/s Huges & Hugges Chem Ltd.
15. M/s Rainbow Agrosciences Pvt. Ltd.

(x) The proposed plan for IPFT bio-efficacy centers of 10 Acres each in Haryana, Maharashtra and Orissa is under planning; expected to be completed by March 2017.

3.7 During the course of evidence, the Secretary, Department of Chemicals and Petrochemicals submitted before the Committee that data show that only 3% of the pesticides used by farmers are bio-pesticides. As such, much attention is required in this area so as to further develop bio-pesticides.

3.8 During the same evidence, the Director, IPFT submitted before the Committee that they are trying to obtain GLP certification, but that is a time-consuming process and would take one year to complete the process.

3.9 When asked to elaborate how the industries benefited from the IPFT, the Department replied in writing as under:-

"IPFT has been serving the Indian Agrochemical Industries by providing them :

i) User & Environment friendly pesticide formulation technologies for the commercialization.

ii) Data on Bio-efficacy, Phytotoxicity and Pesticide Residue Analysis for their formulations for registration with Central Insecticide Board Registration Committee (CIB/RC).

iii) Training of various stakeholders in the following areas of expertise :
   a) Pesticide formulation technology.
   b) QA/QC of pesticides and their formulations.
   c) Regulatory requirements as per CIB/RC.

3.10 When asked about the quality control of pesticides, the Secretary, Department of Chemicals and Petrochemicals submitted before the Committee during the course of evidence on 8 February 2016 that the Ministry of Agriculture has been looking after the quality of pesticides. The Ministry of Agriculture have their own laboratories. In addition to this, the Ministry of Agriculture have two regional laboratories - one at Chandigarh and another at Kanpur. Besides this, there are 60 State pesticide testing laboratories but these are not very well equipped. Sometimes, the Ministry of Agriculture sends some samples for testing to IPFT in case they feel the need for it, but IPFT has no control over them.

II. Budget and Financial Performance

3.11 When the Committee desire to know the budget allocation for IPFT in last three years and the current year, the Department furnished its reply in writing as under:-

Budget allocation for IPFT in last three years and the current year

Rs. in Lakhs

Budget Head	*2012-13*	*2013-14*	*2014-15*	*2015-16*
Non-Plan	310.00	380.00	407.00	370.00
Plan	434.00	434.00	169.00	100.00

3.12 As for financial performance of IPFT, the Department furnished its reply in a tabular form as under:-

IPFT has only one centre located at Gurgaon, Haryana. The financial performance of IPFT during each of the last three financial years and the current year is as under :

Rs. in Lakhs

Financial Year	*Plan Budget*		*Non–Plan Budget*	
	Allocated	*Utilized*	*Allocated*	*Utilized*
2012-13	434.00	19.00	310.00	310.00
2013-14	434.00	434.00	380.00	309.00
2014-15	169.00	169.00	407.00	359.00
2015-16	100.00	00.00 (Not utilized till 31.12.2015	370.00	120.50 (till 31.12.2015)

IPFT has earned revenue from the industry sponsored projects. The details are as follows :

Rs. in Lakhs

Financial Year	*Projected Revenue*	*Earned Revenue*	*Remarks*
2012-13	70.00	111.69	
2013-14	80.00	173.55	
2014-15	90.00	169.55	

3.13 When asked about the initiatives taken to reduce the IPFT's dependence on non-plan funds and become self sufficient financially, the Department replied in writing as under:-

IPFT has been taking various steps to increase its revenue generation in order to reduce its dependence on non-plan funds. Following steps are being taken to achieve the targets.

i) Aggressive marketing in order to attract more Agrochemical Industries for formulation development and projects for data generation on bio-efficacy, phytotoxicity and pesticide residue analysis.

ii) Attract trainees from foreign countries.

iii) Undertake GLP Certification for Physico-chemical testing of pesticides and their formulations.

iv) Collaborative work with Central Pollution Control Board (CPCB) for monitoring of pesticide residue in river water.

v) Certification from Export Inspection Council (EIC) for the testing of food items for pesticide residues.

III. Projects and Research & Development (R&D)

3.14 As per the Department, the major achievements by the **Formulation Division** during each of the last three years are as under:-

(i) During FY 2012-13 :

The Formulation division developed a very special environmental & user friendly pesticide formulation by which doses of pesticides can be reduced, the ground water pollution can be minimized along with long term efficacy impact of the formulation

named as Controlled Release Floating Tablet Formulation. This formulation was specifically developed for the control of aquatic weeds and pests.

A combination water based SC formulation of systemic and contact insecticide qualifying National and International quality parameters was developed and technology was successfully transferred to Indian Pesticides industry for commercialization.

(ii) During FY 2013-14 :

The Formulation division developed a Bio- Botanical based Pesticides formulation for the control of cockroaches. The formulation was qualifying the national & international quality parameters and was also having comparable Bio- efficacy with synthetic pesticide formulation used for cockroach control. This formulation was selected for sustainability award for best green technology in Chemical sector by FICCI, New Delhi.

In research project sponsored by DRDO, Ministry of Defence, the formulation division developed a nano-gel pesticide formulation for impregnating insecticides in Soldier dresses in order to protect them from the small insects when they are deputed in forest area.

The technology of Metamitron SC formulation was successfully developed which contains high loading of active ingredient in water based formulation. This formulation is very useful to minimize dose in field application, therefore, better for user and environment and providing good bio-efficacy at low dose of pesticide. The technology is specifically advantageous for minimizing the pesticide residue problem. This Technology has been transferred to Indian pesticide industry for commercialization.

(iii) During the FY 2014-15 :

The Formulation division developed special type of controlled release formulation with combination of pesticides (ZW formulation) in which one pesticide was inside microcapsules and other remain free in water suspension. The formulation technology developed was successfully transferred to a company in Turkey. This type of formulations are very effective for long term efficacy at lower doses. This formulation can reduce the number of application of pesticides in the total crop period.

The water dispersible effervescent tablet formulation was developed to impregnate pesticides in mosquito net for mosquito protection. The technology was successfully transferred to pesticides industry for commercialization. The uniqueness of the formulation was its enhanced bio-efficacy by incorporating the synergist within the tablet formulation.

Formulation division also developed a unique formulation of liquid pesticides in the form of solid granular formulation which readily dispersed in water for spray application; specialty of the formulation was that the organic solvent which was responsible for environmental pollution, flammability, skin & eye irritation to farmer during application was replaced by solid safe ingredients.

3.15 The details about the **Analytical Division** of IPFT and their major goals are given below:-

"The Analytical Division is the core division associated with all the activities of the institute. The laboratory is fully equipped with the state of the art analytical

instruments such as GC, HPLC, Preparative HPLC, GC-MS, GC-S/MS, LC-MS/MS and UV-VIS Spectrophotometer for undertaking the analysis of pesticides, their formulations and residues in various matrices In December, 2008, the Division has been granted accreditation as per ISO/IEC–17025 (2005) by the National Accreditation Board for Testing & Calibration Laboratories (NABL) for the testing of pesticides, their formulations and CWC related chemicals which is being maintained. The scope of accreditation was enhanced in 2012 to include the testing of pesticide residue in various food matrices such as fruits, vegetable, cereals and milk. This division also participates in the International Proficiency Tests conducted by the Organization for Prohibition of Chemical Weapons Convention (OPCW). The division is also one of the twenty five laboratories participating in ICAR sponsored project on "Monitoring of Pesticide Residue at National Level".

The major aim and goals of the division are as follows :

- To maintain NABL accreditation for pesticide analysis, pesticide residue analysis in food commodities & CWC compounds as per ISO 17025:2005.
- Study of quality control parameters of pesticide technical & their formulations for pesticide industries.
- Pesticide residue analysis in food commodities & soil samples from Govt. organizations & private companies.
- Analysis of chemical pesticide in bio-pesticides.
- To impart training to research scholars/scientists from Indian pesticide industries/Agriculture universities and foreign organizations.

3.16 When asked to give details about the **Bio-science Division** of IPFT and their major goals, the Department replied in writing as under:-

"Bioscience Division is responsible for the evaluation of different pesticide formulations developed by the Institute for their commercial viability through Biological Assays and Field Experimentation. The division is well recognized and certified by Central Insecticide Board, Ministry of Agriculture to conduct and validate the Bio-efficacy, Phyto-toxicity, Phytotonicity and compatibility evaluations of new molecules or existing molecules of agriculture and public health importance in Field and laboratory. The Division comprises of various testing facilities viz. Insect Bioassay Laboratory, Virology Laboratory, Biotechnology Laboratory, Toxicology Laboratory, Pesticide Application Laboratory and Field Experiment Farm. In order to conduct investigations in insect pathology, plant pathology, weeds, Micro flora and soil microbe's dynamics with respect to major crops of economic importance and effective formulations, the division is well equipped with advance instruments *viz.* Microdoser-cum–Tropical Applicator, Potter's Tower, Knowkdown chamber(KD), Plant image analyzer ,Plant leaf area meter, Safety Cabinate, Fermentor, Controlled droplet Applicators(CDA), Conventional Sprayers with spray management valves, Ultra low volume sprayers etc. To provide services in insect science, the division has established two separate insectaries for rearing and maintaining agriculturally important insect pests and insect pest of public health importance included mosquitoes, cockroaches, housefly, bed bug.

