REPORT OF THE COMPTROLLER AND AUDITOR GENERAL OF INDIA

UNION GOVERNMENT
No. 12 (COMMERCIAL) OF 1991

HINDUSTAN INSECTICIDES LIMITED

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PREFACE

The report on Hindustan Insecticides Limited was finalised by an Audit Board consisting of the following members:-

Shri P.K. Sarkar	Chairman, Audit Board and Ex-Officio Additional Deputy Comptroller and Auditor General(Commercial) from 8th June,1991 to 3rd July,1991.
	Deputy Comptroller and Auditor General(Commercial)-cum-Chairman, Audit Board from 4th July,1991 till date.
Shri B.C. Mahey	Principal Director of Commercial Audit & Ex-Officio Member, Audit Board-II, New Delhi from 8th March, 1989 to 1st July,1991.
Shri A.K.Chakrabarti	Principal Director of Commercial Audit & Ex-Officio Member, Audit Board-II, New Delhi from 15th July,1991 till date.
Shri K.P.L. Rao	Principal Director of Commercial Audit & Ex-Officio Member, Audit Board, Madras from 14th October, 1991 till date.
Shri Ananda Shankar	Principal Director of Commercial Audit Ex-Officio Member, Audit Board-I, Bombay from 1st June,1990 till date.
Shri K.S.Menon	Principal Director(Commercial) and Member-Secretary, Audit Board from 2nd July,1990 till date.
Shri H.C.Grover *	Executive President, Chambal Fertilizers & Chemicals Limited, New Delhi, Part-time Member.

2. This report was finalised by the Audit Board after taking into account the results of discussions held with the representatives of the Ministry of Petroleum & Chemicals and the Company.

3. The Comptroller and Auditor General of India wishes to place on record his appreciation of the work done by the Audit Board.

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* Did not attend the meeting of the Audit Board held with the Ministry.

OVERVIEW

I. The Company was registered in 1954 as a Private Limited Company and was converted into a Public Limited Company with effect from 10.9.1959.

(Para 1.1)

II. The main objects of the Company are to carry on all kinds of business relating to insecticides, chemicals and their by-products and also to conduct or subsidise research laboratories and experimental workshops.

(Para 2.1)

III. The Company is the sole manufacturer of DDT in the country. In addition to DDT it manufactures BHC and Malathion for the National Malaria Eradication Programme (NMEP) of the Ministry of Health, and various types of agro-pesticides.

(Paras 7.1 & 7.2)

IV. The initial authorised capital of Rs. one crore has been raised to Rs.50 crores over the years. The paid up capital of the Company as on 31st March, 1991 was Rs.36.55 crores and long term loans were Rs.25.50 crores. The Company is liable to pay penal interest amounting to Rs.10.06 crores (31.3.1991) due to delayed repayment of loans.

(Paras 3.1 & 3.2)

V. In 1979, the Company signed an agreement with four other State Government Companies to form a joint venture Company named Southern Pesticides Corporation

Limited (SPEC) for the manufacture of basic pesticides. The Company acquired the process technology to manufacture 26% Gamma BHC from a firm in USA. It failed to achieve the rated capacity of 3300 TPA of BHC Gamma due to certain technical defects which the contractor failed to rectify. The Company has taken up further modifications at an estimated cost of Rs.43 lakhs. The plant could operate at only 43% of its capacity.

(Paras 1.5 & 4.6)

VI. The output of Hyderated calcium Silicate Plant set up at Delhi in 1966 at a cost of Rs.3.36 lakhs with installed capacity of 604 Kgs. per day, was substandard and hence production was stopped in December, 1984. Efforts made to dispose of all the equipment have not yet been successful.

(Para 5.2)

VII. The Endosulfan (Tech.) plant set up at Udyogmandal in June, 1980 based on the technology provided by the National Chemical Laboratory, Pune, revealed defects during commissioning. The total expenditure incurred on the project including modifications upto 31st March, 1991 was Rs.2450.23 lakhs as against the original estimate of Rs.833.11 lakhs. Despite this, one of the two streams of the plant commissioned in 1983-84 has not yet achieved the installed capacity. Production in the second stream has started only in July 1991.

Equipment and off-site facilities (estimated value Rs.122.15 lakhs), which were discarded during modifications, have not yet been disposed of.

(Para 5.3)

VIII. There were time over runs of 9 months and 21 months in setting up the Malathion and DDT Plants respectively at Rasayani unit. In the case of DDT Plant, the consultant did not perform their obligations under the contract and the Company had to incur extra expenditure of Rs.10.76 lakhs to bring the performance of the plants to the desired level. The Company did not take any action against them. The reasons for not taking any action against the contractor was not explained.

(Paras 5.4 & 5.5)

IX. An Effluent Treatment Plant was installed at Delhi in 1974 at a cost of Rs.13.17 lakhs, however, the discharge of effluents from this plant does not yet conform to the standards prescribed by the Pollution Control Board.

(Para 6.2)

X. Though the country's production of insecticides was increasing, the production of the Company was declining over the years. The production of the Company in all the units was less than the installed capacity. Reasons for shortfall in production were attributed to power failure, shortages of raw materials, repairs of plant and machinery, reprocessing of rejected materials and marketing constraints.

(Para 7)

XI. Excess consumption of raw materials and steam resulted in excess expenditure of Rs.221..63 lakhs and Rs.41.05 lakhs respectively.

(Paras 7.3.4,7.4.7,7.5.2,7.4.9)

XII. The Company does not maintain any record to workout the total loss on account of re-processing of material rejected by NMEP which is considerable. For only rebagging of 4682 MT of material reprocessed after rejection, the Company incurred Rs.8.43 lakhs in Delhi Unit.

(Para 7.7.3)

XIII(a) The fair prices fixed by the Government for supplies of DDT, BHC and Malathion to NMEP were lower than the corresponding costs of production. The norms adopted for fixing the fair price requires a review because some of the plants are very old.

(Para 10.3.1)

(b) There was also delay in realisation of debts. Out of Rs.36.25 crores realisable from Government Departments as on 31st March, 1991, an amount of Rs.33.86 crores was due to be recovered from the Ministry of Health. Unpaid bills by the Ministry of Health has caused severe liquidity problems for the Company.

(Para 10.8.1)

XIV. The internal audit system were not commensurate with the size of the Company and the nature of its business.

(Para 13.1)

XV. The percentage of R&D expenditure to the total turnover was less than 2%. Efforts for development of

technology for new generation insecticides, fungicides, weedicides, process development for new formulations and development of better pollution control techniques were insiginificant.

(Para 14.6)

XVI. There was a delay of six years in the commissioning of Chlorine tanks due to design defects and other technical problems. Transportation of Chlorine had, therefore, to be done in cylinders instead of in bulk, resulting in an avoidable extra expenditure of Rs.40.58 lakhs.

(Para 15.4)

1. INTRODUCTION

1.1 The Hindustan Insecticides Limited(Company) was initially registered as a private limited company under the Companies Act,1913 in March,1954 for the manufacture of Dichloro Diphenyl Trichloroethane(DDT) in a plant gifted by UNICEF and World Health Organisation for the Malaria Eradication Programme of the Government of India. It was converted into a public limited company under the Companies Act, 1956 with effect from 10th September,1959.

1.2 The Company's first factory was established in Delhi in 1955 for the manufacture of 700 tonnes of DDT(Tech.) per annum and its formulations into 50% Water Dispersible Powder(WDP).The factory went into production in April,1955. To meet the increasing demand of DDT for the National Malaria Eradication Programme(NMEP) launched by the Government of India in 1958, the production capacity of this Unit was doubled in 1958-59. The capacity of Delhi Plant was increased in 1969 to 2744 tonnes of DDT(Tech.) and 5488 tonnes of formulated DDT. In October,1978, the formulation of Agro Pesticides was started. Dicofol Plant (25 TPA) was installed in December,1978 at a cost of Rs.18.94 lakhs and put under trial runs in February, 1979. Its commercial production has not, however, been established so far (October,1991).

1.3 The Company's second factory was set up in 1957 at Udyogamandal in Kerala for the production of 1344 tonnes of DDT(Tech.) and 2688 tonnes of DDT(Form.) per annum for distribution under the NMEP. Subsequently, the Company added two more plants, one for the production of 3000 tonnes of Benzene Hexa Chloride(Tech.) per annum with facilities to manufacture 3000 tonnes per annum formulated BHC(50%) in 1971 and the other for production of 1910 Kls. of Endosulfan (Form.) per annum in 1979. As a part of expansion/diversification programme, a plant for producing 1600 tonnes of Endosulfan (Tech.) per annum based on the technology supplied by the National Chemical Laboratory(NCL), Pune was taken up in

1976. Though mechanically completed in June,1980, a number of process and equipment problems were faced in commissioning the plant. The total expenditure incurred on the project upto 31st March,1991 was Rs.2450.33 lakhs. The highest production of Endosulfan(Tech.) so far has been 653 MT in 1990-91 in the first stream, modified and commissioned in 1988. The second stream was commissioned in July,1991.

1.4 In order to bridge the increasing gap between demand and supply of DDT and Malathion for various health and agricultural programmes, the Company established its third factory at Rasayani, near Bombay, for the manufacture of Malathion Tech. (1800 TPA) and its formulation (3200 TPA), DDT(Tech.) (5000 TPA) and its formulations (10,000 TPA). These two projects were got approved from the Government of India in August,1975 and April,1976 respectively. The Malathion Tech. Plant and its formulation plant started production in March,1980. The DDT formulation plant and DDT Tech. plant started production in March,1981 and October,1981 respectively.

1.5 For the manufacture, marketing and development of basic pesticides and its formulations in the country, an agreement was signed on 18th August,1979 between the Company and four State Government Companies (Andhra Pradesh State Agro Industries Development Corporation Limited, Hyderabad, Tamil Nadu Agro Industries Corporation Limited, Madras, Karnataka Agro Industries Corporation Limited, Bangalore and Kerala Agro Industries Corporation Limited, Trivandrum) for setting up a public sector undertaking under the name of "The Southern Pesticides Corporation Limited" (SPEC) with its Registered Office at Hyderabad and a factory at Kovvur, Andhra Pradesh. This subsidiary company was incorporated as a private limited company on 3rd March,1980 and became a public limited company with effect from 16th April,1980 under Section 43-A of the Companies Act,1956. The subsidiary company earned marginal profits amounting to Rs.18.11 lakhs and Rs.5.51 lakhs in 1984-85 and 1985-86 respectively. Thereafter, it suffered losses amounting

to Rs.200.09 lakhs, Rs.184.30 lakhs, Rs.152.88 lakhs, Rs.146.37 lakhs and Rs.107.66 lakhs in the years 1986-87, 1987-88, 1988-89, 1989-90 and 1990-91 respectively.

1.6 **Organisational Set Up**

The Management of the Company vests in the Board of Directors. The Board of Directors consists of minimum of two and maximum of twelve Directors. As on 31st March,1991 the Board of Directors consisted of a Chairman-cum-Managing Director, a Director(Marketing), a Director(Finance) and seven part time Directors. The organisational chart of the Company is given in annexure.

1.7 Each of the three factories located at Delhi, Udyogamandal and Rasayani is under the overall charge of a General Manager who reports to the Chairman-cum-Managing Director.

2. OBJECTIVES

2.1 The main objects of the Company are-

(a) to carry on all kinds of business relating to DDT and its formulation, insecticides, chemicals and their by-products, and

(b) to establish, conduct or subsidise research laboratories and experimental workshops for scientific and technical research and experiments.

2.2 In terms of the Bureau of Public Enterprises' memorandum dated 7th May,1979, Public Sector Undertakings were required to formulate their micro objectives consistent with the broad objectives spelt out in the Industrial Policy Statement of December,1977 so that a realistic and meaningful evaluation of the enterprise would become possible. The Company forwarded its Micro objectives to the Government in December,1983. These were approved by the Administrative Ministry in October, 1990.

3. CAPITAL STRUCTURE

3.1 Authorised and paid-up capital

The authorised capital of the Company was initially fixed at Rs.1 crore. It was raised from time to time and stood at Rs.50 crores at the end of 1990-91. The paid-up capital (wholly subscribed by Government) as on 31st March,1991 was Rs.36.55 crores.

3.2 Long Term Loans

The Government has advanced unsecured long term loans to the Company from time to time. The amount of such loans as on 31st March,1991 was Rs.25.50 crores. The Company paid Rs.1.15 crores in 1987-88 which were repayable in one instalment during June,1982. Interest on loans accrued and due upto 31st March,1991 amounting to Rs.19.37 crores was outstanding. The Company is further liable to pay penal interest @ 2-1/2% per annum in case of default in repayment of principal and interest due. The amount of such penal interest upto 31st March, 1991 worked out to Rs.10.06 crores. The Board of Directors had, in their 167th Meeting, held on 9th September,1985 decided to approach the Government for the waiver of penal interest. Government's approval has not been received (October,1991). During the Audit Board meeting in September,1991 the Management stated that the liability would be substantially reduced after Government's acceptance of the proposal for capitalising the loan for Endosulfan project, and recovery of arrears from Ministry of Health and Family Welfare for which action has been taken at Ministry level.

3.3 Working Capital

The Company has cash credit arrangements with the Bank of Baroda against hypothecation of raw-materials, work-in-progress, finished goods and book-debts. As against the sanctioned cash credit limit of Rs.1200 lakhs, the total amount outstanding as on 31st March,1991 was Rs.642.60 lakhs.