To evaluate different pesticide formulations developed by the Institute, for their commercial viability through bio-assay and field experimentation.

- To support the industries with its available testing facilities /consultancy as per MOA.

- To conduct research and development programme in area of applied entomology, plant pathology and weed science.
- Integration and collaboration with other research institute /organization in government and non-government sector.

3.17 As per the Department, the following facts demonstrate that the Bio-science Division has achieved the goals and aims:

i) Bioscience division is actively engaged in critical analysis, review and testing for commercial viability of developed formulation/technology from different division of IPFT.

ii) Being a well-recognized and certified by Central Insecticide Board, Ministry of Agriculture the division is in comply with its basic mandate to support the industry with its available testing facilities.

iii) The division has empowered the role on developing registration data packages for the pesticide industry for their new formulations thorough sponsored projects.
As evident with significant increase in demand from industry to take up the projects on evaluations of various new molecules, the substantial increase in number of Industry Projects as followed year 2011-12(30), 2012-13(30) 2013-2014 (20) 2015-16 (65).

iv) In order to comply with the fiscal sustainability, the Bioscience Division has been significantly contributing in revenue generation since last ten years. With last year projects handling the revenue generation of worth Rs. 61 Lakhs has been generated from industry sponsored which shall increase upto Rs. 72 Lakhs by March 2016.

v) In 2015, Bioscience Division IPFT has been approved by Central Insecticide Board, Ministry of Agriculture national testing facility for evaluation of molecules of public health importance.

vi) Industries, government and other non-government organization has been benefited as Bioscience Division has provided the platform for the critical authentic analysis of the different safe molecules which are under research or pre-commercial phase all over India.

vii) Major Agriculture Product/Pesticide companies who have been regular clients and are in regular benefit since last ten years are as followed :

1. Gharda Chemicals Ltd.
2. Syngenta India Ltd.
3. Bayer Crop Science
4. Excel Crop Care Pvt. Ltd.
5. Insecticides India Ltd.
6. Isagro Ltd.
7. Jai Shree Rasayan Udyog
8. Plant Protection Ltd.
9. Krishi Rasayan Ltd.
10. Coromandel

11. Crystal phosphate Ltd.
12. Faith Innovation Ltd.
13. Multiplex India Pvt. Ltd.
14. Huges & Hugges Chem Ltd.
15. Rainbow agrosciences Pvt. Ltd.

viii) Undergoing Research & Development Activities w.r.t Biological Science in Bioscience Division has significantly contributed with new findings in following area :

1. A new biological fungal strain has been identified, isolated, developed and tested for controlling the devastating weed, *Trianthema* for crops like cotton, maize, soyabean and cabbage and cauliflower.
2. Three new highly virulent strains of devastating pests *Spodoptera, Helicoverpa* and Cabbage worm has been discovered to control the pests under eco-safe, intensive integrated crop management.
3. Various botanicals viz Eucalyptus, Cashew, Neem and Basil oil has been screened for termite control in agriculture/household. Basil active ingredient has been identified as potent botanical in termite control.
4. MOU has been signed between Institute of Chemical Technology (IICT), Hyderabad and IPFT for undertaking collaborative research.
5. A collaborative project with IIT Kanpur is going on entitled "Evaluation of Pesticide Pollution in air with specific study on effect of droplet sizes and toxicity level in atmosphere after the application of recommended pesticides".

ix) Extension Activities are regularly conducted with Farmers Fair, Farmers Field Visit, Pesticide Application Advises / recommendation sat Farmers Level. Consultancy to small to medium entrepreneur for standardization of biological pesticide production and application related problems.

3.18 As per the Department, the following **Research & Development projects** are undergoing at IPFT since March 2012 :

i) Development of User & Environment Friendly Water Dispersible Granule Formulations of Highly Toxic, Broad Spectrum & effective Pesticides to reduce their Toxicity for Continuation of Use and Prevention from Ban (Sponsored by DC & PC).

ii) Development of Mass Production Technique and Formulation for Baculoviruses (Sponsored by DC & PC).

iii) Management of Termite by Integrated Approach and Indigenous Technologies (Sponsored by DC & PC).

iv) Magnetic core-shell nano particles based extraction coupled with Gas/Liquid Chromatography–Tandem Mass Spectrometry for trace level analysis of pesticides (Sponsored by DC & PC).

v) Pesticide formulation from Plant Extract and their Bio-efficacy studies (Sponsored by DC & PC).

vi) Evaluation, Efficacy Enhancement and Data Generation of Neem based Pesticides & Fertilizers for Commercial Use (Sponsored by DC & PC).

vii) Monitoring of Pesticide Residues at National Level (Sponsored by ICAR).

viii) Development of Recyclable catalytic System based on Nano particles and Nano particulate Assemblies for the Treatment of Toxic Effluent generated from Indian Pesticide Industries (Sponsored by the OPCW).

ix) Development and Evaluation of Nanotechnology based pesticide Formulations for impregnating in military uniform and paints (Sponsored by DRDO).

3.19 As per the Department, the major steps being taken by IPFT to research formulations for pesticides to make them environment friendly are as under:-

"IPFT is actively engaged in developing environmentally and user-friendly pesticide formulations of synthetic chemical pesticides for the safety of environmental and human kind. For this purpose IPFT has replaced no. of powder formulations (WP) by suspension concentrates and water dispersible granular formulations. The powder formulations because of their dry powder characteristics and small particle size creates environmental pollution and health hazards during manufacturing, packing and application in the field by the farmers. IPFT has replaced these powder formulations by water based suspensions (SC) and granular product (WG) which eliminates the hazardous characteristics present in powder formulations. Number of formulations which were available in the market as WP was developed as water based and WG formulations, technology of which has already been transferred to Indian pesticide industries for commercialization.

In the same way IPFT has replaced numher of organic solvent based pesticide formulations which are hazardous to environment and human kind by water based pesticide formulations, technologies of which has already been transferred to different Indian pesticide industries for commercialization.

IPFT is also actively engaged in the promotion and development of biopesticide formulations as a safe alternate to synthetic chemical pesticides based formulations. In this context IPFT is further working to enhance the activity of biopesticides by extensive research work to make them attractive to farmers. These efforts were done because the biopesticide were not like by farmers because of slow action and knock down activity.

IPFT is also working in this area to increase activity of biopesticide, in particular neem and have got very encouraging result on tea and vegetable crops.

IPFT is also engage on combination formulations i.e. a single formulations containing two pesticides in order to decrease number of application in the field for pest management.

IPFT is also actively engaged in application of nanotechnology in pesticide formulation development for the reduction of pesticide doses with higher efficacy for the safety of environment and human kind along with minimization or no pesticide residue which is a acute problem in the use of pesticide in crop pest management.

Since IPFT is involved in research activity for the development of new types of formulations keeping in mind the safety aspects before and after application. In this regard IPFT has developed floating controlled release pesticide tablet formulations

for the management of aquatic pests and weeds. Till date the pesticide formulations available when applied in the field for aquatic pest and weeds management distributed throughout the water body and contaminate the ground water. The controlled release floating tablet formulations, after application float on the surface and release pesticides slowly which remain on the surface of water and not distributed throughout the water body so no ground water contamination."

3.20 When asked to provide an updated progress report on the development of environment-friendly new generation pesticides formulation technology, the Department furnished the information as under:-

"Since inception of IPFT, more than 50 environmental and user friendly formulations have been developed and the technologies have been transferred to different industries in India and abroad for commercialization. Details of technology developed and transferred are as follows :

Sl. No.	*Name of Formulation*
1.	Isoproturon 50 SC
2.	Isoproturon 75 WG
3.	Captan 83 WG
4.	Metamitron 70 WG
5.	Mancozeb 75 WG
6.	Phosphamidon 42.5 SP
7.	Chlorothalonil 75 WG
8.	2,4 D Sodium 70 SG
9.	Endosulfan 35 SC
10.	Endosulfan 50 WG
11.	Neemazal 2 S.O (Neem Based Spreading Oil Formulation)
12.	Neemazal 30 MEC (Neem Based Micro-Emulsion Concentrate Formulation)
13.	Endosulfan 75 WG
14.	Carbendazim 86 WG
15.	Carbendazim 50 SC
16.	Hexaconazole 10 SC
17.	NC-312 80 WG (Coded Active Supplied by the Sponsoring Company)
18.	Devrinol 50 WG
19.	Thiram 80 WG
20.	Cypermethrin 40 WG (Fluid Bed Granulation Process)
21.	Sulphur 52 SC
22.	Essential Oil Formulation
23.	Malathion 50 WP
24.	Storage Stable Cypermethrin 40 WG
25.	SML 16 Capsule Suspension (Coded Active Supplied by the Sponsoring Company)
26.	Fipronil 5 SC
27.	Fipronil 0.05 Gel Bait
28.	Imidacloprid 2.15 Gel Bait
29.	Thiomethaxam 25 WG
30.	Deltamethrin 25 WG
31.	Lambda Cyhalothrin 10 CS
32.	Lambda Cyhalothrin 4.9 CS
33.	Deltamethrin 12.5 %+ PiperonylButoxide 12.5% WT

Sl. No.	*Name of Formulation*
34.	Lambda Cyhalothrin 25 CS
35.	PyrithiobacNa+Quizalofop-P-Ethyl ME
36.	Thiomethaxam 14.1%+ Lambdacyhalothrin10.6% SC
37.	Metamitron 70% W/V SC
38.	Triclopyrbutoxy ethyl ester 90EC (Petroleum Solvent Free) Formulation
39.	Trizophos 20WG Formulation
40.	Chloryprifos 5 ME
41.	Chloryprifos 10 ME
42.	Chloryprifos 15 ME
43.	Permethrin 15 Nano Gel (For Impregnation in Mosquito Net & Other Textiles)
44.	Lambda Cyhalothrin 25 CS + Chlorypyrifos 10 EW (ZW)
45.	Deltamethrin 25% WT
46.	Botanical Based WT (For Cockroaches Control)
47.	Neem Based Mosquito Coil
48.	Neem Based Cream
49.	Biocide Surface Spreading Formulation
50.	Floating Tablets (Synthetic & Botanical)
51.	Trizophos Water Dispersible Granules
52.	Multi Functional Neem based Formulation

As per mandates, responsibility of IPFT is to make the pesticides formulations more and more environmental and user friendly. In this regard, IPFT has credit to replace solvent based formulations into water based formulation and powder based formulations into granular formulation in Indian market for crop pest management. Furthermore, IPFT has developed number of bio-botanical based formulations as a safe alternative to synthetic non-biodegradable pesticides.

3.21 When the Committee asked for a detailed account of the findings made by IPFT in the matter of pesticide residues at the National Level and whether the level of pesticide residue is at alarming level or not and also how the monitoring is done by IPFT, the Department replied in writing as under:-

"The status of pesticide residues analysed in different commodities (Vegetables, fruits, rice, wheat, milk and water) during 2011-2016 are as under :

Years	*Target*	*Target Achieved*	*No. of samples with detected residues*	*No. of samples with no detectable residues*	*No. of samples with multiple residues*	*No. of samples with detected residues above PFA/Codex (alarming level)*	*Sampling Sites*
2011- 2012	792	792	61	731	3	10	Faridabad, Rohatak and Gurgaon
2012- 2013	722	706	108	598	16	48	Pataudi, Rewari and Narnaul
2013- 2014	708	708	140	568	37	71	
2014- 2015	708	708	71	637	14	21	
2015- 2016	590	627	37	590	7	2	Faridabad, Bahadurgarh and Palwal
Total	3520	3541	417	3124	77	152	

Method of Sampling : We are doing pesticide residue analysis in different food and environmental samples like fruit, vegetables, wheat, rice, milk and water from

various locations of Haryana state (three districts every month). At present, we are collecting samples (market & farm gate) from Bahadurgarh, Palwal, Faridabad and organic sample from Gurgaon. We are collecting surface water samples from major pond and canals located around the above mentioned sampling locations. Besides that, we are also participating in International & National PT/ILC programs, which is mandatory for the project.

Samples are processed by using QuEChERS method. After processing the samples, pesticide residue analysis is done by GC-ECD, FPD and GC-MS techniques. Analysis report is forwarded to National Project Cordinator every month.

Outcome of the project : From pesticide residue data available for last five years, it is clear that only in 4.3% of food commodities collected from different locations of Haryana, pesticide residue is above MRL. In organic samples, no pesticide has been detected above MRL.

3.22 According to the Department, management of Termite by Integrated Approach and Indigenous Technologies is one of the ongoing projects undertaken by IPFT.

"In this regard, the Committee desire to know the progress made with regard to the project and the benefits that it will bring to the country at large. In reply thereto, the Department stated as under:-

Progress/Achievements made with major milestones achieved vis-à-vis objectives of the project :

(i) Survey conducted on different termite species from different agro-climatic regions viz. Haryana, U.P., Rajasthan and Tamil Nadu. Seven different termite species have been identified under selective different agro-climatic zones.
(ii) Under indigenous technologies, effect of inter cropping with various crops and its screening and impact on termite population build up and percentage termite infestation reduction in wheat crop has been evaluated at IPFT.
(iii) Farmers feedback and indigenous knowledge available at farmer levels from Haryana, U.P., Rajasthan and Tamil Nadu has been collected and reviewed for the development of indigenous technology to be applied in termite management.

Benefits to the Country at large :

(i) Information on taxonomic identification and spatial distribution of different termite species in different regions of India.
(ii) Indigenous technology will be integrated with recent advances in termite management along with use of safe chemical pesticides.

3.23 When the Committee enquired about the major programmes being undertaken by IPFT in the recent years and especially in the current year, the Department furnished its reply in writing as under:-

"Following major programmes/projects are being undertaken by IPFT in the recent years.

a) Development of User & Environment Friendly Water Dispersible Granule Formulations of Highly Toxic, Broad Spectrum & effective Pesticides to reduce their Toxicity for Continuation of Use and Prevention from Ban.
b) Development of Mass Production Technique and Formulation for Baculoviruses.

c) Management of Termite by Integrated Approach and Indigenous Technologies.
d) Magnetic core-shell nano particles based extraction coupled with Gas/Liquid Chromatography – Tandem Mass Spectrometry for trace level analysis of pesticides.
e) Pesticide formulation from Plant Extract and their Bio-efficacy studies.
f) Neem based commercially viable economic formulations have been developed with high efficacy as compared to presently available neem based pesticide formulations. Data is being generated for registration with Central Insecticide Board (CIB) to bring the product in the market for directly use by the farmers.

New projects based on the outcome of these projects and the demand by agrochemical industries will be taken up in future. Work will continue on the industry sponsored projects for data generation on bioefficacy, phytotoxicity and pesticide residue analysis."

3.24 Asked about new issues/projects being envisaged by IPFT, the Department stated as under:-

"New projects are being envisaged in the area of Green pesticide formulations & their evaluations.

Patents will be filed for all the new R & D findings resulting from the ongoing and new projects."

3.25 When the Committee asked for an updated progress report on the projects sponsored by DC&PC for the twelfth plan period, the Department replied in writing as under:-

"The updated progress report on the projects sponsored by DC&PC for the twelfth plan period are as follows :

(a) Development of User & Environment Friendly Water Dispersible Granule Formulations of Highly Toxic, Broad Spectrum & effective Pesticides to reduce their Toxicity for Continuation of Use and Prevention from Ban.

Development of one WDG formulation and filing the patent for this product.

(b) Development of Mass Production Technique and Formulation for Baculoviruses.

i) Development of standard homogenous population of *Helicoverpa armigera* and *Spodoptera* collected from field and transfer under lab conditions.
ii) Isolation and purification of selected viral strains obtained from laboratory reared standard culture of *S litura* and *Heliothis* as maintained in IPFT.
iii) Isolation andpurification of Baculovirus strain of *Pierisbrassicae*, Cabbage worm obtained from field and propagation, standardization and mass production in laboratory.
iv) Study on entomo-pathogenic potential of viral strains obtained from field and standard laboratory culture.
v) Poly-inclusion bodies count study for determining the insect infestation level and viral potential using haemo-cytometer of selected and prepared NPV strain.

vi) Laboratory evaluation on the effect of different food substrates on development period and mortality of *Heliothis* for development and mass production of NPV strain technology with economic host larvae.

vii) Standardization on selection of most suitable food substrate for *in vivo* mass production of *Spodoptera litura.*

viii) Evaluation on effect of different larval stages and incubation period on mass production of HaNPV.

ix) Field study conducted on efficiency of different viral strains against *Heliocovera* and *Spodoptera*.

x) Studies on infectivity potential of newly identified strain of Baculovirus, *Pierisbrassicae*, Cabbage worm.

xi) Laboratory and field survival rate study of newly identified strain of Baculovirus, *Pierisbrassicae*, Cabbage worm for the mass production and application in the field.

xii) Biotic and abiotic stress tolerance study on newly identified strain of Baculovirus, *Pierisbrassicae*, Cabbage worm.

xiii) Study on nano-size analysis of developed Baculoviruses and their possibility in developing nano-encapsulations against abiotic stress at field level.

(c) Management of Termite by Integrated Approach and Indigenous Technologies.

i) Survey conducted on different termite species from different agro-climatic regions viz. Haryana and Tamil Nadu.

ii) Identification of different termite species viz. *Odontotermusobesus, O. wallonensis* and *O. oryzae*collected from different agro-climatic regions.

iii) Effect of intercropping with various crops and its impact on termite population build up and percentage infestation reduction in wheat crop at IPFT.

iv) Study on indigenous technology applied in termite management in various crops at farmers' level in Tamil Nadu.

v) Screening of botanicals with ani-termite properties, Eucalyptus, Zatropha, Cashew, Crotalaria, basil, Pongamiakaranj, Neem for development of a biological product for termite control in agriculture and public health.

(d) Magnetic core-shell nano particles based extraction coupled with Gas/Liquid Chromatography – Tandem Mass Spectrometry for trace level analysis of pesticides.

i) Synthesis of Magnetite Nanoparticles.

ii) Preparation of magnetic core-shell silica nanoparticles.

iii) Fabrication/ surface engineering of surface coatings of silica.

iv) Characterization of magnetic core-shell nanoparticles using SEM, TEM, XRD, FTIR and VSM.

v) Experimental setup for application of Magnetic core-shell nanoparticles in Pesticide Analysis.

vi) Selection of Pesticides.

vii) Standardization of GC-MS operating conditions.

viii) Standardization of Extraction Procedures.