4. CORPORATE PLANS

4.1 The Company had formulated a shelf of projects for the 7th Five Year Plan(1985-90) based on the demand projections of the working group on pesticides set up by the Government taking into consideration the changing pattern of pest control requirements. The projects included in the Plan were Methyl Parathion, Dichloro Benzene, Chlorobanzillate Acetellic, Edifenfos, Trivax, Amitraz, Acephate/Metha Midophos, Phosphamidon, Isoproturon and Carbamate group of pesticides.

4.2 The table below indicates the approved outlay under 7th Five Year Plan(1985-90) alongwith actual expenditure there-against alongwith expenditure for 1990-91.

TABLE-I

(Rs. in lakhs)

Name of the Scheme	Approved outlay under VII plan (1985-90)	Actual expenditure during 85-86	86-87	87-88	88-89	89-90	Total for the VII Plan	90-91	Total expenditure upto 31.3.91	Percentage of total expenditure under VII Plan
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)
(A) CONTINUING SCHEMES										
i) DDT at Rasayani	32.00	30.00	2.27	--	--	--	32.27	--	32.27	101
ii) Endosulfan Tech.	150.00	266.63	131.00	280.48	225.33	231.02	1134.46	--	1134.46	756
iii)UNDP- Plan	9.00	0.04	0.28	2.32	0.64	--	3.28	9.80	13.08*	36
-Non-Plan		(19.46)	(26.91)	(23.22)	(25.19)	(26.82)	(121.60)	(32.61)	(154.21)*	--
iv) Science & Technology	59.00	6.00	25.00	19.56	7.69	4.39	62.64	18.70	81.34	106
v) Renewal & Replacement	450.00	100.00	94.01	84.19	106.77	80.15	465.12	29.45	494.57	103
vi) Joint Venture	--	--	30.36	--	--	70.00	100.36	--	100.36	--
vii) H.O. Accommodation	--	6.75	22.00	24.78	36.02	40.45	130.00	--	130.00	--
(B) NEW SCHEMES										
i) Shifting of DDT(F) facilities	420									
ii) Flow Improver	70									
iii) Dicofol	)									
iv) Monocrotophos	)				64.44	142.62	207.06	121.53	328.59)	
v) Carboxin	)								)	
vi) Oxycarboxin	)								)	
vii) Butachlor	)	--	5.00	249.18	137.71	25.95	417.84	--	417.84)	
viii) Chlordane	)								))	
ix) Chloro Banzillate	)								)	
x) Mathyl Parathion	)410								)	77
xi) Dichlorobenzil	)								)	
xi) Housing at Rasayani	)	6.00	20.00	13.42	27.79	--	67.21	--	67.21)	--
	1600	415.42	329. 92	673.93	606.39	594.58	2620.34	179.48	2799.82	164

*Total expenditure incurred upto March,1991 was Rs.206.99 lakhs. Out of this, Rs.39.70 lakhs was incurred upto March,1985. A sum of Rs.108.19 lakhs(Rs.82 lakhs as non-plan) has been received upto 31st March, 1991. Balance of Rs.98.80 lakhs(Rs.89 lakhs as non-plan) have not yet been received.

4.3 From table-I it may be seen that the Company had already exceeded its approved outlay by 64 percent. In the case of Endosulfan(Tech.) project, the actual expenditure under VII Plan(upto 31st March,1990) was 756 percent of the approved outlay.

4.4 **Butachlor**

The Company got a letter of intent in December,1981 for the manufacture of 1,000 MT per annum Butachlor Tech. The Board decided(January,1985) to prepare feasibility report based on Monsanto Technology. In November,1986 Government of India approved the implementation of Butachlor Project at Rasayani at a total investment of Rs.360 lakhs. An agreement was executed(November,1986) with Regional Research Laboratory, Hyderabad(RRL) at a fee of Rs.18.00 lakhs for technology transfer, supply of detailed engineering design report including basic design package for 1,000 TPA Butachlor Tech. Plant. In terms of the agreement, work was to be completed by early 1987. The Plant was, however, mechanically completed in August,1988 and commercial production commenced with effect from 1st April,1990. A quantity of 257 MT of Butachlor Tech. (26 per cent of installed capacity) was produced during the year 1990-91.

4.5 **Monocrotophos**

Government also approved in May,1987 setting up of manufacturing facilities for 300 MT per annum Monocrotophos Tech. and its formulation at Rasayani at a total investment of Rs.239.00 lakhs. The Company entered into agreements with NRDC for technology transfer and with Regional Research Laboratory (RRL), Hyderabad for the supply of detailed Design Engineering Package. The Company got the environmental clearance from the Maharashtra State Authorities after facing a lot of problems which resulted in delay in the execution of the project. The project

was mechanically completed in August,1990 as against the expected date of 15th October,1989 and trial runs started from September, 1990. An expenditure of Rs.328.59 lakhs was held under capital work-in-progress towards Monocrotophos(Tech.) Plant as on 31st March,1991. However, Monocrotophos(Form.) plant has been capitalised at a cost of Rs.9.35 lakhs.

4.6 **Joint Venture**

In April,1978, the Company submitted to the Government of India a feasibility report for setting up a 26 per cent Gamma BHC Plant at an estimated cost of Rs.487.00 lakhs. The Government approved the project in January,1979. The Company promoted the Southern Pesticides Corporation Limited(SPEC) as a subsidiary company in March,1980 for implementation of this project.

In June,1980, the Company entered into a Licence Agreement with M/s. STAUFFER Chemical Company, U.S.A. for the process technology package, technical service and licence for commercial production of 3300 tonnes per annum of 26 per cent Gamma BHC for a fee of US $ 2.40 lakhs and assigned this agreement to SPEC. The process package was received by SPEC through the Company in June,1981. Detailed cost estimates for an investment of Rs.741.67 lakhs on the proposed 26 per cent Gamma BHC Plant including off site facilities and the formulation plant already commissioned were approved by Government in August,1982. The plant was expected to be commissioned in June,1984. The pay back period for the entire project was 5.9 years.

The plant was commissioned in March,1985 but it has been working only to a limited extent ever since due to technical problems.

The production performance of this plant upto 1990-91 was as follows:

TABLE-II

Year	Quantity produced (MT)	Percentage to the installed capacity of 3300 MT
1985-86	18	0.55
1986-87	498	15.09
1987-88	422	12.79
1988-89	600	18.18
1989-90	928	28.12
1990-91	1415	42.88

A team constituted by the Department of Chemicals and Petro-chemicals, comprising the Adviser(Chemicals) and Industrial Adviser(DGTD) visited the factory in August,1989 to make technical assessment with regard to the achievable level of production and its quality. It was noted by the Committee that the low capacity utilisation of the plant was due, inter-alia, to interruption in power supply and power cuts, inadequate designing of the reactors, poor performance of vaccum jets, solvent leakage due to corrosion and breakages of glass pipes and fittings. The Committee, therefore, recommended certain improvements involving an investment of Rs.60 lakhs and also suggested fixation of achievable capacity of the plant as 1800 tonnes per annum upto 1989-90, 2100 tonnes per annum from 1990-91 and 2400 tonnes from 1992-93 after installation of additional reactor recommended by the Committee.

In the detailed estimates(August,1982) the projected cost of production and the sale price of 26 per cent Gamma BHC were Rs.10,178 and Rs.12,000 respectively per tonne. An average annual profit (before tax) of Rs.76.32 lakhs was envisaged on all the products out of which the share of Gamma BHC on the 2459 tonnes intended for sale(rest being for captive consumption) would have been Rs.34.81 lakhs. The subsidiary company has been incurring loss since 1986-87 mainly because of low production of the plant. The accumulated loss upto March,1991 was Rs.791.29 lakhs which had exceeded its paid-up capital of Rs.337.68 lakhs. The actual expenditure on the project upto March,1991 was Rs.983.76 lakhs.

The terms of the Licence Agreement provide, inter-alia, that-

-performance of guarantee test(due more or less, immediately after the plant was ready for start up), and

- payment of compensation by M/s. STAUFFER as liquidated damages, subject to a maximum of US $ 72,000, if it failed to reach performance guarantee or elected to pay liquidated damages.

The performance guarantee test is yet(April,1990) to be completed despite visits(November,1984 to April,1985 & January,1986 to April, 1986) by the STAUFFER engineers. SPEC wrote to M/s. STAUFFER in September,1987 and June,1988 claiming damages amounting to Rs.37 millions due to breach of contract. SPEC requested the Company in April,1989 and September,1989 to report the matter to the Government of India.

The Ministry stated(February,1991) that the matter was examined by it and the holding Company(HIL) and it was found that no useful purpose would be served by pursuing the matter as M/s. STAUFFER was no loger in existence.

The Company entered into an Memorandum of Understanding(MOU) in September,1990 with Council of Scientific and Industrial Research(CSIR) to act as the consultant with the Company through Indian Institute of Chemical Technology, Hyderabad on payment of fees of Rs.3.00 lakhs. The assignment was to be completed within 12 months. The entire work was estimated to cost Rs.43.00 lakhs(including the assistance of Rs.19.00 lakhs from Department of Scientific and Industrial Research). The Company had so far(September,1990) spent Rs.6.34 lakhs (Provisional). Despite all this the plant could operate only at 43 per cent of its capacity.

5. PROJECT IMPLEMENTATION

5.1 Dicofol Plant

The process to synthesize Dicofol from DDT was purchased by the Company in 1975 on "as is where is basis" from Indian Agricultural Research Institute(IARI) through National Research and Development Corporation(NRDC) on payment of royalty of Rs.10,000. No feasibility study was, however, undertaken before purchasing the know-how. This process was further developed and put up to pilot plant studies at Regional Research Laboratory (RRL), Hyderabad in collaboration with Fact Engineering and Design Organisation(FEDO), Udyogamandal.

The Company got DGTD registration in June,1977 for two years to manufacture Dicofol Tech. and its formulation. According to the registration, the Company was to start commercial production latest by 20th December,1981.

Under the Insecticides Act,1968, the products, before its registration with Insecticides Board, must meet certain standards specified therein. To comply with these requirements Dicofol sample prepared in pilot plant was sent in 1978 to the Central Drugs Research Institute(CDRI), Lucknow for toxicological evaluation. The sample was found to be more toxic than the prescribed standards. In 1979 another sample was sent to CDRI and the same also failed to meet the prescribed standards. Concurrently the Company took up the installation and erection of the Dicofol plant. It was to be mechanically completed by 28th February,1978 and commissioned by March,1978. The Plant was set up in December, 1978 at a cost of Rs.18.94 lakhs. It was put under trial run in February,1979 to April,1979. However, the desired quality of the product was not obtained during its trial runs as the NRDC/ IARI process was not found technically and economically viable due to inherent technical problems. The Management, therefore, decided (June,1979) to abandon this process. An alternate process for hydrolysis was adopted at an additional estimated cost of Rs.6.00 lakhs which eliminated use of light during Chlorination and started from DDT Technical and was expected to give cheaper

product. After running a few batches adopting hydrolysis process, the Board was apprised(December,1983) of the stabilisation of production. Due to some operational problems the Company incurred Rs. 1 lakh for changing the plant layout, acquisition of additional scrubber and wash tank for scrubbing and HCL Chlorine wash to improve efficiency. Despite these, only 2.75 MT Dicofol was produced during November,1986 to January,1987. There were major break-downs due to leakage of karbate condensers on the reaction vessel, leakage of mechanical seal of hydrolyser and G.L.C. being out of order. To achieve actual production of 25 MT Dicofol on a regular basis after taking care of stoppages, additional glasslined vessels were to be installed but this was not implemented till January,1987 due to financial constraints and thereafter the R&D Complex undertook trial runs for technical Butachlor production. The Company incurred additional expenditure of Rs.18.58 lakhs upto 31st March,1991 on modifications in the Dicofol plant. These modifications were intended to stabilise production and reduce cost of production. This involved time and cost overrun as under:-

Scheduled date of completion and commissioning	Actual date of completion and commissioning	Time over run	Original estimated cost	Actual cost including modification.	Cost over run
			(Rs. in lakhs)		
Feb.,1978	Feb.,1979	1 year	18.94	37.52	18.58
March,78	March,82	4 years			

However, the intended purpose of these modifications could not be achieved as the production of Dicofol(Tech.) during 1985-86 and 1986-87 was only 1 MT and 3 MT respectively against the installed capacity of 25 MT and there was no production thereafter (March,1991).

The Management stated in April,1989 that the quality of the product meets ISI specifications now and the Company would be able to produce marketable quantity within 4 or 5 months after carrying out the necessary repair work of the docofol plant building which was extensively damaged.

The Ministry stated(September,1990) that the repair work was expected to be completed by December, 1990 for starting the commercial production of Dicofol.

The plant has been recommissioned during 1991-92, after a gap of 7 years and process conditions are being optimised.

5.2 **Hyderated Calcium Silicate Plant**

With a view to have an indigenous substitute for imported Microcel-E used in the formulation of DDT water dispersible powder, the Company installed a Hyderated Calcium Silicate Plant(H.C.S.) at Delhi Factory at a cost of Rs.3.36 lakhs. It was commissioned in November,1966 with an installed capacity of 604 Kgs. per day. After sometime the quality of the product produced by this plant deteriorated due to various reasons with the result that the Company had to stop its production from December,1984. Unit Management gave the following reasons for stoppage of production:-

i) The cost of production of HCS was Rs.18.21 per Kg. in the HCS plant whereas it was easily available in the market for Rs.9.32 per Kg.

ii) The availability of sodium silicate- one of the major raw materials- was very erratic and HCS plant had to be stopped a number of times during 1983-84 and 1984-85.

iii) The Company's product was in lumps whereas that available in the market was in the powdered form which improved the grindability of DDT and ultimately, helped in shelf life of formulated DDT.

The Management stated(November,1989) that with the development of new technology in India, cost of production of other factories was much lower. Hence the Company procured the material in subsequent years from the market and the plant was dismantled.

The Ministry stated(September,1990) that some of the equipment removed from HCS plant were used elsewhere in the Company and some of the equipment were disposed of. Efforts were still being made to dispose of the remaining equipment.

5.3 **Endosulfan Project**

The first stream of the plant was producing Endosulfan from 1983-84. The technology for production of Endosulfan in this plant was obtained from the National Chemical Laboratory. The difficulties encountered in standardising operating parameters and recovery processes were dealt with in paragraph XII of Part-III of the Report of Comptroller and Auditor General- Union Government (Commercial)- 1983.

In February,1984 Government appointed an Expert Committee to make recommendations on the future course of action to be taken on the Project. As advised by the Committee, the Company carried out modifications in one stream of production (out of the two streams, each of 800 TPA). As a part of the modification work, a peeler type centrifuge was procured in December,1987 and was installed and commissioned in January,1988.

After the commissioning of the one stream of 800 TPA, production of Endosulfan has steadily improved as indicated below.

	Production(MT)
1983-84	76.21
1984-85	171.00
1985-86	190.48
1986-87	62.06
1987-88	309.82
1988-89	436.00
1989-90	563.00
1990-91	653.00

The second stream of the plant was modified and commissioned in July,1991. The total expenditure incurred on the project upto 31st March,1991 was Rs.2450.23 lakhs (including Rs.17.04 lakhs incurred on the second stream) as against the original detailed cost estimate of Rs.833.14 lakhs(February,1980) and the revised estimate of Rs.1040 lakhs(December,1981). the initial date for commissioning the project was February,1980. Only the first stream was commissioned in 1983. The reasons for the delay in commissioning the plant were indicated in the Report of the Comptroller and Auditor General mentioned above.

After modifications to the plant at an extra expenditure of Rs.14 crores and variations of the operational parameters, the Company was able to achieve 82 per cent of commissioned capacity of one stream after a decade.

Equipment and offsite facilities (estimated value: Rs.122.15) which were discarded during modifications were awaiting disposal(October,1991). The realisable value of the discarded items was estimated(September,1990) Rs.12 lakhs only.

Ministry informed the Audit Board during discussions (October,1991) that the equipment cannot be disposed of till finalisation of the case, going on between the Company and the Supplier. They also stated that though there have been time and cost over runs, production of Endosulfan on indigenous technology

was a significant achievement.

The feasibility report(1974) of the project based on NCL technology envisaged employment of 94 numbers of staff and workers for the operation and maintenance of the plant. The project was mechanically completed in June,1980. Staff and workers were employed on the project right from 1979-80 onwards and the number of workers so employed had exceeded the quantum envisaged in the Feasibility Report i.e. 94 numbers as shown below:-

As on 31st March	Number of staff and workers employed
1980	77
1981	256
1982	267
1983	226
1984	207
1985	202
1986	191
1987	189
1988	223
1989	223
1990	219
1991	224

5.4 **Malathion Project**

i)Malathion(Technical) Plant

The Company decided in March,1976 to award the contract for construction of Malathion Technical plant to M/s.EXCEL Industries Ltd.(EXCEL) at an estimated cost of Rs.310 lakhs on turnkey basis. The plant was to be erected within 30 months (June,1979) from the last date of design conference(December,1976) and commissioned within 6 months thereafter. The contract also provided for penalty at the rate of 1 per cent of the erection cost(maximum 5 per cent) for every 15 days delay in erection and similar penalty for non fulfilment of performance guarantee.

The erection of the Malathion Technical Plant was completed by EXCEL on 25th March,1980 resulting in delay of 9 months and the plant was declared as commissioned on the same date. No penalty was levied. The Company stated(May,1983) that no penalty was levied as the delay was due to dispute over the utilisation of the site raised by Maharashtra State Electricity Board(MSEB), shortage of construction material and delay in supply of equipment, scarcity of skilled labour and dispute by local people for employment problems.

As per the terms of the contract, EXCEL was specifically required to give performance guarantee in regard to raw material inputs utilities and effluent discharge. This was in addition to its primary responsibility of ensuring the technical quality of the final product as per the ISI specifications mentioned in the contract. For proving the guarantee, trial runs were undertaken from 3rd September,1980 to 10th September,1980. All the guarantees specified in the contract were proved by the contractor, except in the case of quality of output, which, while meeting the ISI specifications was not acceptable to the Ministry of Health.

Dispute arose between EXCEL and the Company regarding the quality of output viz. Malathion(Tech.). EXCEL was asked to effect the necessary modification as per requirements of Ministry of Health to upgrade the product and an amount of Rs.33.52 lakhs was withheld. Subsequently, an understanding was reached(June,1982) according to which the amount withheld was to be paid subject to EXCEL making serious efforts to achieve the standard output. No action was, however, taken by EXCEL in this regard. The Company has not taken any action against the contractor. It was not clear why, if the Ministry of Health found the ISI specifications unacceptable, they did not initiate action to change the ISI specification.

ii)**Malathion(Formulation)Plant**

The consultancy cum site management for the erection and commissioning of Malathion(Formulation) Plant was awarded (July,1976) to M/s.Fact Engineering & Design Organisation (FEDO)at a cost of Rs.27.35 lakhs. The erection was to be completed

within 30 months from the effective date(August,1976) and commissioned within 3 months thereafter. The contract also provided for modification for quality design to be done at firm's cost subject to a maximum of Rs.2.18 lakhs. The plant was to be mechanically completed in February,1979. The 3 months period given for commissioning was for the trial runs and proving of guarantees for the final product as well as the norms for raw material consumption, utilities, etc.

The trial runs for the formulation plant were carried out from February,1979 to June,1980 and in all 58 batches were produced during this period. Out of these, 55 batches were tested but only 1 batch conformed to ISI specifications. The consumption of raw material and utility inputs were also not within the norms. The consultants dis-owned responsibility for these deficiencies on the ground that the Company did not conduct sufficient demonstration on the plant as provided for in the contract to determine the correct norms and standards. Thus, even the amount of Rs.2.18 lakhs to be borne by the contractor for the above deficiencies was not recovered. The Company did not furnish any reasons for accepting the responsibility for the deficiencies. Total payment made to the contractor was Rs.30.53 lakhs against Rs.27.35 lakhs.

5.5 DDT project at Rasayani

The setting up of the DDT Project at Rasayani was approved by Government of India in April,1976, at an estimated cost of Rs.825 lakhs. This was revised to Rs.1997.14 lakhs in 1981 and to Rs.1998.24 lakhs in July,1983. The Company stated that the increase in the estimated cost was due to change in scope, items not originally provided for, short provisions, price escalation and interest.

The consultancy cum site managment contract was awarded (March,1977) to M/s. Fact Engineering & Design Organisation (FEDO) for erection to be completed within 33 months and to be commissioned within 3 months thereafter.

The DDT Technical plant having 5000 TPA capacity was to be erected by December,1979 but could be completed by October,1981 i.e. after a delay of 21 months. The delay was mainly on account of various slippages in procurement, construction activities and off-site arrangements.

The commissioning for full production of the plant scheduled for March,1980, could be done only by March,1983 at a cost of Rs.1998.24 lakhs when it reached 60 per cent capacity utilisation. The consultant was responsible for ensuring completion and commissioning of the plant in time and for guaranteeing the final product as per the ISI specifications. It was noticed that the quality of the output was not established by the consultant and they left the site in May,1982 before commissioning all the 4 streams of the plant. As operation of the plant was not fully satisfactory, the Company was forced to spend an amount of Rs.10.76 lakhs for carrying out the modifications necessary for stabilising the production. The Company pointed out (July,1982) some lapses on the part of the consultant relating to poor quality of the output and proposed withholding of payments. The Company, however, released full payment to the consultant . As per the contract, the consultant was responsible upto an expenditure of Rs.4.50 lakhs for affecting any modifications for ensuring the quality of the output and for stabilising the plant. The Company did not enforce these provisions and reasons as to why no action was taken against the consultant were not on record.

In case of DDT formulation plant also, having 10000 TPA capacity, for which the consultancy-cum-management contract was given to Fact Engineering and Design Organisation(FEDO), the consultant again did not complete the mechanical erection within the prescribed period and there was time over run of 21 months.

The consultant failed to prove the technical quality of the output, the process package and the norms of input and utilities as privided for in the contract. The Company did not take any action against the consultant. On the contrary, the

Company paid the consultant an additional amount of Rs.5.95 lakhs for overstayal of their engineers at site.

Ministry stated(September,1990) that the reasons for delay were such that the consultant alone could not be held responsibile for them.

6. POLLUTION CONTROL

6.1. All pesticide plants have potential for creating pollution which depends on the product pattern, capacity, its effluents and pollutants in production and so on. The various steps taken by the Company in the field of pollution control and their effectiveness are discussed below:

6.2 **Delhi Factory**

The Company entered into a contract with a party of Bombay in May,1973 for setting up an Effluent Treatment Plant at Delhi Factory on turn-key basis at a total cost of Rs.9.23 lakhs for treating 4.5 lakh litres of industrial effluent per day according to Indian Standard Institute(ISI) specifications. The plant was to be completed by July,1974 but was actually completed in September, 1974 at a cost of Rs.13.17 lakhs. The completion certificate was, however, withheld by the Company because the treated effluent sample tested on 9th February,1976 did not conform to ISI specifications. A sum of Rs.0.84 lakh payable to the contractors was withheld. After some modifications the Company was able to treat 4.5 lakh litres of effluent per day. The Effluent Treatment Plant came under the direct jurisdiction of Central Board of Prevention of Water Pollution. The effluent is discharged in Najafgarh Nallah (1,00,000 gallons of effluent per day was being discharged in Najafgarh drain instead of the Municipal Sewer).

In June,1983, Central Board for Prevention and Control of Water Pollution, New Delhi, suggested certain modifications in the Effluent Treatment Plant. During the meeting, the Board authorities informed the Company that the plant monitoring data and field reports indicated that no control on the operation of the treatment plant with a view to delivering effluent conforming to consistent standards was being exercised. It was further pointed out that the monitoring data also indicated lack of in-plant control resulting in escape of high concentration of DDT to the effluent sporadically. After discussion, the following decisions were taken:-

i) The operation of the effluent treatment plant would be intensively monitored by Hindustan Insecticides Limited to ensure continuous operation with vigorous check on the ph at identified points in the treatment system till such time the plant delivered a consistent quality of effluent at par with this activity.

ii) The Company would analyse samples of treated effluent entering the nallah over a period of time to determine the concentration of DDT and its derivatives. Also, the effluent samples would be analysed over a period of time with the ultimate objective of controlling the quantity of DDT entering the treatment plant. The last exercise would help in better plant operation and performance.

iii) The Company would fabricate the pilot plant within 3 weeks from date and report the same to the Board so that the same could be put into operation in the 2nd week of July,1983.

While, communicating the above decisions to the Company, the Board for Prevention and Control of Water Pollution emphasised that they were giving a last opportunity to the Company to set right the situation before launching legal proceedings. Despite all this, effluent discharged by the Delhi Factory failed to conform to the standards prescribed by the Board. Dr. Dave of Jawahar Lal Nehru University, engaged by the Company in May,1986, had suggested certain modifications which were fully implemented. The Company appointed Prof. B.K.Guha of Indian Institute of Technology, New Delhi as consultant in July,1990 for the improvement and modification of existing plant.

6.3 **Udyogamandal Factory**

Acidic effluents containing insecticides and other pollutants like suspended and dissolved solids, chlorides, sulphates, sulphides, oil and grease, etc. are discharged by the unit. The maximum discharge per day is 620 M^3

An Effluent Treatment Plant was commissioned in May, 1982 at a cost of Rs.20 lakhs. As the different pollutants, after treatment in the plant were found to exceed the levels fixed by the State Pollution Control Board, the setting up of a second treatment plant for reducing the levels to those fixed by the State Board is under consideration of the Company.

The Company stated(September,1991) "the pilot plant studies conducted by a consultant had not established and substantial biodegradability of the pollutants present in the effluents to meet the standards prescribed by the Pollution Control Board. However, as an alternative we have already started procurement of equipment for modification of the systems so as to bring down the value of parameters prescribed. Work order for civil works

connected with this are also being placed. It may be mentioned that no established pollution control system is available for treatment of the type of effluents coming out from H.I.L. Plants."

6.4 **Rasayani Factory**

The Maharashtra Pollution Control Board pointed out several deficiencies in the Effluent Treatment Plants(ETP) of the unit based on the complaints lodged by the residents of Rasayani, stating that the discharge of the effluent water into the main stream was polluting the drinking water. The Board issued orders periodically to regulate the production in such a way that the discharge of effluent remains within the norms. Consequently, the unit was regulating the plants by stopping for a few days intermittantly. The following data indicates loss of production due to the plant stoppage since 1985-86 to 1988-89.