(e) Pesticide formulation from Plant Extract and their Bio-efficacy studies.

i) Isolation of *Capparis Decidua* extract using different solvents.
ii) Development of EC & ME formulations from the extract.
iii) Biological studies (Larvicidal activity) of *Capparis Decidua* crude extracts and their formulations. Efficacy of these extracts/formulations was evaluated against the various bacterial and fungal strains. Promising result was obtained.
iv) Isolation of *Melia Azedarach* extract using different solvents.
v) Development of EC & ME formulations from *Melia Azedarach* thanolic extract Larvicidal activity of various formulations (5 and 7.5% EC and ME Prepared from *Melia azederach)* was done using two mosquito vectors *A stephensi* and *A culicifacies.* Initial screening of these prepared formulations was found to exhibit very good larvicidal activity.
vi) Synthesis of silver nano particle from *Capparis Decidua* extract was successfully done which showed very good antibacterial activity in comparison to various standard drugs.

f) Neem based commercially viable economic formulations have been developed with high efficacy as compared to presently available neem based pesticide formulations. Data is being generated for registration with Central Insecticide Board (CIB) to bring the product in the market for directly use by the farmers.

3.26 When asked how the IPFT plan to advise farmers in rural areas on the use of pesticides and in terms of pesticides application, the Director of IPFT replied during evidence as under:-

> "We are doing a lot to farmers also upfront. We are interacting with the farmers in various fora. We are going to villages and interacting with farmers and teaching them how to use pesticides and apply technology. They come to us also. We are helping them through mails also. That is the way we are interacting, teaching and educating them. We are also educating the dealers. What I have not mentioned here is that we are also working on different streams to educate them for application of pesticides.
>
> A new project has come up. Most of the big farmers are not going to apply pesticides and fertilisers themselves. They are using a person called Pesticide Applicator. We have already designed a course for them. But we have to meet the national application standard and qualification package. In the next couple of months we are going to develop them and conduct training for them."

IV. Academic and Training Outputs

3.27 As per the Department, the various academic courses designed by IPFT for skills development training are given as under:-

IPFT, in consultation with JS (C) and industry associations namely PMFAI, CCFI, CLI and ICC designed the following courses for skill development.

S. No.	*Title of the Course*	*Target Participants*	*Qualification*	*Duration*
1.	Analysis of Industrial Chemicals	Chemists/Analysts	Sc. Graduate	3 Months
2.	Industrial & Chemical Safety	Safety Officers/ Safety Asstts.	Graduates	2 Month
3.	Process/Plant Operations	Plant Operators	XII/ITI	3 Months
4.	Chemical Packaging and Labeling	Packaging and Labeling Technician	X/XII/ITI	1 month
5.	Handling of Hazardous Chemicals	Chemists/ Technicians	X/XII	2 Month
6.	QA/QC of Pesticides and their Formulations	Pesticide Analysts	Sc. Graduate	1 Month

3.28 On the role played by IPFT in skills development, the Department has submitted further information as under:-

- The National Skill Development Council (NSDC) has made "Sector Skill Councils (SSC)" for various fields/areas.
- FICCI has been made SSC for Chemicals & Petrochemicals Sector (Mr. PS Singh, Head- Chemicals & Petrochemicals, FICCI)
- Agriculture Skill Council of India (ASCI), Sushant Lok, Gurgaon. (Mr. SS Arya, CEO, ASCI)
- IPFT has been recognized as Training Partner by both these SSCs and working out skill development programmes in consultation with them.
- DC&PC has signed an MoU with MSDE where IPFT has been given the responsibility for skill development for Chemical Sector. Details have been submitted to Director (T), Directorate General Employment & Training.

3.29 As per the Department, the IPFT has also submitted the proposal for skill development under CSR Scheme. Under the scheme, the following Big industries have been contacted for this purpose :

1. M/s Tata Chemicals
2. M/s Gharda Chemicals Ltd.
3. M/s UPL India Ltd.
4. M/s RCF Ltd.
5. M/s BASF India Ltd.
6. M/s Rallis India Ltd.
7. M/s Crystal Crop Protection
8. M/s Coromondal Agrico Pvt. Ltd.
9. M/s Bharat rasayan Ltd.

Most of the industries have shown their inability to sponsor the courses in 2015 – 16. However, they are willing to do so next year.

PART - II

OBSERVATIONS AND RECOMMENDATIONS

Central Institute of Plastics Engineering and Technology (CIPET)

No. 1.

The Committee note that CIPET is operating on self-sustaining mode since 2008-09 and no non-plan allocation has been made to CIPET from the Eleventh Plan onward. CIPET has been performing well financially even though the profit margins from its operations are very small. During 2012-13, the income from CIPET's 22 centres was Rs. 12218.83 Lakh while its expenditure (with depreciation) was Rs. 11976.73 Lakh. For 2013-14, the income rose to Rs. 14007.13 Lakh while the expenditure was Rs. 13843.06 Lakh. For 2014-15, the income and expenditure figures were Rs. 17070.44 Lakh and Rs. 15692.05 Lakh respectively. The income for the year 2015-16 (up to November 2015) is Rs. 12212.48 Lakhs. The Committee also note that CIPET, as a non-profit and self-sustaining institution, has to survive on course fees from trainees and also from rendering technical services to the industries. CIPET has been striving for better revenue resources by undertaking more training programs, technical services and Research & Development activities in the field by signing MoUs with various Governmental, Public Sectors, NGOs, and international institutions & organizations.

The Committee while lauding the financial performance of CIPET, recommend that CIPET should undertake more training programmes, technical services and Research & Development activities so as to generate more revenue which will help the organization to further expand its activities. The Department must ensure proper funding structure and financial management for CIPET so that it may not suffer any handicaps while carrying out its programmes and schemes.

No. 2

The Committee note that during the Twelfth Five Year Plan, an allocation of Rs. 586.45 crore has been made as Plan support to CIPET out of which Rs. 371.19 crore has been received by CIPET and Rs. 318.61 crore has been spent by them so far. This shows that more than 85 percent of the received amount has been utilized by CIPET so far, which is indicative of good financial performance of the Plan allocation. As Rs. 215.26 crore is still to be received by CIPET and the current year is the last leg of the Twelfth Five Year Plan, the Committee recommend that this amount should be released without any further delay to accelerate various activities of CIPET. The Committee are of the view that the Ministry of Finance, keeping in view the national

stature of CIPET, may not withhold their due allocation. The Committee therefore, recommend to release the balance amount at the earliest so that CIPET can carry out its unfulfilled task during the Plan period.

No. 3.

The Committee observe that CIPET Centres in project stage viz., Vijayawada, Bhopal (VTC), Baddi and Valsad do not have academic buildings, Hostel buildings and Technical infrastructure except few machineries / equipments. The Centres are functioning in rented sheds.

In this regard, the Committee are distressed that the above-mentioned CIPET Centres have to function without basic infrastructure like Academic buildings and have to function from rented sheds. The Committee, therefore, recommend that top priority should be given to the construction of proper academic buildings, hostel buildings and technical infrastructure for Vijayawada, Bhopal, Baddi and Valsad centres which are presently functioning from rented sheds. The Department may take up the matter with State Governments to provide already constructed buildings such as Industrial Training Institutes (ITIs) which are lying vacant in the States. The Committee would like to be informed of measures taken in pursuance of this recommendation at the earliest.

No. 4.

The Committee note that CIPET Is facing acute shortage of hostel facilities for its students. CIPET centres at Bhubaneswar (Campus II) and PWMC, Guwahati and the new hostels for 10 of its centres which are at various levels of completion do not have hostel facilities. However, CIPET is not keen to utilize its time and energies constructing hostel buildings from scratch which will affect its self-sustained funding mode and divert it from managing its core courses. CIPET is also presently utilizing 11 hostels whose management has been outsourced to private operators.

In this regard, the Committee are of the opinion that the Department and CIPET have the right to decide about what is best for the students in particular and the Institute at large regarding hostel accommodation and other facilities. However, the Committee would like to state that the interest and welfare of the students should not be compromised in any way. There should be proper mechanisms in place to monitor and ensure that the private operators in case of outsourcing of hostel facilities do not take advantage of the students for their profit. Further, the Committee desire that the ongoing construction of 10 hostels be expedited and that

the Department should ensure that adequate funds are provided for their full completion.

No. 5.

The Committee observe that CIPET has been offering various long term programmes viz., Under Graduate and Post Graduate courses in Science, Engineering and Technology, Diploma courses, Post-diploma and Postgraduate Diploma courses in plastics and allied field. For these different types of programmes, different admission procedures are followed. For high-end programmes like B. Tech., M. Tech., or PhD, the admission process is as per the concerned University guidelines. For diploma courses, an all-India entrance examination is conducted online. However, the Committee note that while 12629 students had enrolled for long-term training programmes during 2014-15, only 2340 student completed it, which is only 18.52 percent of the total enrolment.

In this regard, the Committee are concerned about the extremely low completion rate of students enrolled in the long-term courses offered by CIPET and recommend that the Department/CIPET should study the reasons for the same and make amends accordingly. Measures taken in pursuance of this recommendation may be communicated to the Committee at the earliest.

No. 6.