(Qty. in MT)

Year	Malathion(T)	D.D.T.(T)
1985-86	38.568	261.66
1986-87	--	--
1987-88	--	75.00
1988-89	--	15.00
	38.568	351.66

The unit has not recorded loss of production due to pollution problems during the years 1989-90 and 1990-91.

Based on the directives of the Pollution Control Board and the Court, the unit has taken necessary action to overcome the deficiencies in the Effluent Treatment Plant.

6.5 As regards Effluent Treatment Plants at Udyogamandal and Rasayani factories, the Management informed the Audit Board(October,1991) that these units were at present meeting all standards laid down by the State Pollution Control Boards in respect of water and air pollutions. The Ministry further informed the Board that from 1st January,1992 some more standards have been prescribed for controlling pollution which was a problem for the industry as these standards were not easily achieveable.

7. PRODUCTION PERFORMANCE

7.1 Product Range

The Company's product range can be braodly divided into two categories:-

(i) Insecticides for NMEP viz. DDT, BHC and Malathion.

(ii) Agro-pesticides viz. Hildan 35 EC, Hilfol 18.5 EC, Hilcron 36 SL, Hiltaklor 50 EC, Hilcyperin 25 EC and Hilfan 20 EC.

7.2 The table below indicates the production of various group of products in the country as a whole and HIL's share for the years 1985-86 to 1989-90(figures in respect of country's production for the year 1990-91 were not available).

TABLE-III

(Qty. in 000' tonnes)

Year	Insecticides			Fungicides			Herbicides			Rodenticides		
	Country's production	HIL's production	Percentage of (ii) to (i)	Country's production	HIL's production	Percentage of (v) to (iv)	Country's production	HIL's production	Percentage of (viii)to (vii)	Country's production	HIL's production	Percentage of (xi) to (x)
	(i)	(ii)	(iii)	(iv)	(v)	(vi)	(vii)	(viii)	(ix)	(x)	(xi)	(xii)
1985-86	48.49	24.90	51.35	3.51	0.02	0.57	1.70	0.04	2.35	1.20	--	--
1986-87	47.27	30.54	64.61	5.12	0.02	0.39	2.00	0.01	0.50	1.81	--	--
1987-88	49.71	28.33	56.99	3.91	0.02	0.51	2.02	0.16	7.92	1.26	--	--
1988-89	52.70	26.90	51.04	7.70	0.01	0.13	3.00	0.04	1.33	0.70	--	--
1989-90	55.33	26.37	47.66	6.60	0.01	0.15	2.87	0.41	14.29	1.00	--	--
	253.50	137.04	54.06	26.84	0.08	0.30	11.59	0.66	5.69	5.97	--	--

The above table shows that while country's production of insecticides was showing an upward trend, the Company's share was showing a downward trend despite the fact that HIL is the monopoly producer of DDT(T). Its contribution to country's total insecticides production ranged between 47.66 per cent to 64.61 per cent during the period from 1985-86 to 1989-90. In respect of Fungicides, the Company's share ranged between 0.13 per cent to 0.57 per cent of the country's production during 1985-86 to 1989-90. The overall production of the Company ranged between 40.71 per cent to 54.40 per cent of the country's production.

7.3 Unit-wise Production Performance

7.3.1 Delhi Factory

The table below indicates the installed capacity, the targets of production fixed(on three shifts basis) from 1984-85 to 1990-91 and actual production thereagainst in respect of DDT(Tech.) and DDT (Form.), the major products, being manufactured by Delhi Factory.

TABLE-IV

(Qty. in MT)

Name of the product/year	Installed capacity	Targetted production	Actual production	Percentage of actual production to	
				Installed capacity	Targetted production
(A)DDT(Tech.)					
1984-85	2744	3000	2508	91.40	83.60
1985-86	2744	1600	422	15.38	26.37
1986-87	2744	2570	2311	84.22	89.92
1987-88	2744	2668	2668	97.23	100.00
1988-89	2744	2668	2104	76.68	78.86
1989-90	2744	2470	2251	82.03	91.13
1990-91	2744	2470	1911	69.64	77.37
(B) DDT(Form.)					
1984-85	5488	5500	4002	72.92	72.76
1985-86	5488	3000	1050	19.13	35.00
1986-87	5488	4940	3771	68.71	76.34
1987-88	5488	5190	4300	78.35	82.85
1988-89	5488	5190	3520	64.14	67.82
1989-90	5488	4940	3852	70.19	77.98
1990-91	5488	4349	4109	74.87	94.48

7.3.2 The production of DDT(Tech.) and DDT(Form.) had throughout been less than the installed capacity and the targets fixed for production except during the year 1987-88 when production of DDT(Tech.) was equal to the targetted production. Production of DDT(Tech.) and DDT (Form.) during the year 1985-86 was recorded lower i.e. 26.37 per cent and 35.00 per cent respectively of the targetted production.

The Management stated(November,1989) that the targets were fixed based on the orders from NMEP for formulated DDT and capacity utilisation of the plant in view of its old technology, frequent break-downs, frequent low voltage supply by Delhi Electric Supply Undertaking(DESU) and stringent pollution control standards to be followed by the Company.

7.3.3 **Loss of Production**

The table below indicates the extent of actual loss in production due to various causes during the period from 1984-85 to 1990-91:

TABLE-V

(Quantity in MT)

Name of the product/year	Power failure	Shortage of raw materials	PLant Problems	Other reasons	Total
DDT(TECH.)					
1984-85	25	278	46	143	492
1985-86	20	1059	63	36	1178
1986-87	83	163	13	--	259
1987-88	--	--	Nil	--	Nil
1988-89	92	422	50	--	564
1989-90	159	8	52	--	219
1990-91	136	149	127	147	559
DDT(FORM.)					
1984-85	150	--	--	1348	1498
1985-86	--	332	--	1618	1950
1986-87	186	684	96	203	1169
1987-88	865	--	--	25	890
1988-89	838	107	225	500	1670
1989-90	640	141	307	--	1088
1990-91	161	--	62	17	240

(i) During 1984-85, there was a loss of production of 1348 MT of DDT(Form.) due to "other reasons" out of which 1060 MT was due to use of this plant for formulation of Agro-Pesticides and 288 MT for reprocessing of rejected material.

(ii) During 1985-86, loss of production of 1059 MT of DDT(Tech.) was due to shortage of raw material and non supply of Chlorine, Oleum and Steam during December,1985 to March,1986.

(iii) Loss of production of 1618 MT of DDT(Form.) due to "other reasons" during 1985-86 was attributable to (i) preparation of other formulations (1071 MT) (ii) shortage of gunny bags (378 MT) and (iii) repair work (169 MT) and non-availability of DDT(Tech.) (332 MT).

(iv) Loss of production of 203 MT of DDT(Form.) during 1986-87 and 25 MT in 1987-88 was due to reprocessing of rejected material.

(v) Out of total loss of production of 500 MT for DDT(F) for "other reasons" during 1988-89, loss of 172 MT was due to reprocessing of rejected DDT(Form.).

(vi) Loss of production of 147 MT of DDT(Tech.) due to "other reasons" during 1990-91 was on account of water shortage, steam failure and high brine temperature.

7.3.4 **Raw Material Consumption**

The table below gives the average consumption of raw material for producing one tone of DDT(Tech.) alongwith the Designer's standard for the last seven years ending 31st March,1991.

TABLE-VI

Item	Designer's norms	Consumption of raw materials per tonne of the product						
		84-85	85-86	86-87	87-88	88-89	89-90	90-91
Alcohol	0.3710	0.3813	@	0.3900	0.3814	0.5091	0.4046	0.4116
Benzene	0.8470	0.8011		0.8277	0.8509	0.9443	0.8925	0.9441
Chlorine	1.9820	1.6441		1.9583	1.7987	1.7700	1.6300	1.6814
Oleum (excluding consumption for Chloral)	1.5300	1.3700		1.2579	1.2866	1.5500	1.2889	1.3031

@ Factory remained closed almost for the entire year for renovation and non-supply of Chlorine, Oleum, etc. by the supplier.

The average consumption of alcohol exceeded the designers norms during all the years. The main reasons during all these years had been frequent power failure and other reasons such as shortage of raw materials(1986-87), interruption of steam supply(1984-85) and chloral distillation vapour line leakage (1984-85). It would further be seen from the following table that the total excess consumption of alcohol worked-out on the basis of actual production of DDT(Tech.) was 541.27 KL (value Rs.28.03 lakhs) during 1984-85 to 1990-91 and of Benzene 503.10 KL (value Rs.42.20 lakhs) in 1987-88 to 1990-91.

TABLE-VII

Year	Production of DDT(T)	Excess per tonne consumption of alcohol/ Benzene over designer's norms	Total excess consumption	Average cost per KL	Amount
	(MT)		(KL)	(Rs.)	(R s .)
		ALCOHOL			
1984-85	2508	0.0103	25.8324	3134	80959
1985-86	422	----------Not comparable----------			
1986-87	2311	0.0190	43.9090	6382	280227
1987-88	2668	0.0104	27.7472	5881	163181
1988-89	2104	0.1381	290.5624	4750	138017
1989-90	2251	0.0336	75.6336	5850	442457
1990-91	1911	0.0406	77.5866	5880	456209
			541.2712		2803204
		BENZENE			
1987-88	2668	0.0039	10.4052	7400	76998
1988-89	2104	0.0973	204.7192	7380	1510828
1989-90	2251	0.0455	102.4205	8400	860332
1990-91	1911	0.0971	185.5581	9550	1772080
			503.1030		4220238

Despite the fact that the Board of Directors of the Hindustan Insecticides Limited expressed their concern over the excess consumption of raw material (Alcohol) in their meeting held on 6th March,1985 and desired to take appropriate steps, effective remedial measures were, however, not taken by the Management as is evident from above.

7.3.5 **Loss on account of low recovery of by-products**

Sulphuric Acid(H_2SO_4) and Hydrochloric Acid(HCL) are the main by-products during the manufacture of DDT. According to the prescribed standard, production of 1 MT of DDT(T) yields 1.222 MT of Sulphuric acid and 1.289 MT of Hydrochloric acid as by-products.

The tables below gives the quantity of production of DDT(Tech.) and by-products actually recovered, and quantities recoverable as per standard during the years from 1980-81 to 1990-91.

TABLE-VIII

HYDROCHLORIC ACID(HCL) (Qty. in MT)

Year	DDT(T) production	Recovery of HCL as per norms	Actual recovery (30 per cent)	Difference at 30 per cent (concentrated)
1980-81	3000	3866	3900	--
1981-82	2285	2945	2799	146
1982-83	2915	3756	4109	--
1983-84	2868	3696	2888	808
1984-85	2508	3232	2941	291
1985-86	422	544	------Not comparable----	
1986-87	2311	2978	4363	--
1987-88	2668	3438	5273	--
1988-89	2104	2711	4040	--
1989-90	2251	2900	4222	--
1990-91	1911	2462	2949	

TABLE-IX

SULPHURIC ACID(H_2SO_4)

(Qty. in MT)

Year	DDT(T) production	Recovery H_2SO_4 as per norms	Actual recovery (70 per cent)	Difference at 70 per cent concentrated
1980-81	3000	3668	3599	69
1981-82	2285	2793	2657	136
1982-83	2915	3564	4035	--
1983-84	2868	3506	3627	--
1984-85	2508	3065	3278	--
1985-86	422	-------Not comparable----------		
1986-87	2311	2825	3525	--
1987-88	2668	3262	3934	--
1988-89	2104	2572	3114	--
1989-90	2251	2752	3370	--
1990-91	1911	2336	2711	--

It is seen that the recovery of both by-products i.e. Sulphuric Acid and Hydrochloric Acid has been erratic. In the case of Hydrochloric Acid the recovery was less than the designed norms during 1981-82, 1983-84 and 1984-85 but was more than the norms during 1980-81, 1982-83 and 1986-87 to 1990-91. Similarly, in the case of sulphuric acid the actual recovery was less during 1980-81 and 1981-82 but was more in other years.

Ministry indicated(September,1990) that with the installation of absorption system for HCL & hydrolyser for the Sulphuric Acid actual recovery of by-products improved from 1985-86.

As the actual recovery of by-products was more than the norms after 1986-87, Company should have evolved more realistic norms of recovery of by-products as the standards earlier laid down were stated to be purely presumptive.

7.4 **Udyogamandal Factory**

7.4.1 The table below indicates the installed capacity, annual targetted production and the actual production in respect of the main products DDT(Tech.), DDT(Form.), BHC(Tech.), BHC(Form.) and Hildan during 1984-91:

TABLE-X

Name of product	Year	Installed capacity	Targetted production	Actual production	Percentage of actual production to	
		(--In MT/KL---------)			Installed capacity	Targetted production
1.	2.	3.	4.	5.	6.	7.
DDT(Tech.)	1984-85	1344	1344	838	62.4	62.4
	1985-86	1344	1344	792	58.9	58.9
	1986-87	1344	1161	1011	75.2	87.1
	1987-88	1344	1258	1158	86.2	92.1
	1988-89	1344	1258	1178	87.7	93.6
	1989-90	1344	1344	1109	82.5	82.5
	1990-91	1344	1210	882	65.6	72.9
ii)DDT(Form.)	1984-85	2688	2400	1746	65.0	72.8
	1985-86	2688	2688	1250	46.5	46.5
	1986-87	2688	2289	1951	72.6	85.2
	1987-88	2688	2480	1609	59.9	64.9
	1988-89	2688	2480	1924	71.6	77.6
	1989-90	2688	2688	1602	59.6	59.6
	1990-91	2688	2419	1857	69.1	76.8
iii)BHC(Tech.)	1984-85	3000	2000	1902	63.4	95.1
	1985-86	3000	3000	2520	84.0	84.0
	1986-87	3000	2000	1555	51.8	77.8
	1987-88	3000	2700	1576	52.5	58.4
	1988-89	3000	2700	1912	63.7	70.8
	1989-90	3000	3000	2064	68.8	68.8
	1990-91	3000	2700	2085	69.5	77.2
iv)BHC(Form.)	1984-85	3000	3000	2769	92.3	92.3
	1985-86	3000	5000*	2022	67.4	40.4
	1986-87	3000	3000	2952	98.4	98.4
	1987-88	3000	2700	2361	78.7	87.4
	1988-89	3000	2700	3002	100.1	111.2
	1989-90	3000	3000	2801	93.4	93.4
	1990-91	3000	3000	2534	84.5	84.5
v)Hildan (KL)	1984-85	1910	458	264	13.8	57.6
	1985-86	1910	400	265	13.9	66.3
	1986-87	1910	400	268	14.0	67.0
	1987-88	1910	700	290	15.2	41.4
	1988-89	1910	900	457	23.9	50.8
	1989-90	1910	1000	621	32.5	62.1
	1990-91	1910	750	583	30.5	77.7

*Revised to 3000 MT subsequently

7.4.2 It may be seen from the above table that the production of DDT(Tech.), DDT(Form.), BHC(Tech.), BHC(Form.), the main products of the Unit, had throughout been less than the installed capacity and also the targets fixed for production, except in the case of BHC(Form.) which exceeded both the installed capacity and target in 1988-89.

7.4.3 Production of Hildan had throughout been on the lower side stated to be due to poor market demand. The Management stated(May,1988) that the Hildan Plant was utilised to some extent for the production of Hildit 25 EC, Hilthion 50 EC and Plantavax 20 EC.

7.4.4 The shortfall in targetted production in respect of the major four products was attributed by the Management to power failure, shortage of raw materials, plant troubles and other reasons as indicated in the table below:-

TABLE-XI

(Quantity in MT)

Name of product	Year	Power failure	Shortage of raw materials	Plant problems	Other reasons	Total
i)DDT(Tech.)	1984-85	23.8	462.0	8.3	11.9	506
	1985-86	13.0	397.1	95.3	46.6	552
	1986-87	88.2	11.6	3.5	46.7	150
	1987-88	31.5	27.7	11.3	29.5	100
	1988-89	5.0	47.8	21.4	5.8	80
	1989-90	51.0	74.0	96.0	14.0	235
	1990-91	--	240.0	86.6	1.4	328
ii)DDT(Form.)	1984-85	105.9	426.4	46.9	74.8	654
	1985-86	14.0	777.6	14.6	631.8	1438
	1986-87	90.0	--	8.9	239.1	338
	1987-88	505.9	--	42.11	322.99	871
	1988-89	27.3	19.0	27.3	482.4	556
	1989-90	574.0	--	185.0	327.0	1086
	1990-91	5.4	--	57.8	498.8	562
iii)BHC(Tech.)	1984-85	59.1	22.1	16.8	--	98
	1985-86	91.1	344.6	44.3	--	480
	1986-87	292.0	14.0	84.9	54.1	445
	1987-88	707.0	59.0	170.0	188.0	1124
	1988-89	199.4	218.7	278.1	91.8	788
	1989-90	456.0	16.0	250.0	214.0	936
	1990-91	115.6	73.3	188.3	237.8	615

iv)BHC(Form.)	1984-85	80.2	105.5	12.0	33.3	231
	1985-86	15.0	48.2	6.5	908.3	978
	1986-87	--	6.0	6.0	36.0	48
	1987-88	72.0	--	35.0	232.0	339
	1988-89	-------Production exceeded target------				
	1989-90	80.0	--	29.0	90.0	199
	1990-91	--	178.8	--	287.2	466

Note: "Other reasons" mentioned above include time taken for reprocessing of rejected materials, non-availability of surfactant of required quality, go-slow tactics by workers, shortage of space for storage of finished products,etc.

7.4.5 The Management attributed the shortfall in production in respect of DDT(Tech.) and BHC(Tech.) during 1984-85 to 1990-91 to non-availability of Alcohol allocated by Government and short supply of Chlorine by M/s. Travancore and Cochin Chemicals Limited. The shortfall in respect of DDT(Form.) and BHC(Form.) in 1985-86 was mainly attributed to re-processing of rejected materials(2385 tonnes) and non-availability of surfactants(568 tonnes). Further, during 1985-86 the production of BHC(Form.) had to be cut down owing to lifting of only 2360 MT by NMEP against their firm order for supply of 3800 tonnes.

7.4.6 **Consumption of raw materials**

The table below gives designed ratios for the consumption of main raw-materials in the production of DDT and BHC and the actual ratios achieved during 1984-85 to 1990-91:

TABLE-XII

Product	Raw Material	Designed Ratio	Actual ratios 84-85	85-86	86-87	87-88	88-89	89-90	90-91
DDT (Tech.)	Chlorine	1.891	1.697	1.779	1.730	1.830	1.835	1.798	1.917
	Benzene	0.848	0.858	0.852	0.823	0.827	0.826	0.846	0.853
	Alcohol	0.372	0.376	0.363	0.378	0.372	0.404	0.418	0.453
	Oleum	1.534	1.318	1.375	1.421	1.395	1.364	1.395	1.331
BHC (Tech.)	Chlorine	0.760	0.737	0.762	0.759	0.760	0.762	0.760	0.760
	Benzene	0.310	0.324	0.318	0.334	0.313	0.316	0.326	0.322

It may be seen from the above that the consumption had exceeded the norms in the following cases:

DDT(Tech.)

Chlorine 1990-91

Benzene 1984-85, 1985-86 and 1990-91

Alcohol 1984-85, 1986-87, 1988-89, 1989-90 and 1990-91.

BHC(Tech.)

Chlorine 1985-86 and 1988-89

Benzene 1984-1991

The Management explained(May,1988) as follows: "The norms fixed by the supplier (of machinery) for the consumption of Benzene and other raw-materials were based on the strict condition of availability of uninterrupted power supply, steam, etc. It can be seen that an average of 30 power interruptions were taking place during a month and in certain months it has gone as high as 45 times. This togetherwith low chlorine pressure and purity necessitated frequent stopping and starting of the plant. Therefore, consumption of the raw-material had gone up slightly.

The chlorine consumption is computed taking into consideration the readings as per the meters and taking into account the average purity of chlorine prevailing everyday. The benzene and alcohol efficiencies would get affected if the purity is low as the impure portion of the chlorine would be air. This will not get absorbed in the reaction process and would escape as uncondensed gas carrying benzene/alcohol alongwith it. We are continuously taking up the matter with M/s. Travancore Cochin Chemicals wherever purity goes down".

It is clear from the Company's reply that it faced continuous difficulties in obtaining uninterrupted power supply and raw materials of required specifications.

7.4.7 **Consumption of Monochloro Benzene(MCB) and Chloral**

Monochloro Benzene(MCB) and Chloral, obtained by combining benzene and chlorine, and alcohol and chlorine respectively, are the main inputs for the production of DDT. As per designed norm, 1.10 tonnes of MCB and 324.66 litres of chloral are required for the production of a tonne of DDT.

It may be seen from the figures for the years 1984-91 given below that while the consumption of MCB was less than the norm, the consumption of chloral exceeded the norm except in 1986-87:

TABLE-XIII

Year	MCB(in MT)		Chloral(in KL)		Excess consumption
	Consumption as per norm	Actual consumption	Consumption as per norm	Actual consumption	
1984-85	922	878(1.05)	272	275(328)	3
1985-86	871	839(1.06)	257	259(327)	2
1986-87	1112	1043(1.03)	328	324(320)	--
1987-88	1274	1206(1.04)	376	378(326)	2
1988-89	1296	1225(1.04)	382	384(326)	2
1989-90	1220	1072(1.06)	360	362(326)	2
1990-91	970	859(1.07)	286	295(334)	9

Note: Figures in brackets indicate actual consumption of MCB(in MT) and chloral(in litres) per tonne of DDT.

The value of excess consumption of chloral during 1984-1991(excepting 1986-87) worked out to Rs.4.42 lakhs.

7.4.8 **Recovery of by-products**

The DDT plant would normally yield Hydrochloric acid(HCL) and Sulphuric acid as by-products, in the following ratios:

Production of 1 MT of DDT(T) yields 1.289 MT Hydrochloric acid and 1.222 MT of Sulphuric acid as by-products.

The table below shows the actual production vis-a-vis designed norms:

TABLE-XIV

(Qty. in MT)

Year	DDT (Tech.) Produced	Qty. of HCL/ H_2SO_4 to be produced as per norms	Actual production of HCL/ H_2SO_4	Shortfall in production as against norms	
				Total	Percentage of shortfall to norms
a) Hydrochloric Acid(HCL)					
1984-85	838	1080	796	284	26
1985-86	792	1021	1076		
1986-87	1011	1303	1763		
1987-88	1158	1493	2193		
1988-89	1178	1518	2070		
1989-90	1109	1429	1851		
1990-91	882	1137	1422		
b) Sulphuric Acid(H_2SO_4)					
1984-85	838	1024	840	184	18
1985-86	792	968	1050	Excess	Production
1986-87	1011	1235	1358	-do-	
1987-88	1158	1415	1355	60	5
1988-89	1178	1440	1549	Excess	production
1989-90	1109	1356	1245	111	8
1990-91	882	1078	1090	Excess	production

It may be seen from the above that there was shortfall during 1984-85 in the case of HCL and during 1984-85, 1987-88 and 1989-90 in the case of Sulphuric acid.

7.4.9 **Production and consumption of steam**

As per designed norms, 12 tonnes of steam is required for production of one tonne of DDT and 2.5 tonnes of steam for one tonne of BHC. Steam produced and consumed in these plants during 1984-1991 is given below:

TABLE-XV

(Qty. in MT)

Year	Steam produced and consumed	Total steam required for DDT and BHC plants as per norms	Excess consumption	Percentage of excess consumption over the norms
1984-85	17397	14811	2586	17.5
1985-86	18477	15804	2673	16.9
1986-87	20405	16020	4385	27.4
1987-88	18879	17836	1043	5.8
1988-89	22011	18916	3095	16.4
1989-90	18394	18468	--	--
1990-91	16459	15797	662	4.2

The value of excess consumption during these years works out to Rs.41.05 lakhs.

Consumption of steam is not measured at the steam consuming units but the total quantity of steam produced on the whole is allocated to the consuming units based on production.

The Management stated(May,1988) that the figures of consumption of steam in the DDT and BHC plants also include its consumption for other purposes like decontamination of equipment for maintenance works, cleaning of pipe lines, casting trays, etc. for which a good quantity of steam is required. The Management also stated that with a view to have a better control of steam consumption, action was being taken to provide separate metres for various plants.

7.5 **Rasayani Unit**

7.5.1 (i) The production performance of Malathion(Form.) and DDT(Form.) plants during the years 1984-1991 as against their installed capacity is given below:-

TABLE-XVI

Year	Malathion(Form) plant Installed capacity 4800 MT			DDT(Form.) Plant Installed capacity 10,000 MT		
	Budgetted production (MT)	Actual Production (MT)	Percentage to capacity	Budgetted Production (MT)	Actual Production (MT)	Percentage to capacity
1984-85	6400	2903	60.48	5100	8179	81.79
1985-86	3200	3289	68.52	10000	7650	76.50
1986-87	4500	1484	30.92	9000	9415	94.15
1987-88	2880	*		9000	8656	86.56
1988-89	2800	927	19.31	9330	7042	70.42
1989-90	2880	1684	35.08	9000	5802	58.02
1990-91	2800	1096	22.83	9000	6216	62.16

*Formulated Malathion Plant remained idle due to non-placement of orders by the Ministry. However, 1135 MT of 25 per cent Malathion(Form) w.d.p. was reprocessed during the year.

There had been a decline in the production of Malathion (Form.) over the years. The Company stated that they reduced production because of lack of demand from NMEP consignee states.

(ii) The table below indicates the production loss during the period 1984-85 to 1990-91 with reference to installed capacity on account of power failure, shortage of raw-materials and other reasons:

TABLE-XVII (Qty. in MT)

Name of the product	Year	Power failure	Shortage of raw materials	Other Reasons	Total
Malathion (Form)	1984-85	37	720	1140	1897
	1985-86	19	901	591	1511
	1986-87	11	--	3305	3316
	1987-88	--	--	4800	4800
	1988-89	--	1248	2625	3873
	1989-90	3	1157	1956	3116
	1990-91	21	1364	2319	3704

DDT (Form.)	1984-85	15	1024	782	1821
	1985-86	42	1304	1004	2350
	1986-87	56	380	149	585
	1987-88	34	49	1261	1344
	1988-89	66	382	2510	2958
	1989-90	48	502	3648	4198
	1990-91	70	211	3503	3784

It would be seen from the above that there was substantial production loss of DDT(Form.) on account of raw material shortage during 1984-85 to 1990-91 and in case of Malathion(Form.) production loss was substantial in the years 1984-85, 1985-86, 1988-89, 1989-90 and 1990-91.