The Committee observe that CIPET offers short term Vocational Skill Development Programmes (VSTP) for the duration up to 6 months to enhance the employability of trainees. The Committee also note that on the question of setting up a dedicated skills training institute for the chemicals sector, the Department is exploring the possibilities of engaging Institute of Pesticide Formulations Technology (IPFT) for the same. The focus of CIPET's activities, as per the Department, is to impart skill training to meet the demand of petro-chemical and plastics industry. The Committee further note that in continuation to the observations of the Committee, CIPET has made more efforts and given priority to conduct the short-term and vocational skill development training programmes. As a result, CIPET has the target of training 80,000 students for the year 2015-16 and during the period April - December 2015, 42743 candidates were trained.

In this regard, the Committee desire that the Department/CIPET should expedite the process of consultations with IPFT for setting up a dedicated skills training institute to cater to the chemicals sector. The Committee feel that short-term

and vocational training programmes are crucial to engage the unemployed youths of the country for the country's industrial development and progress. The Committee therefore recommend that the CIPET should give priority to the short-term vocational training programmes which will benefit the unemployed youths of the country. This will give impetus to entrepreneurship and self-employment opportunities to the youth. Initiatives taken towards this end may be intimated to the Committee at the earliest.

No. 7.

The Committee note that the Department and CIPET management had decided against converting CIPET into a kind of university which can award its own degrees. The reasoning is that since CIPET centres are spread all over the country and the courses taught are of different categories, viz. diploma courses, vocational training, Under Graduate / Post Graduate degrees and PhDs, it will be difficult to manage all of them under a unified structure in the form a university. As of now, CIPET centres are attached to the nearest university which takes care of the academic affairs. This means that the degrees are also awarded in the name of the host university.

In this regard, the Committee are of the belief that for CIPET to really emerge as a national-level centre of excellence in the field of plastic engineering, it is imperative to explore ways to structure the courses of CIPET under a unified head. Since different universities have different standards in terms of academic grading and excellence, the present arrangement in which different CIPET centres comes under the purview of different universities, may result in differential standards of excellence and competence for different centres. Hence, the Committee recommend that the CIPET management and the Department should review the issue and explore ways to enable CIPET to structure its syllabus, course structure and teaching standards in a unified manner under one university. The Committee expect to be apprised of the measures taken in this regard.

No 8.

The Committee observe that the Plastic Waste Management Centre (PWMC) at Guwahati is a model centre and not a full-fledged manufacturing unit. It is an academic institute whose basic objective is for training the students on recycling technology and other forms of plastic waste management. It is only a kind of concept model plant which others are supposed to emulate and follow.

In this regard, the Committee, in their earlier reports, had emphasized frequently about the need for CIPET to play a central role in plastic waste management and for that purpose, the need for more PWMCs. However, the Department had said that the issue relating to PWM falls within the domain of Ministry of Environment, Forests and Climate Change (MoEF&CC). Now, the Department has informed that it has acted as facilitator and prepared Approach Paper for effective PWM. The Department, after holding extensive Inter-Ministerial consultations and discussion with industry associations, has formulated a draft Paper on Plastic Waste Management. The Paper contains effective and specific action points to realize the goals of the 'Swachh Bharat Abhiyaan'. It also discusses the recycling of plastic waste and steps for ameliorating the condition of workers involved in this task. The programme prepared by the Department has three components, viz. Entrepreneur Development Programme (EDP), Establishment of shredding facility and Technology up-gradation of existing plastic recycling units. The Department has further taken up the issue with the Ministry of Urban Development (MoUD), the nodal Ministry for coordination with urban local bodies for Implementation of this initiative. The MoUD had in turn written to Municipal Commissioners of the concerned cities advising them, for imparting training to Rag pickers under the 'Swachh Bharat Abhiyan' in recycling and processing of plastic waste and developing entrepreneurship in collaboration with CIPET.

In view of the foregoing, the Committee recommend that the Department should play a proactive role in ameliorating the pollution and environmental damage caused by plastic products like loose polythene, etc. This is an urgent and pressing matter which cannot be left only to the Ministry of Environment, Forests and Climate Change (MoEF&CC) or the Ministry of Urban Development (MoUD). The Committee desire that the Department should work with all concerned to ensure that the three-point programme it has evolved is implemented effectively. The Committee desire to be apprised of further action taken in this regard.

No. 9.

The Committee note that only about 5 percent of CIPET's revenues have been invested in Research & Development (R&D) purposes. Presently, these meagre resources have been utilized through CIPET's R&D centres, viz. Laboratory for Advanced Research in Polymeric Materials (LARPM) and Advanced Research School for Technology and Product Simulation (ARSTPS) located at Bhubaneswar and

Chennai respectively. The research is focused on new areas of Polymeric materials and Composites for defence applications, Energy Resources, Health Care, Plastic waste management, Adhesive and coating sciences, Designing, Simulation and prototyping, 3D printing Technologies and Micro fluidic Devices.

In this regard, the Committee are of the opinion that the proportion of revenue allocated to R&D activities by CIPET is simply not enough to produce cutting-edge technology on the above-mentioned areas. The Committee are failed to understand the contradictory statement of the Department of Chemicals and Petrochemicals and CIPET. While the Department of Chemicals and Petrochemicals in its written reply has stated that the budget allocation made for specific schemes is sufficient for implementation of the particular schemes, on the contrary, the Director General, CIPET had stated during evidence that investment for R&D activities which is only to the tune of five percent of CIPET revenues is very insufficient. The Committee therefore express their displeasure over such contradictions and are of the opinion that R&D is a very essential concept of "Make In India", and as such allocation for R&D activities should be augmented in the budget so as to support CIPET in their R&D activities and make CIPET the torch-bearer in high-end research relating to Plastic waste management, Designing, Simulation and prototyping, 3D printing Technologies and Micro fluidic Devices. Polymeric materials and Composites for defence applications, etc. CIPET should aspire to be the top research centre in the above-mentioned fields. The Committee desire to be apprised of measures taken in pursuance to this recommendation at the earliest.

Institute of Pesticides Formulation Technology (IPFT)

No. 10.

The Committee note that there are 60 State pesticides testing laboratories spread all over the country. Besides these, there are two regional laboratories - one at Kanpur and another at Chandigarh. These laboratories are under the Ministry of Agriculture. These are not well equipped and sometimes, they also send samples to IPFT for checking the quality of pesticides. The Committee feel that such type of duality is not conducive for the overall quality control of pesticides. The Committee understand that quality control on pesticides is in the domain of Ministry of Agriculture, nevertheless the Committee recommend that there should be proper coordination between the Ministry of Agriculture and the Ministry of Chemicals and Fertilizers (Department of Chemicals and Petrochemicals) so as to streamline the

quality of pesticides as most of the pesticides are checked by State pesticides laboratories whose reports may not be considered authentic as they are ill-equipped and the poor efficacy of such pesticides waste the farmers' hard earned money and labour.

In this regard, it is also imperative that IPFT should upgrade its facility to Good Laboratory Practice (GLP). The Committee also note that apart from the existing physical infrastructure in Gurgaon, the IPFT has proposed for another building in the same campus for a Good Laboratory Practice (GLP) Certified lab and also for Agriculture Lands in Haryana, Maharashtra and Orissa for conducting Field Trials of pesticide on various crops in three different climatic conditions. For these, there are set procedures to be completed after which an application for GLP certification will be submitted to National GLP Compliance Monitoring Authority (NGCMA), Department of Science & Technology (DST) which will conduct a Pre-inspection followed by a full inspection before granting GLP Certification. As stated by the Director, IPFT that they are yet to apply for GLP and it would take one year to obtain the same, the Committee therefore recommend that all out effort should be made to obtain GLP certification by the Department of Chemicals and Petrochemicals and IPFT at the earliest.

No. 11.

According to the IPFT, there have been sharp increase in the demand for bio-efficacy studies in India to cater to the equally sharp increase in the pesticides industry. IPFT has received more than 150 projects for North location (i.e. North Agro climatic Zones) alone for testing on bio efficacy testing. To fulfill the need of increasing number of projects in field, IPFT should have additional agriculture land.

In this regard, the Committee believe that IPFT should play a pivotal role in providing user and environment friendly pesticides formulation technologies and the Committee are fully in support of the plan to expand IPFT to set up more bio efficacy testing for pesticides. The Committee recommend that the projects like bio-efficacy studies should be pursued vigorously and completed without any delays. The Committee desire to be apprised of further progress in the above-mentioned projects at the earliest.

No. 12.

The Committee note that unlike CIPET, IPFT has been dependent on the Department for non-plan funds, apart from funds under Plan head. Further, in terms of utilization of funds, while IPFT had more or less fully utilized its allocated funds during 2013-14 and 2014-15 (i.e., Rs. 434 Lakh allocated and utilized in 2013-14 and Rs. 169 Lakh allocated and utilized in 2014-15 under Plan Head), its record of utilization during 2012-13 and 2015-16 (i.e., Rs. 434 Lakh allocated and Rs. 19 Lakh utilized in 2012-13 and Rs. 100 Lakh allocated and Rs. Nil utilized in 2015-16) was very disappointing. On the other hand, the Institute has earned more than its projected revenue consecutively for three years from 2012 to 2015. While Rs. 70 Lakh was the projected revenue in 2012-13, Rs. 111.69 Lakh was earned, and the figures for 2013-14 and 2014-15 were Rs. 80 Lakh/173.55 Lakh and Rs. 90 Lakh/169.55 Lakh respectively. The Committee also note that IPFT has been taking various steps to increase its revenue generation in order to reduce its dependence on non-plan funds.