The Management stated(October,1989) that shortfall in production on account of raw material shortage was due to paucity of funds, failure on the part of the suppliers and general scarcity of vital raw materials like Alcohol, Benzene Toluene and Methanol, etc. and that they were keeping only seven days inventory of critical raw materials.

7.5.2 For production of Malathion(Technical), the Company uses Toluene as the raw material and for the production of DDT(Technical), Benzene and Ethyl Alcohol are raw materials. The excess consumption of raw materials in the production of these products for the six years 1985-86 to 1990-91 is indicated below:-

TABLE-XVIII

Years	Malathion(T)	D.D.T.(Technical)	
	Toluene	Benzene	Ethyle Alcohol
	(KL)	(KL)	(KL)
1985-86	42.70	4.003	80.06
1986-87	16.39	--	134.26
1987-88	29.61	--	137.33
1988-89	28.61	314.10	188.67
1989-90	45.68	651.74	119.07
1990-91	20.33	409.98	12.81
Total KL	183.32	1379.823	672.20
Value (Rs. in lakhs)	13.62	109.18	24.18

The value of total excess consumption for six years was Rs.146.98 lakhs.

The Management stated(April,1988) that higher consumption of Toluene was due to frequent steam fluctuations and efficiency of Ethyl Alcohol had not improved because of the maintenance problems and sudden and frequent breakdowns in the glasslined vessels. The Company had not taken corrective measures to overcome these problems.

7.5.3 **By-products**

Hydrochloric Acid is a by-product during the manufacture of DDT(Tech.) at the ratio of 1.7 tonnes of Hydrochloric Acid to 1 tonne of DDT(T) production.

7.5.4 The following table indicates the production data of DDT(T) and Hydrochloric Acid(HCL) during 1984-85 to 1990-91:

TABLE-XIX

(Qty. in MT)

Year	DDT production	HCL		Shortfall
		As per norms	Actual	
1984-85	3932	6684	4430	2254
1985-86	4003	6805	5572	1233
1986-87	4795	8152	5854	2298
1987-88	4187	7118	6615	503
1988-89	3494	5940	6425	(+)485
1989-90	3133	5326	5063	263
1990-91	3203	5445	4697	748

7.5.5 The Company did not analyse the reasons for shortfall in production of HCL for taking remedial action. The value of shortfall computed at selling prices worked out to Rs.6.27 lakhs during 1984-85 to 1990-91.

7.5.6 During the year 1988-89, the unit not only achieved the norms but recorded an excess production, the reasons for which were not indicated.

7.5.7 The Management stated(April,1988) that shortfall in production of by-products even after modifications was due to frequent stoppage of the plant and purchase of Mono Chloro Benzene from outside.

7.6 **Rejections by NMEP**

DDT, BHC and MAL has to pass certain quality control checks of NMEP before it is released to market. Each batch is tested before release for sale. The batch which does not conform to the prescribed specifications is rejected by NMEP and are re-processed in the factory.

7.7 **Delhi Unit**

7.7.1 The table below indicates the quantity of DDT(Form.) produced by the Delhi Unit, rejected by the NMEP, re-processed quantity and percentage of rejected quantity to production during 1984-1991.

TABLE-XX

(Qty. in MT)

Year	Total Production of DDT (Form)	Qty. Rejected by NMEP during the year	Rejected Qty. re-processed during the year	Percentage of rejection to total production
1984-85	4002	616.00	575.50	15.39
1985-86	1050	283.50	326.00	27.00
1986-87	3771	545.00	545.00	14.45
1987-88	4300	520.50	489.50	12.10
1988-89	3520	516.00	545.00	14.66
1989-90	3852	1094.00	594.00	28.40
1990-91	4109	1105.00	1607.00	26.89

7.7.2 It is seen that the percentage of rejection of DDT (Form.) by NMEP ranged between 12.10 per cent to 28.40 per cent. The rejections were abnormally high during 1985-86, 1989-90 and 1990-91.

7.7.3 For re-bagging of re-processed 4682 MT of DDT(Form.), the Company had to incur an extra expenditure of Rs.8.43 lakhs (approximately) being the cost of new bags required for the same. Besides, there were other items of expenditure such as labour, overheads, etc. for which no separate account is being maintained. The extent of expenditure on re-processing and marketing the reprocessed material, therefore, could not be assessed.

7.8 **Udyogamandal Unit**

The table below gives the particulars of rejections by NMEP during 1984-1991:

TABLE-XXI

(Qty. in MT)

Product	Year	Total Production	Qty. rejected by NMEP during the year	Percentage of Qty. rejected to total production
DDT(Form)	1984-85	1746	419	24.00
	1985-86	1250	827	66.16
	1986-87	1951	437	22.40
	1987-88	1609	582	36.17
	1988-89	1924	1100	57.17
	1989-90	1602	577	36.01
	1990-91	1857	1085	58.43
BHC(Form.)	1984-85	2769	789	28.49
	1985-86	2022	846	41.84
	1986-87	2952	705	23.88
	1987-88	2361	858	36.34
	1988-89	3002	1506	50.17
	1989-90	2801	999	35.66
	1990-91	2534	1830	72.22

It may be seen from the above table that the percentage of rejections increased considerably and was at the peak level in 1985-86 in the case of DDT(Form.) and in 1990-91 in the case of BHC(Form.). the cost of reprocessing of such rejected materials was not worked out by the unit.

As regards high percentage of rejections, the Ministry, during discussions with the Audit Board in October,1991, clarified that the Unit was situated at sea shore where humidity was 90-98 per cent for 8 to 9 months in a year, which affects the quality of product adversely.

In the context of producing DDT, the Ministry assured (October,1991) the Audit Board that it would find out ways and means to improve the quality of product.

7.9 Rasayani Unit

7.9.1 The table below gives the particulars of rejections by NMEP during the year 1984-1991:

TABLE-XXII

(Qty. in MT)

Product	Year	Total production	Qty. rejected by NMEP during the year	Percentage of rejection to total production
DDT(Form.)	1984-85	8179	1664	20.34
	1985-86	7650	1052	13.75
	1986-87	9415	583	6.19
	1987-88	8656	667	7.71
	1988-89	7042	1065	15.12
	1989-90	5802	692	11.93
	1990-91	6216	657	10.57
MAL(F)	1984-85	2903	333	11.47
	1985-86	3289	69	2.10
	1986-87	1484	Nil	Nil
	1987-88	Nil	--	--
	1988-89	927	17	1.83
	1989-90	1684	154	9.14
	1990-91	1096	83	7.57

7.9.2 The rejected material was reprocessed in the Unit alongwith the fresh batches of production. The cost of such processing was not worked out by the Unit separately.

7.9.3 The Management expressed(August,1983) its inability to eliminate the rejections completely, it being part of the process. They further stated that strict checks of raw materials China-Clay, Surfactants used in the formulations to take care of low suspensibility of the product, primary grindings of the products, etc. had been introduced.

7.9.4 The Company had not constituted an effective internal quality control organisation for ensuring that the products released for NMEP conformed to the prescribed standards.

8. MATERIAL MANAGEMENT AND INVENTORY CONTROL

8.1 **Inventory Holdings**

8.1.1 The following table indicates the comparative position of the inventory at the end of the last five years:

TABLE-XXIII

(Rs. in lakhs)

Item	1986-87	1987-88	1988-89	1989-90	1990-91
Raw materials	251.59	218.94	318.45	377.31	238.57
Stores, spares, loose tools excluding goods in transit	299.67	299.71	312.77	338.62	396.55
Packing materials	33.51	34.27	41.97	49.43	49.56
Work in progress	61.50	68.21	95.90	387.21	250.85
Finished products (including by- products)	862.88	668.88	220.65	410.52	546.95
	1509.15	1290.01	989.74	1563.09	1482.48

8.1.2 The stock of raw materials, stores and spares, loose tools and packing materials was equivalent to about 2.36 months' consumption for production requirement in 1990-91 as compared with 3.37 months' in 1989-90 and 3.34 months' in 1988-89.

8.1.3 The goods in process (semi finished) at the end of the 1990-91 represented 14.23 days' value of production at cost (including depreciation) as compared with 26.09 days' in 1989-90 and 6.92 days' in 1988-89.

8.1.4 Finished goods represented 30 days' of sales in 1990-91 as compared with 29 days' in 1989-90 and 15 days in 1988-89.

8.2 In this connection the following points deserve mention:

(a) A review of inventory control system was got carried out by the Company from M/s. Palit & Co. in 1960. Thereafter, no systematic review was done either by the Management or by any outside agency.

b) The Management stated(October,1991) before the Audit Board that the system of automatic replenishment of stores items based on minimum, maximum and re-order levels is in vogue in the units and also that these levels are reviewed by

the Stores Department in consultation with the user departments as and when warranted. However, at Delhi Factory levels were fixed long back in respect of limited number of items of regular consumption only. These have not been reviewed thereafter. Procurement of stores, in actual practice, is done on 'as and when basis'.

8.3 While preparing detailed cost estimates of working capital, the Engineering and Design Organisation envisaged that the stocks of finished products should not exceed one month's sale of the Company. The Board of Directors in their 165th meeting held on 30th May,1985 considered stock of finished goods equivalent to 15 days production as acceptable. The Company had finished product equivalent to 1.02 months' sale at the end of 1989-90 and 1990-91.

8.4 **Delhi Factory**

The details below indicate that the non-moving stores items(which did not move during the last 3 to 4 years) valued at Rs.9.88 lakhs as on 31st March,1982 increased to Rs.31.38 lakhs as on 31st March,1991.

TABLE-XXIV

(Rs. in lakhs)

Particulars	As on 31st March,1982			As on 31st March,1991		
	Less than 3 years	More than 3 years	Total	Less than 3 years	More than 3 years	Total
Inventory General						
1. Indigenous	2.08	4.51	6.59	12.59	16.41	29.00
2. Imported	0.57	2.57	3.14	0.32	1.70	2.02
3. Loose Tools	0.03	0.12	0.15	0.19	0.17	0.36
	2.68	7.20	9.88	13.10	18.28	31.38

The Management stated(March,1983) that these items had become obsolete/surplus due to change in process/ change in main equipment/replacement of the capital equipment.

In their meeting held on 10th January,1985 the Board of Directors had expressed serious concern over the abnormal rise of the inventory and had desired control measures besides analysing the excessive inventory in slow moving, non-moving items and disposing of redundant material. The Unit Management have not taken any action so far(October,1991).

8.5 **Udyogamandal Factory**

8.5.1 The table below shows consumption and closing stock of raw materials during last seven years:

TABLE-XXV

(Rs. in lakhs)

Year	Annual consumption	Closing stock	Percentage of 3 to 2
(1)	(2)	(3)	(4)
1984-85	414.16	152.17	37
1985-86	426.69	224.17	53
1986-87	478.48	125.18	26
1987-88	512.05	114.84	22
1988-89	641.50	144.06	22
1989-90	779.40	206.15	26
1990-91	1218.03	80.21	7

8.5.2 The stock of raw materials as on 31st March,1991 includes 5990 Kgs. of formamide valued at about Rs.0.90 lakh which was originally recommended in NCL technology to be used as stabilizer could not be used as it was not giving the desired result.

8.5.3 **Non-moving General Stores**

The table below shows the non-moving items of general store held in stock at Udyogamandal during the last seven years ended 31st March,1991:

TABLE-XXVI

Year	Number of items	Value (Rs. in lakhs)
1984-85	2251	17.00
1985-86	2273	19.53
1986-87	2354	24.48
1987-88	2441	25.00
1988-89	231	3.61
1989-90	Not assessed	
1990-91	4128	54.10

The Management stated(May,1988) "Action has been taken for disposal of the non-moving items, response to which was poor. Attempts to dispose of the same is taken up vigorously." Though non-moving stores was reduced in 1988-89, it increased substantially in 1990-91.

8.6 **Rasayani Factory**

8.6.1 The following table indicates the comparative position of the Inventory and its distribution at Rasayani at the close of last seven years:-

TABLE-XXVII

(Rs. in lakhs)

Closing stock	1984-85	85-86	86-87	87-88	88-89	89-90	90-91
Raw Materials	66.82	88.62	43.53	69.11	139.71	114.64	105.02
Stores & Spares	87.70	100.50	128.51	132.36	136.09	164.09	142.53
Packing Materials	28.54	27.01	13.36	9.63	15.53	29.71	27.53

8.6.2 The closing stock of various items expressed in terms of monthly consumption is given below:-

TABLE-XXVIII

Closing Stock	1984-85	85-86	86-87	87-88	89-89	89-90	90-91
	(No. of months consumption)						
Raw Materials	0.77	0.92	0.47	0.80	1.67	1.26	0.94
Stores & Spares	11.15	9.34	15.67	9.36	16.51	20.41	16.33
Packing Materials	3.50	3.01	2.28	1.82	2.46	4.37	3.23

8.6.3 Maximum, minimum and ordering levels have not been fixed. There is also no system of fixing issue rates. Only the yearly consumption is arrived at and valued on the basis of the average for the entire year.

9. MANPOWER ANALYSIS

9.1 The table below indicates the expenditure on salaries and wages(including bonus, and other benefits) during the last seven years from 1984-85 to 1990-91:-

TABLE-XXIX

	1984-85	85-86	86-87	87-88	88-89	89-90	90-91
a)No. of employees	2790	2767	2762	2751	2780	2764	2748
b)Salaries & wages (Rs. in lakhs)	719.61	714.90	792.40	924.33	1043.28	1290.32	1590.59
c)Total value of production (Rs. in lakhs)	5140.42	3984.33	5068.43	5366.00	5055.02	5417.66	6436.12
d)Average expenditure per employee (Rs. in lakhs)	0.26	0.26	0.29	0.34	0.38	0.47	0.58
e)Average production per employee (Rs. in lakhs)	1.84	1.44	1.83	1.95	1.82	1.96	2.34
f)Percentage of average expenditure to average production	14	18	16	17	21	24	25

9.2 The percentage of average expenditure to average production per employee has increased steadily from 14 per cent in 1984-85 to 25 per cent in 1990-91.

9.3 The table below compares unit-wise average production per employee for the last seven years ending 31st March,1991:-

TABLE-XXX

(In MT/KL)

Year	Delhi Factory			Udyogamandal Factory			Rasayani Factory		
	Total production	No.of employees	Average production per employee	Total production	No. of employees	Average production per employee	Total Production	No. of employee	Average production per employee
1.	2.	3.	4.	5.	6.	7.	8.	9.	10.
1985	6735	776	8.68	7703	685	11.25	15867	921	17.23
1986	1543	755	2.04	7268	689	10.55	16147	913	17.69
1987	6130	738	8.31	7925	683	11.60	16505	897	18.40
1988	7019	735	9.55	7642	674	11.34	13843	896	15.45
1989	6446	720	8.95	8987	680	13.22	11512	907	12.69
1990	6253	703	8.89	8867	648	13.68	11663	906	12.87
1991	6135	703	8.73	8594	629	13.66	11451	903	12.68

The average production per employee in case of Delhi Factory has remained almost static except during 1985-86 when the production was partially stopped due to renovation work while in case of Rasayani Factory the average production was showing declining trend since 1987-88.

10. MARKETING, SALES, PRICING AND CREDIT CONTROL

10.1 Organisational set-up of Marketing Division

Director(Marketing) is in overall charge of Marketing Division. He is assisted by a Chief Marketing Manager, Chief Sales Manager and Chief Product Development.

Chief Marketing Manager has been assigned the job of export and import and in addition looks after the routine administration of Marketing Division. Overall general and personnel administration with policy decision are being looked after by General Manager(PD) and Secretary of the Company.

Chief Sales Manager looks after the sales of technicals to formulators and also formulations to Government agencies, institutions and private trade.

Chief, Product Development, looks after extension services, products identification, data generation for registration, etc.

10.2 Marketing Policy and Strategies

10.2.1 The Company started its activities in 1954 initially with the sole objective of manufacturing pesticides for meeting the requirement of the Ministry of Health for their National Malaria Eradication Programme(NMEP). Gradually, the Company entered into supplying technical grade pesticides like DDT and BHC to private formulators for sale of the formulated material to agriculture and health programmes. It was only in 1977 that the Company entered into direct sale of agro pesticides to agricultural consumers. At present, the Company has the following span of market:-

(a) Captive Market-supplies to Ministry of Health for NMEP.

(b) Competitive market-agro-pesticides.

(c) (i) Technical grade sale to formulators.

(ii) Formulated pesticides-sale to private traders, Government Departments and Institutions.

(iii) Imports and Exports.

10.2.2 In their export efforts the Company was able to get the first export order for 100 MT of Malathion(Tech.) during 1982-83. It further exported 200 MT of 25 per cent Malathion & 3 MT of Malathion(Tech.) during 1985-86. There were no exports in 1986-87. The table indicates Export Turnover and Foreign Exchange earnings during last five years:-

TABLE-XXXI

(Rs. in lakhs)

Year	Total Turnover	Export Turnover	Percentage of Export Turnover to Total Turnover	Earnings in Foreign Exchange (F O B basis)
1986-87	4790	Nil	--	--
1987-88	5553	182	3.28	37
1988-89	5476	176	3.21	166
1989-90	4936	113	2.29	111
1990-91	6436	119	1.85	117

The products exported are Endosulfan(Tech.), DDT 75 per cent WDP, Malathion 50 per cent WDP and Malathion 57 per cent EC. Export of Endosulfan(Tech.) was mainly to European countries viz. West Germany, Belgium, Mexico, Greece and France and of Malathion(Tech.) to Nicaragua, Nepal, Senegal and WHO for Sri Lanka. The profitability or otherwise in export transactions has not been separately worked out by the Company.

10.3 **Pricing of the products**

The products can be classified into four categories for the purpose of pricing-(i) supplies to NMEP (ii) Technical grade Pesticides and other Agro-Pesticides, (iii) Export products and (iv) By-products.

10.3.1 **Pricing of supplies to NMEP**

The prices of NMEP supplies are determined by the Cost Accounts Branch of the Ministry of Finance every year. The Cost Accounts Branch allows 12 per cent post tax return on net worth while determining the prices. The capital employed is calculated with reference to the net fixed assets of the plant and a normative working capital calculated with reference to the actual working capital employed. The total capital employed is divided into debt and equity portion in the ratio of the overall debt equity ratio of the Company. On equity portion a return of 12 per cent post tax is provided whereas on the debt portion interest is provided at the actual rate being paid to the bankers and the Government. While calculating cost of production, a

normative capacity utilisation of 90 per cent is assumed without taking into account the age of the plant(Delhi plant is operating from 1954 and the Udyogamandal plant from 1958-59) or the full interest to be paid on cash credit arrangements due to large outstandings from Ministry of Health(Rs.33.86 crores on 31.3.1991). Norms for consumption of raw-materials should also be realistic keeping in view the age of the plant. It appears from the discussions between the Ministry and the Audit Board that there is a good case for review of the norms adopted for fixing fair price of insecticides for the N.M.E.P. The present situation appears to provide a hidden subsidy to N.M.E.P. not reflected in the Budget of the Ministry of Health & Family Welfare.

10.3.2 **Technical grade pesticides and other agro pesticides**

The prices of technical grade pesticides and other agro-pesticides for agriculture are determined with reference to the cost of production and the prices of similar products marketed by the competitors. The prices are reviewed from time to time based on the prevailing market prices and cost of production.

10.3.3 **Export products**

The prices of export products are determined with reference to the cost of production, the international ruling price and policy for the development of exports. In case of stiff international competition and availability of export surplus in our country for a product, marginal costing techniques are also applied for pricing.

10.3.4 **By-products**

The pricing of by-products is done on the basis of the ruling market price because the cost of production is not separately ascertained for the by-products.

10.3.5 **Cost of production vs. fair prices fixed by the Govt.**

Company's product-wise(main products) comparison of actual cost of production with the fair prices fixed by the Government of India is given hereunder:-

TABLE-XXXII

(Rs./MT)

PRODUCT

(i)DDT(Tech.)

Year	Fair Price	Actual cost of Production		
		Delhi Unit	Udyogamandal Unit	Rasayani Unit
1984-85	26950	23700	29464	26876
1985-86	26950	68650	36097	28212
1986-87	33800	31840	31724	27069
1987-88	33800	33230	36887	32742
1988-89	37300	34970	34169	40929
1989-90	37300	42550	37391	45949
1990-91	N.A.	51490	45779	44730

(ii)DDT(Form.)

1984-85	18790	18720	20554	18817
1985-86	20801	45090	26401	19988
1986-87	22560	24510	22143	19719
1987-88	24273	25320	26665	28323
1988-89	26312	27250	25362	28298
1989-90	27628	31620	28552	34644
1990-91	29009 (Provisional)	37360	32846	33698

(iii)BHC(Tech.) BHC(Form.)

(Being produced at Udyogamandal Unit only)

Year	Fair Price	Cost of production	Fair Price	Cost of production
1984-85	7500	9955	7951	9373
1985-86	7500	9260	9026	9862
1986-87	8100	11515	9243	10485
1987-88	9365	12542	10110	11879
1988-89	10225	11530	10788	11289
1989-90	10240	12712	11327	12218
1990-91	10300	13287	11327	13134

(iv)Malathion(Tech.) Malathion(Form.)

(Being produced at Rasayani Unit only)

Year	Fair Price	Cost of production	Fair Price	Cost of production
1984-85	36603	39348	20659	18338
1985-86	41756	40213	23655	19341
1986-87	44446	39619	21718	21437
1987-88	39340	50203	20685	No Production
1988-89	48419	63048	19800	28054
1989-90	50840	66472	19800	26610
1990-91	50840	79500	19800	32046

The fair prices fixed by the Government were less than the corresponding cost of production because ground realities were not considered during price-fixation. This resulted in a hidden subsidy by the Company to the Ministry of Health. The expenditure incurred by the Government on NMEP is, to that extent, understated. It is suggested that such hidden subsidies should be discontinued by fixing the correct price of insecticides supplied by the Company for NMEP.

The whole process of price fixation takes a considerable long time because the process starts only after the finalisation of annual accounts of the Company and thereafter takes more than a year. The Company gets price difference only after the issue of the final prices and in the meantime a substantial amount remains blocked creating liquidity problems for the Company.

10.3.6 Some quantities of DDT(Tech.) and BHC(Tech.) were sold to private parties. The table below compares the selling prices of these products with actual cost of production in the Udyogamandal unit during 1984-1991.

TABLE-XXXIII

(Rs./MT)

Year	Cost of Production	Selling Price
1.DDT(Tech.)		
1984-85	29464	26950
1985-86	36097	26950
1986-87	31724	33800
1987-88	36887	33800
1988-89	34169	37300
1989-90) 1990-91)	No sale of Tech. DDT as use of DDT in agriculture is banned.	
ii)BHC(Tech.)		
1984-85	9955	7500
1985-86	9260	7500
1986-87	11515	8100
1987-88	12542	9365
1988-89	11530	10225
1989-90	12712	10240
1990-91	13287	10300

The Management stated(September,1988) that the selling price of DDT(Tech.) is fixed considering the weighted average cost of production in all the three factories of the Company.

The Management also stated that BHC(Tech.) was sold at a price lower than cost of production with a view to expanding its market and to utilise the surplus capacity of BHC(Tech) with a view to reducing cost of production.

10.4 **Overall sales performance**

10.4.1 The table below indicates the estimated sales of the Company during the period from 1984-85 to 1990-91 and actual sales there-against:

TABLE-XXXIV

Year	Original estimates	Revised estimates	Actuals	Percentage of revised estimates to original estimates	Percentage of actuals to original estimates	Percentage of actuals to revised estimates
	(Rs. in lakhs)					
1984-85	5954.74	5423.42	5268.40	91.08	88.47	97.14
1985-86	6350.31	*	3887.84	--	61.22	--
1986-87	5694.11	*	4789.55	--	84.11	--
1987-88	6659.05	6049.60	5553.29	90.85	83.39	91.80
1988-89	7008.37	6533.50	5475.56	93.22	78.13	83.81
1989-90	8651.30	6557.09	4936.49	75.79	57.06	75.28
1990-91	9754.03	6909.74	6436.04	70.84	65.98	93.14

* For 1985-86, the Company did not prepare revised estimates.

It will be seen that the original estimates of sales had been revised downwards in all the years, the percentage of revised estimates to original estimates varied between 70.84 and 93.22. Ministry stated(September,1990) that the sales targets were revised keeping in view the demand, agro-climatic conditions prevailing during the year and availability of materials from production for sales.

Even the revised estimates of sales were not achieved in any of the years. The percentage of actual sales to original varied between 57.06 and 88.47 and to revised estimates between 75.28 and 97.14 during all these years.

10.4.2 **Break-up of sales**

The break-up of the sales into supplies to NMEP and other parties is indicated below:-

TABLE-XXXV

(Rs. in lakhs)

Year	Total sales excluding By-Products	Supplies to NMEP	Other sales	Percentage of NMEP sales to total sales	Percentage of other sales to to total sales
1980-81	1987.99	890.25	1097.74	44.78	55.22
1981-82	2887.55	1978.75	908.80	68.53	31.47
1982-83	3878.98	2946.00	932.98	75.95	24.05
1983-84	5573.24	2879.00	2694.24	51.66	48.34
1984-85	5212.03	3548.00	1664.03	68.07	31.93
1985-86	3834.31	2802.00	1032.31	73.08	26.92
1986-87	4716.32	3668.15	1048.17	77.78	22.22
1987-88	5476.60	4083.21	1393.39	74.56	25.44
1988-89	5384.95	4332.00	1052.95	80.45	19.55
1989-90	4838.59	4041.00	797.59	83.52	16.48
1990-91	6351.64	4572.00	1779.64	71.98	28.02

Supplies to NMEP are the assured sales of the Company. Sales of By-Products is made directly by factories where other sales depends upon the efforts made by the Marketing Wing. However, it would be seen from the above table that while the NMEP sales showed an upward trend from 44.78 per cent in 1980-81 to 83.52 per cent in 1989-90, other sales showed a declining trend from 55.22 per cent in 1980-81 to 16.48 per cent in 1989-90.