In this regard, the Committee desire that the Department/IPFT should plan its activities well in advance so that its allocated funds may be utilized on time. The Committee, however, are encouraged by the fact that IPFT has been able to exceed its projected revenue earning for the last three years and hope that the Institute will be able to continue on the growth path for long-term sustenance. The Committee recommend that the Department/IPFT should carry out the measures it has proposed which will help it earn more revenue as well as increase its footprint in the area of pesticides formulation in India. The Committee desire to be apprised of measures taken in this regard at the earliest.

No. 13.

The Committee observe that since its inception, the IPFT had developed more than 50 environmental and user friendly pesticide formulations and the technology have since been transferred to different industries in India and abroad for commercialization. IPFT's mandate also include monitoring of pesticide residues in different commodities like vegetables, fruits, rice, wheat, milk and water at the national level. Further, the IPFT has also been undertaking the management of termite by integrated method and using indigenous technologies.

The Committee are of the view that the IPFT's mandate as stated above are of crucial importance to the preservation of the environment and the public health in

the country. The Committee are pleased to note that the IPFT have been doing exemplary work on the projects as stated above but testing has been done in specific areas in the country. The Committee therefore recommend that IPFT should further expand these projects to cover the entire country. The Committee desire that IPFT should emerge as a leader in field of eco-friendly pesticides formulation and for this purpose, the Department/IPFT should come up with a detailed roadmap for the same. The Committee expect to the apprised of the action taken in pursuance of this recommendation.

No. 14.

The Committee observe that IPFT has been imparting training to farmers on the use pesticides and application of technology to the farming process. IPFT has also been in the process of designing a course for Pesticide Applicators whose task it is to apply pesticides and fertilizers in the field.

In this regard, the Committee are of the opinion that educating the farmers on the correct and proportionate use of pesticides and fertilizers is an important task for which IPFT should play a major role. This is an urgent issue given that much of the agricultural land in the country is lying barren due to excessive or disproportionate use of pesticides and fertilizers. The Committee therefore recommend that a study should be made on soil health and pesticides use by IPFT. The Committee further recommend that IPFT should work on the course it has designed for the Pesticide Applicators and farmers on priority and finalize the same at the earliest. The Committee understand that training on judicious use of pesticides is the function of the Department of Agriculture and State Governments but a synergy is this regard with the Department of Agriculture and State Governments is imperative and accordingly IPFT/Department should chalk out the programme to ensure synergy on the matter with the Department of Agriculture and State Governments concerned.

No. 15.

The Committee observe that the Department of Chemical and Petrochemicals has signed an MoU with the Ministry of Skill Development and Entrepreneurship (MSDE) where IPFT has been given the responsibility for skill development for Chemical Sector. Further, the IPFT has already submitted the proposal for skill development under the Corporate Social Responsibility (CSR) scheme to nine private corporations, viz., M/s Tata Chemicals, M/s Gharda Chemicals Ltd., M/s UPL India

Ltd., M/s RCF Ltd., M/s BASF India Ltd., M/s Rallis India Ltd., M/s Crystal Crop Protection, M/s Coromondal Agrico Pvt. Ltd., and M/s Bharat rasayan Ltd. However, most of these corporations were not able to sponsor the courses during 2015-16. They are expected to sponsor the courses during 2016-17.

In this regard, the Committee have always emphasized the need to give priority to skills development training so as to empower the youths of the country in terms of entrepreneurship and self-employment. The Committee accordingly recommend that the IPFT should proactively carry out its role for skill development for the chemical sector and pursue the matter relating to skill development under CSR with the nine corporations mentioned above and ensure that the same are carried out this year. The Committee desire to be apprised of the progress in this regard.

New Delhi;
26 April, 2016
06 Vaisakha, 1938 (Saka)

Anandrao Adsul
Chairperson
Standing Committee on
Chemicals and Fertilizers

Financial Performance of CIPET Centres
Income / Revenue generated vis-à-vis Expenditure during 2012-13
(Rs.in lakhs)

Sl. No.	Centre	Income	Expenditure (Without depreciation)	Expenditure (With depreciation)
1	2	3	4	5
1	**CHENNAI**	**1518.36**	**1276.05**	**1582.84**
2	**AHMEDABAD**	**1071.89**	**840.22**	**1108.21**
3	**BHUBANESWAR**	**718.00**	**571.73**	**784.27**
4	**LUCKNOW**	**911.92**	**872.28**	**1045.85**
5	**HYDERABAD**	**432.91**	**460.92**	**547.03**
6	**HAJIPUR**	**434.08**	**316.82**	**420.04**
7	**BHOPAL**	**526.22**	**369.29**	**464.77**
8	**JAIPUR**	**609.20**	**534.39**	**688.91**
9	**MYSORE**	**466.64**	**465.75**	**552.17**
10	**GUWAHATI**	**387.15**	**367.32**	**484.54**
11	**HALDIA**	**588.12**	**386.90**	**517.29**
12	**MURTHAL**	**635.17**	**420.75**	**521.21**
13	**IMPHAL**	**182.41**	**190.79**	**253.68**
14	**PWMC GUWAHATI**	**255.49**	**270.64**	**331.56**
15	**ARSTPS**	**377.24**	**217.23**	**254.87**
16	**BALASORE**	**353.79**	**213.08**	**237.60**
17	**LARPM BBSR**	**626.02**	**140.70**	**303.35**
18	**PDS and OTHERS**	**211.97**	**0.00**	**83.15**
19	**CAMPUS II BBSR**	**654.16**	**415.83**	**457.85**
20	**AURANGABAD**	**521.01**	**413.18**	**588.20**
21	**AMRITSAR**	**407.38**	**339.13**	**403.87**
22	**MADURAI**	**329.70**	**241.73**	**345.47**
	Total	12218.83	9324.73	11976.73

Annexure - II

Financial Performance of CIPET Centres
Income / Revenue generated vis-à-vis Expenditure during 2013-14
(Rs.in lakhs)

Sl. No.	Centre	Income	Expenditure (Without depreciation)	Expenditure (With depreciation)
1	2	3	4	5
1	**CHENNAI**	**1631.39**	**1474.91**	**1786.83**
2	**AHMEDABAD**	**1195.84**	**986.30**	**1167.61**
3	**BHUBANESWAR**	**805.39**	**779.81**	**917.12**
4	**LUCKNOW**	**1022.03**	**925.01**	**1051.85**
5	**HYDERABAD**	**600.93**	**554.85**	**627.24**
6	**HAJIPUR**	**358.76**	**332.55**	**414.76**
7	**BHOPAL**	**634.51**	**470.63**	**531.08**
8	**JAIPUR**	**903.79**	**776.57**	**883.23**
9	**MYSORE**	**380.14**	**542.30**	**598.56**
10	**GUWAHATI**	**364.40**	**382.12**	**461.77**
11	**HALDIA**	**812.14**	**466.55**	**549.41**
12	**MURTHAL**	**583.60**	**686.31**	**882.39**
13	**IMPHAL**	**300.47**	**247.87**	**288.37**
14	**PWMC GUWAHATI**	**296.13**	**286.36**	**323.73**
15	**ARSTPS**	**313.86**	**224.63**	**254.54**
16	**BALASORE**	**357.35**	**287.42**	**321.49**
17	**LARPM BBSR**	**509.04**	**223.60**	**323.09**
18	**PDS and OTHERS**	**463.08**	**0.00**	**36.78**
19	**CAMPUS II BBSR**	**751.10**	**638.90**	**672.25**
20	**AURANGABAD**	**725.82**	**447.52**	**557.92**
21	**AMRITSAR**	**410.60**	**419.39**	**462.86**
22	**MADURAI**	**250.83**	**326.22**	**396.28**
23	**CBPST KOCHI**	**335.93**	**309.47**	**333.90**
	Total	14007.13	11789.29	13843.06

Financial Performance of CIPET Centres
Income / Revenue generated vis-à-vis Expenditure during 2014-15

(Rs.in lakhs)

Sl. No.	Centre	Income	Expenditure (Without depreciation)	Expenditure (With depreciation)
1	2	3	4	5
1	CHENNAI	1634.97	1507.97	1806.25
2	AHMEDABAD	1267.34	1102.33	1274.31
3	BHUBANESWAR	955.06	820.75	963.00
4	LUCKNOW	1018.81	1091.21	1223.84
5	HYDERABAD	807.31	620.92	693.27
6	HAJIPUR	755.83	484.16	567.64
7	BHOPAL	846.74	649.32	731.95
8	JAIPUR	1075.13	889.26	1000.14
9	MYSORE	522.05	550.45	612.12
10	GUWAHATI	421.48	429.42	509.77
11	HALDIA	966.81	635.21	731.30
12	MURTHAL	791.82	623.85	817.26
13	IMPHAL	351.01	361.43	421.23
14	PWMC GUWAHATI	206.74	256.06	295.95
15	ARSTPS	235.98	278.92	309.04
16	BALASORE	609.85	366.78	417.70
17	LARPM BBSR	697.48	285.01	397.27
18	PDS & OTHERS	1131.30	295.04	329.28
19	CAMPUS II BBSR	808.16	631.69	680.21
20	AURANGABAD	820.63	554.62	672.75
21	AMRITSAR	465.46	454.68	508.98
22	MADURAI	326.39	348.21	414.66
23	CBPST KOCHI	354.09	286.47	314.13
	Total	**17070.44**	**13523.76**	**15692.05**

Annexure - IV

Financial Performance of CIPET Centres (Centre-wise)

High Learning Centres: Ahmedabad

Year	Income	Expenditure	Remarks
2012-13	1071.89	840.21	(+) 231.68
2013-14	1195.84	986.30	(+) 209.54
2014-15	1267.33	1102.33	(+) 165.00
2015-16* *(upto Jan.'16)*	1228.72 (T-2000)	985.69	(+) 243.03

Bhubaneswar:

Year	Income	Expenditure	Remarks
2012-13	1071.89	840.21	(+) 231.68
2013-14	1195.84	986.30	(+) 209.54
2014-15	1267.33	1102.33	(+) 165.00
2015-16* *(upto Jan.'16)*	1228.72 (T-2000)	985.69	(+) 243.03

Chennai:

Year	Income	Expenditure	Remarks
2012-13	1071.89	840.21	(+) 231.68
2013-14	1195.84	986.30	(+) 209.54
2014-15	1267.33	1102.33	(+) 165.00
2015-16* *(upto Jan.'16)*	1228.72 (T-2000)	985.69	(+) 243.03

Kochi:

Year	Income	Expenditure	Remarks
2012-13	1071.89	840.21	(+) 231.68

2013-14	**1195.84**	**986.30**	**(+) 209.54**
2014-15	**1267.33**	**1102.33**	**(+) 165.00**
2015-16* *(upto Jan.'16)*	**1228.72 (T-2000)**	**985.69**	**(+) 243.03**

Lucknow:

Year	Income	Expenditure	Remarks
2012-13	**1071.89**	**840.21**	**(+) 231.68**
2013-14	**1195.84**	**986.30**	**(+) 209.54**
2014-15	**1267.33**	**1102.33**	**(+) 165.00**
2015-16* *(upto Jan.'16)*	**1228.72 (T-2000)**	**985.69**	**(+) 243.03**

Diploma Learning Centres: Aurangabad

Year	Income	Expenditure	Remarks
2012-13	**1071.89**	**840.21**	**(+) 231.68**
2013-14	**1195.84**	**986.30**	**(+) 209.54**
2014-15	**1267.33**	**1102.33**	**(+) 165.00**
2015-16* *(upto Jan.'16)*	**1228.72 (T-2000)**	**985.69**	**(+) 243.03**

Amritsar:

Year	Income	Expenditure	Remarks
2012-13	**1071.89**	**840.21**	**(+) 231.68**
2013-14	**1195.84**	**986.30**	**(+) 209.54**
2014-15	**1267.33**	**1102.33**	**(+) 165.00**
2015-16* *(upto Jan.'16)*	**1228.72 (T-2000)**	**985.69**	**(+) 243.03**

Bhopal:

Year	Income	Expenditure	Remarks
2012-13	1071.89	840.21	(+) 231.68
2013-14	1195.84	986.30	(+) 209.54
2014-15	1267.33	1102.33	(+) 165.00
2015-16* *(upto Jan.'16)*	1228.72 (T-2000)	985.69	(+) 243.03

Guwahati:

Year	Income	Expenditure	Remarks
2012-13	1071.89	840.21	(+) 231.68
2013-14	1195.84	986.30	(+) 209.54
2014-15	1267.33	1102.33	(+) 165.00
2015-16* *(upto Jan.'16)*	1228.72 (T-2000)	985.69	(+) 243.03

Hajipur:

Year	Income	Expenditure	Remarks
2012-13	1071.89	840.21	(+) 231.68
2013-14	1195.84	986.30	(+) 209.54
2014-15	1267.33	1102.33	(+) 165.00
2015-16* *(upto Jan.'16)*	1228.72 (T-2000)	985.69	(+) 243.03

Haldia:

Year	Income	Expenditure	Remarks
2012-13	1071.89	840.21	(+) 231.68
2013-14	1195.84	986.30	(+) 209.54
2014-15	1267.33	1102.33	(+) 165.00
2015-16* *(upto Jan.'16)*	1228.72 (T-2000)	985.69	(+) 243.03

Hyderabad:

Year	Income	Expenditure	Remarks
2012-13	1071.89	840.21	(+) 231.68
2013-14	1195.84	986.30	(+) 209.54
2014-15	1267.33	1102.33	(+) 165.00
2015-16* *(upto Jan.'16)*	1228.72 (T-2000)	985.69	(+) 243.03

Imphal:

Year	Income	Expenditure	Remarks
2012-13	1071.89	840.21	(+) 231.68
2013-14	1195.84	986.30	(+) 209.54
2014-15	1267.33	1102.33	(+) 165.00
2015-16* *(upto Jan.'16)*	1228.72 (T-2000)	985.69	(+) 243.03

Jaipur:

Year	Income	Expenditure	Remarks
2012-13	1071.89	840.21	(+) 231.68
2013-14	1195.84	986.30	(+) 209.54
2014-15	1267.33	1102.33	(+) 165.00
2015-16* *(upto Jan.'16)*	1228.72 (T-2000)	985.69	(+) 243.03

Murthal:

Year	Income	Expenditure	Remarks
2012-13	1071.89	840.21	(+) 231.68
2013-14	1195.84	986.30	(+) 209.54

2014-15	**1267.33**	**1102.33**	**(+) 165.00**
2015-16* ***(upto Jan.'16)***	**1228.72 (T-2000)**	**985.69**	**(+) 243.03**

Mysore:

Year	**Income**	**Expenditure**	**Remarks**
2012-13	**1071.89**	**840.21**	**(+) 231.68**
2013-14	**1195.84**	**986.30**	**(+) 209.54**
2014-15	**1267.33**	**1102.33**	**(+) 165.00**
2015-16* ***(upto Jan.'16)***	**1228.72 (T-2000)**	**985.69**	**(+) 243.03**

Annexure - V

The list of courses offered at various CIPET centres are as per the following statement:-

CENTRE#	Diploma/post-diploma & PG Diploma courses					UG and PG Courses in Engineering/Technology					PG in Science		
Ahmedabad	PGD-PPT	-	DPMT	DPT	-	B.Tech (PE/PT)	B.Tech (ME/MT)	M.Tech (PE/PT)	-	-	-	-	M.Sc.(PS)
Amritsar	PGD-PPT	-	DPMT	DPT	-	-	-	-	-	-	--	-	-
Aurangabad	PGD-PPT	PGD-PTQM	DPMT	DPT	PD-PMD	-	-	-	-	-	-	-	-
Balasore	PGD-PPT	-		DPT	-	-	-	-	-	-	-	-	-
Bhopal	PGD-PPT	-	DPMT	DPT	-	-	-	-	-	-	-	-	-
Bhubaneswar – I*	-	-	-	-	-	B.Tech (PE/PT)	B.Tech (ME/MT)	M.Tech (PE/PT)	M.Tech (PNT)	-	M.Sc. Tech (MSE)	-	M.Sc.(PS)
Bhubaneswar - II	-	-	DPMT	-	-	-	-	-	-	-	-	-	
Chennai*	PGD-PPT	-	DPMT	DPT	-	B.Tech (PE/PT)	B.Tech (ME/MT)	M.Tech (PE/PT)	-	M.E. (CAD/CAM)	-	-	
Guwahati	PGD-PPT	-	DPMT	DPT	**PD-PMD**	-	-	-	-	-	-	-	-
Guwahati - PWMC	**PGD-PPT**	-	-	-	-	-	-	-	-	-	-	-	-
Hajipur	PGD-PPT	-	DPMT	DPT	-		-	-	-	-	-	-	-
Haldia	PGD-PPT	-	DPMT	DPT	-	-	-	-	-	-	-	-	-
Hyderabad	PGD-PPT	-	DPMT	DPT	**PD-PMD**	-	-	-	-	-	-	-	-
Imphal	PGD-PPT	-	DPMT	DPT	-	-	-	-	-	-	-	-	-
Jaipur	PGD-PPT	PGD-PTQM	DPMT	DPT	-	-	-	-	-	-	-	-	-
Kochi	**PGD-PPT**	-	-	-	-	-	-	-	-	-	-	M.Sc. (BPS)	-
Lucknow	PGD-PPT	-	DPMT	DPT	-	B.Tech (PE/PT)	B.Tech (ME/MT)	M.Tech (PE/PT)	-	-	-	-	-
Madurai	-	-	DPMT	-	**PD-PMD**	-	-	-	-	-	-	-	-
Murthal	PGD-PPT	PGD-PTQM	DPMT	DPT	PD-PMD	-	-	-	-	-	-	-	-
Mysore	PGD-PPT	PGD-PTQM	DPMT	DPT	-	-	-	-	-	-	-	-	-

#All centres are offering vocational skill development training programmes (VSTP) in various field of plastics technology.

***These centres are also offering Ph.D program.**

MINUTES OF THE FIFTH SITTING OF THE STANDING COMMITTEE ON CHEMICALS & FERTILIZERS (2015-16)

The Committee sat on Wednesday, the 27 January, 2016 from 1430 hrs. to 1530 hrs. in Committee Room 'D', Parliament House Annexe, New Delhi.

PRESENT
Shri Anandrao Adsul - Chairperson
MEMBERS
LOK SABHA

2. Smt. Anju Bala
3. Shri B. N. Chandrappa
4. Smt. Veena Devi
5. Shri K. Ashok Kumar
6. Shri Kamalbhan Singh Marabi
7. Shri S. Rajendran
8. Shri Chandu Lal Sahu
9. Shri Tasleem Uddin
10. Smt. Rekha Arun Verma

RAJYA SABHA

11. Dr. M. S. Gill
12. Shri Narayan Lal Panchariya
13. Shri Sanjay Sinh
14. Shri Palvai Govardhan Reddy

SECRETARIAT

1.	Smt. Rashmi Jain	-	Joint Secretary
2.	Shri A. K. Srivastava	-	Director

List of Witness

Department of Chemicals and Petrochemicals

1.	Shri Vijay Shankar Pandey	Secretary
2.	Shri Avinash Joshi	Joint Secretary

CIPET

1.	Prof. (Dr.) S. K. Nayak	Director General
2.	Shri R. Rajendran	Director Finance
3.	Dr. Abdul Kader	Director (Academics)

IPFT

1.	Dr. S. K. Raza	Director
2.	Dr. P. K. Patanjali	Chief Formulation Officer

2. At the outset, Hon'ble Chairperson welcomed the Members of the Committee and representatives of the Ministry of Chemicals & Fertilizers (Department of Chemicals and Petrochemicals) and other officials to the sitting. Their attention was invited to the provisions contained in Direction 55(1) of the Directions by the Speaker regarding confidentiality of the Committee's proceedings.

3. After the witnesses introduced themselves, the Director General (CIPET) and Director (IPFT) made power point presentation to the Committee on the subject, "CIPET" and "IPFT', respectively. Thereafter, the Secretary, Department of Chemicals and Petrochemicals and other officials replied to queries raised by the Members relating to the subject.

4. The Chairperson thanked the witnesses for appearing before the Committee as well as for furnishing valuable information to the Committee.

5. It was also decided that the next sittings of the Committee would be held on 08 and 15 February 2016 to take oral evidence on the subject "IPFT" and "CIPET" respectively.

6. A copy of the verbatim record of the proceedings of the sitting has been kept.

The Committee then adjourned.

Annexure - VII

MINUTES OF THE NINTH SITTING OF THE STANDING COMMITTEE ON CHEMICALS & FERTILIZERS (2015-16)

The Committee sat on Monday, the 08 February, 2016 from 1500 hrs. to 1630 hrs. in Committee Room No.139, Parliament House Annexe, New Delhi.

PRESENT
Shri Anandrao Adsul - Chairperson
MEMBERS
LOK SABHA

2. Smt. Anju Bala
3. Shri Sankar Prasad Datta
4. Dr. Kulamani Samal
5. Shri Tasleem Uddin
6. Shri Kotha Prabhakar Reddy
7. Shri George Baker

RAJYA SABHA

8. Dr. M. S. Gill
9. Shri Narayan Lal Panchariya
10. Shri Garikapati Mohan Rao
11. Dr. Sanjay Sinh
12. Shri Mansukh L. Mandaviya

SECRETARIAT

1. Smt. Rashmi Jain - Joint Secretary
2. Shri A. K. Srivastava - Director

List of Witnesses

Department of Chemicals and Petrochemicals

1. Shri Vijay Shankar Pandey Secretary
2. Shri Samir Kumar Biswas Joint Secretary
3. Shri Sunil Kumar Sharma Director

Institute of Pesticides Formulation and Technology (IPFT)

1. Dr. S. K. Raza Director
2. Dr. P.K. Patanjali Chief Formulation Officer

2. At the outset, Hon'ble Chairperson welcomed the Members of the Committee and representatives of the Ministry of Chemicals & Fertilizers (Department of Chemicals and Petrochemicals) and other officials to the sitting. Their attention was invited to the

provisions contained in Direction 55(1) of the Directions by the Speaker regarding confidentiality of the Committee's proceedings.

3. After the witnesses introduced themselves, the Director of *Institute of Pesticides Formulation and Technology (IPFT)* made power point presentation to the Committee pertaining to IPFT with reference to the subject 'Functioning of autonomous institutions – Central Institute of Plastics Engineering Technology (CIPET) and Institute of Pesticides Formulation and Technology (IPFT). Thereafter, the Secretary, Department of Chemicals and Petrochemicals and other officials replied to the queries relating to IPFT raised by the Members.

4. The Chairperson thanked the witnesses for appearing before the Committee as well as for furnishing valuable information to the Committee.

5. It was also decided that the next meeting will be held on 17.02.2016 to take oral evidence of the representatives of Department of Chemicals and Petrochemicals and CIPET on the subject 'Functioning of autonomous institutions – Central Institute of Plastics Engineering Technology (CIPET) and Institute of Pesticides Formulation and Technology (IPFT).

6. A copy of the verbatim record of the proceedings of the sitting has been kept.

The Committee then adjourned.

Annexure - VIII

MINUTES OF THE TENTH SITTING OF THE STANDING COMMITTEE ON CHEMICALS & FERTILIZERS (2015-16)

The Committee sat on Wednesday, the 17 February, 2016 from 1500 hrs. to 1630hrs. in Committee Room-D, Parliament House Annexe, New Delhi.

PRESENT

Shri Anandrao Adsul - Chairperson

MEMBERS

LOK SABHA

2. Smt. Anju Bala
3. Smt Veena Devi
4. Shri K. Ashok Kumar
5. S. Rajendran
6. Shri Chandu Lal Sahu
7. Dr. Kulamani Samal
8. Shri Tasleem Uddin
9. Smt Rekha Arun Verma
10. Shri Innocent
11. Shri George Baker

RAJYA SABHA

12. Dr. M. S. Gill
13. Shri Narayan Lal Panchariya
14. K. parasaran
15. Shri Mansukh L. Mandaviya

SECRETARIAT

1.	Smt. Rashmi Jain	-	Joint Secretary
2.	Shri A. K. Srivastava	-	Director

List of Witnesses

Department of Chemicals and Petrochemicals

1.	Shri Vijay Shankar Pandey	Secretary
2.	Shri Prannoy Sharma	Director

Central Institute of Plastics Engineering Technology (CIPET)

1.	Prof. (Dr.) S.K. Nayak	Director General
2.	Shri R. Rajendran	Director (Finance)

2. At the outset, Hon'ble Chairperson welcomed the Members of the Committee and representatives of the Ministry of Chemicals & Fertilizers (Department of Chemicals and Petrochemicals) and other officials to the sitting. Their attention was invited to the provisions contained in Direction 55(1) of the Directions by the Speaker regarding confidentiality of the Committee's proceedings.

3. After the witnesses introduced themselves, the Director General of Central Institute of Plastics Engineering Technology (CIPET) made power point presentation to the Committee pertaining to CIPET with reference to the subject 'Functioning of autonomous institutions – Central Institute of Plastics Engineering Technology (CIPET) and Institute of Pesticides Formulation and Technology (IPFT)'. Thereafter, the Secretary, Department of Chemicals and Petrochemicals and other officials replied to the queries relating to CIPET raised by the Members.

4. The Chairperson thanked the witnesses for appearing before the Committee as well as for furnishing valuable information to the Committee.

5. A copy of the verbatim record of the proceedings of the sitting has been kept.

The Committee then adjourned.

Annexure - IX

MINUTES OF THE FOURTEENTH SITTING OF THE STANDING COMMITTEE ON CHEMICALS & FERTILIZERS (2015-16)

The Committee sat on Thursday, the 21 April, 2016 from 1500 hrs. to 1600 hrs. in Committee Room 'C', Parliament House Annexe, New Delhi.

Shri Anandrao Adsul - Chairperson

Members

Lok Sabha

2. Smt. Anju Bala
3. Shri B.N. Chandrappa
4. Shri R. Dhruvanarayana
5. Shri Chhedi Paswan
6. Shri S. Rajendran
7. Dr. Kulamani Samal
8. Shri Tasleem Uddin
9. Shri Innocent
10. Shri Kotha Prabhakar Reddy
11. Shri George Baker

Rajya Sabha

12. Shri Biswajit Daimary
13. Shri Narayan Lal Panchariya
14. Shri Palvai Govardhan Reddy

Secretariat

1.	Smt. Rashmi Jain	-	Joint Secretary
2.	Shri A.K. Srivastava	-	Director
3.	Shri Ram Parkash	-	Additional Director

2. At the outset, the Hon'ble Chairperson welcomed the Members of the Committee.

3. The Committee, thereafter, took up for consideration and adoption report on the subject, 'Functioning of Autonomous Institutions - Central Institute of Plastics Engineering Technology (CIPET) and Institute of Pesticides Formulation and Technology (IPFT)'.

4. After a brief discussion on the contents of the report, the draft Report was adopted by the Committee without any amendment.

5. The Committee authorised the Chairman to make consequential changes, if any, arising out of the factual verification of the Report by the Department of Chemicals and Petrochemicals of the Ministry of Chemicals and Fertilizers and present the same to both the Houses of Parliament.

6. The Committee decided to hold its next meeting on 26th April, 2016 for consideration and adoption of the draft reports on Demands for Grants 2016-17 of the Ministry of Chemicals and Fertilizers (Department of Fertilizers, Department of Chemicals and Petrochemicals and Department of Pharmaceuticals).

The Committee then adjourned.