10.5 **Unit-wise sales performance**

10.5.1 Delhi Factory

The sales performance of the Delhi Factory with the targets of sales fixed for the year 1981-82 to 1990-91, are indicated in the table below:-

TABLE-XXXVI

(Rs. in lakhs)

Year	DDT(Tech.)		DDT(Form.)	
	Revised Budget Esti-mates	Actual	Revised Budget Estimates	Actual
1981-82	*	125.29	733.04	869.92
1982-83	153.99	103.14	910.58	883.45
1983-84	180.83	182.27	605.17	555.66
1984-85	154.55	102.70	698.84	732.07
1985-86	30.37	13.06	172.90	257.05
1986-87	N.A.	72.29	N.A.	784.26
1987-88	27.04	101.00	1165.00	1146.28
1988-89	18.02	93.18	1021.94	1019.84
1989-90	18.65	Banned	1215.94	1016.04
1990-91	----Banned---------		1568.00	1437.47

*Unit-wise budget estimates were not fixed.

It is seen that sales targets could be achieved in the case of DDT(Tech.) only in the years 1983-84, 1987-88 and 1988-89 and for DDT(Form.) in the years 1981-82, 1984-85 and 1985-86. The targets for 1985-86 were kept exceptionally low due to abnormal conditions like renovation, stoppage of supply of chlorine, etc.

10.5.2 Rasayani Factory

The overall sales targets are set by the Company for each annual budget period and the anticipated sale figures are reflected in the budget for the year. It may be stated that the production of DDT(Tech.) is primarily for captive consumption in DDT(Form.) Plant. The sales target fixed by the Company for each of their products and the actual achievements are given in the table below:-

TABLE-XXXVII

(Qty. in MT and Value Rs. in lakhs)

Product / Year	Original Targets		Revised Estimates		Actual		Shortfall w.r.t. revised targets	
	Qty.	Value	Qty.	Value	Qty.	Value	Qty.	Value
Malathion(Tech.)								
1984-85	N.A.	31.00	59.00	22.24	205.75	68.78	--	--
1985-86	550	207.35	208.15	78.47	290.00	109.60	--	--
1986-87	205	82.00	70.00	--	31.25	11.83	38.75	--
1987-88	400	--	100.00	37.70	621.75	186.96	--	--
1988-89	400	150.80	100.00	40.50	189.67	63.34	--	--
1989-90	450	216.00	350.00	171.50	144.00	65.58	206	105.92
1990-91	150	73.50	27.00	13.87	17.00	9.39	10	4.48
Malathion(Form.)								
1984-85	6800	1288.19	3000	621.39	3260	675.24	--	--
1985-86	6000	1242.78	4200	907.20	2735	600.00	1465	307.20
1986-87	4800	1036.80	3200	N.A.	533	108.96	--	--
1987-88	3200	--	900	212.96	1135	244.71	--	--
1988-89	2800	728.00	1100	220.00	1285	265.67	--	--
1989-90	2800	616.00	2400	576.00	1776	467.71	624	108.29
1990-91	2800	700.00	1300	325.00	1126	287.13	174	37.87
DDT(Form.)								
1984-85	4500	833.31	7500	1355.33	8107	1464.93	--	--
1985-86	10000	1807.10	8337	1601.62	7322	1497.19	1015.00	104.43
1986-87	10100	1921.10	10100	2118.74	9840	2181.53	260	--
1987-88	9200	--	9000	2097.00	7555	2042.86	1445.00	54.14
1988-89	9000	2295.00	9300	2568.66	8090	2297.56	1210.00	271.10
1989-90	9000	2421.90	8500	2487.95	5721	1736.57	2779.00	751.38
1990-91	9000	2666.00	6800	2176.00	6338	1964.76	462	211.24

The revised targets for DDT(Form.) had exceeded the original targets in 1984-85 because the original target was unrealistically low.

10.6 **Distribution**

Hindustan Insecticides Limited entered the market of agro-pesticides in 1977-78 through Agro-Industries and Marketing Federations as its distributors. During 1980-81, the Company received a set back in their sales due to their heavy dependence for marketing on Agro-Industries and Marketing Federations who developed their own formulation facilities. The Company, therefore, started appointing private dealers and distributors. For the sale of agriculture pesticides to end user, the Company has now a network of distributors and dealers. The number of distributors and dealers during the period from 1984-85 to 1990-91 and the quantity sold during these years are tabulated below:-

TABLE-XXXVIII

Year	No. of distri-butors	No. of dealers	Sales in open market (Rs. in lakhs)	Percentage of decrease (-)/increase(+) in No. of dealers/distri-butorsover the year 1984-85	Percentage of increase(+)/ decrease(-) in the sales over the year 1984-85
1984-85	10	285	1664.03	--	--
1985-86	10	350	1032.31	23	(-)37.96
1986-87	10	500	1048.17	73	(-)37.01
1987-88	11	516	1393.39	81	(-)16.26
1988-89	11	528	1052.95	83	(-)36.72
1989-90	11	850	797.59	192	(-)52.07
1990-91	11	905	1779.64	211	(+)6.95

It would, thus, be seen from the table that the increase in numbers of dealers/distributors from year to year did not result in significant increase in turnover which in fact declined till 1989-90.

10.7 **Credit Policy**

10.7.1 **NMEP Sales**

The terms of sales under NMEP to the Ministry of Health stipulate 98 per cent immediate payment after inspection and proof of despatch and 2 per cent subsequent payment on confirmation of receipt of consignment from the consignee. Cash rebate of 1 per cent allowed upto 31st March,1987 by the Hindustan Insecticides Limited if the balance of 2 per cent payment was released within 15 days of the submission of the bill.

10.7.2 **Agro-Pesticides**

The parties are required to deposit 10 per cent advance for the quantities required to be purchased by them. For the remaining 90 per cent, the despatch documents are sent through Bank for collection before the same are handed over to the party for the retirement of the goods. However, credit to the extent of 30 to 60 days is extended to the State Agro-Industries Corporations and other public sector institutions depending upon the market conditions for a particular product from time to time.

10.8 **Sundry debtors and turnover**

10.8.1 The following table indicates the volume of book debts vis-a-vis sales for the last ten years ending 31st March, 1991:-

TABLE-XXXIX

(Rs. in lakhs)

As on 31st March	Considered good	Considered doubtful	Total	Sales	Percentage of debtors to sales
1982	687.27	0.09	687.36	2927.85	23.48
1983	1480.54	7.02	1487.56	3936.49	37.79
1984	1449.52	7.32	1456.84	5631.59	25.87
1985	1623.39	8.52	1631.91	5268.40	30.98
1986	1239.09	9.40	1248.49	3887.84	32.11
1987	2337.78	35.13	2372.91	4789.55	49.55
1988	3012.54	21.71	3034.25	5553.29	54.64
1989	3309.40	21.17	3330.57	5475.56	60.83
1990	4260.88	18.73	4279.61	4936.49	86.69
1991	3647.66	205.17	3852.83	6436.04	59.86

The Sundry Debtors represented sales of 2.8 months' in 1981-82, 4.5 months' in 1982-83, 3.10 months' in 1983-84, 3.72 months' in 1984-85, 3.85 months' in 1985-86, 5.94 months' in 1986-87, 6.56 months' in 1987-88, 7.3 months' in 1988-89, 10.40 months' in 1989-90 and 7.18 months' in 1990-91. It would be seen that the quantum of Sundry Debtors had shown a sharp increase during 1982-83 and marginal decrease during 1983-84. These again went up during 1984-85. During 1985-86 both the sales and sundry debtors decreased considerably, but even than the quantum of sundry debtors in terms of month's sale was higher than that of 1983-84 and 1984-85. During 1986-87 to 1989-90, sundry debtors increased continuously but decreased in 1990-91.

The following table indicates the age-wise position of outstanding debts as on 31st March,each year from 1984 to 1991.

TABLE-XL

(Rs. in lakhs)

Year ended	Debts outstanding for more than one year but less than two years		Debts outstanding for more than two years but less than 3 years		Debts outstanding for more than 3 years	
	Govt. Deptts.	Other Private parties	Govt. Deptts.	Other Private parties	Govt. Deptts.	Other Private parties
31.3.1984	253.22	1.33	245.31	9.03	73.17	1.71
31.3.1985	N.A.	N.A.	78.34	N.A.	N.A.	N.A.
31.3.1986	94.26	24.99	78.34	8.53	349.78	64.39
31.3.1987	189.85	2.06	77.06	1.05	340.44	1.65
31.3.1988	451.40	33.48	25.93	7.68	432.71	16.13
31.3.1989	494.05	0.30	200.77	0.07	182.47	9.76
31.3.1990	656.19	26.95	465.97	0.30	363.24	9.83
31.3.1991	737.26	5.24	612.55	4.02	1087.24	104.56

The above figures indicate that the amount of debts outstanding for more than 3 years in respect of Government Departments increased from Rs.73.17 lakhs as on 31.3.1984 to Rs.1087.24 lakhs as on 31st March,1991. In the case of private parties the corresponding figure increased from Rs.1.71 lakhs to Rs.104.56 lakhs. While the debts from Government Departments might be considered good, all the debts from private parties cannot be considered good.

Out of the dues of Rs.36.25 crores outstanding against Government Departments as on 31st March,1991, an amount of Rs.33.86 crores was due to be received from the Ministry of Health. When the Audit Board enquired whether the matter regarding delay in payment of outstanding debts by the Ministry of Health had ever been taken up by the Ministry at the level of Committee of Secretaries, it was stated by the Ministry that the matter was being sorted out at the level of Secretaries.

10.8.2 **Delhi Factory**

The table below indicates the position of book debts in relation to the sales for the seven years from 1984-85 to 1990-91:-

TABLE- XLI

(Rs. in lakhs)

Year	Total Book Debts	Sales	Book debts in terms of number of months' sales
1984-85	430.34	868.18	5.95
1985-86	290.02	289.56	12.02
1986-87	492.29	909.75	6.49
1987-88	767.15	1291.39	7.13
1988-89	907.61	1160.81	9.38
1989-90	1131.17	1087.43	12.48
1990-91	1066.06	1456.62	8.78

It would be seen that the book debts in terms of monthly sales have been varying from year to year. During 1984-85 these represented 5.95 months' sale but at the end of 1989-90 these rose to 12.48 months' sale. The Management stated(October, 1987) that the ratio of book debts to sales rose due to late communication of annual final prices and consequential delay in realisation of debts. The delay in collection of debts has resulted in increased interest charges paid by the Company on cash credit.

10.8.3 **Udyogamandal Factory**

The table below indicates the position of book debts in relation to sales for the seven years from 1984-85 to 1990-91:-

TABLE- XLII

(Rs. in lakhs)

Year	Book Debts	Sales	Book debts in terms of No. of months' sale
1984-85	324.86	586.58	6.6
1985-86	366.71	516.55	8.5
1986-87	441.08	727.01	7.3
1987-88	577.72	802.44	8.6
1988-89	689.21	926.19	8.9
1989-90	867.75	881.59	11.8
1990-91	683.80	1008.98	8.13

The Management stated (September,1988) that fixation of prices by Cost Accounts Branch took about two years time. For true and fair presentation of financial results of the Company, prices were worked out by the Company considering the same parameters as were adopted by the Cost Accounts Branch. The accounts were finalised based on the prices adopted by the Company Difference in selling prices and billed price for the year got reflected in sales value and book debts. Book debts as shown in the books as on the closing day of the year couldn't be claimed from NMEP until Cost Accounts Branch finally fixed the price due to which book debts were slightly on the higher side.

The fact remains that outstanding debts in terms of month's sale has remained equivalent to more than 6 months' sale during all the years.

10.8.4 **Rasayani Factory**

a) The table below indicates the position of book debts in relation to the sales for the seven years from 1984-85 to 1990-91:-

TABLE-XLIII

(Rs. in lakhs)

Year	Total book debts	Sales	Percentage of debtors to sales
1984-85	476.88	2467.14	19.33
1985-86	569.43	2280.79	24.97
1986-87	1128.92	2351.14	48.02
1987-88	1493.44	2624.99	56.89
1988-89	1587.56	2679.82	59.24
1989-90	1934.82	2325.82	83.19
1990-91	1665.99	2321.91	71.75

The year-wise break up of outstandings as at the end of 31st March,1991 was as under:-

	(Rs. in lakhs)
More than 3 years	472.37
2 to 3 years	188.11
1 to 2 years	367.76
Less than one year	637.75

The Management stated(April,1988) that percentage of debtors to sales at the end of each year was more because the annual accounts were finalised on the basis of provisional prices fixed by the Government.

b) **NMEP Sales**

It is seen that the Company has not so far (March,1991) raised bills amounting to Rs.36.82 lakhs towards the 2 per cent residual payment of the sales made from 1980-81 upto March,1991.

Though in a meeting, consisting of representatives of the Ministry of Health, NMEP and the Company, held on 26th September,1986 it was decided that balance 2 per cent would become payable within 90 days if the consignees did not produce the receipt by that time despite three registered reminders, it is not clear why the Company could not claim Rs.36.82 lakhs.

11. COSTING SYSTEM

11.1 The Company has not introduced a full-fledged costing system. The Company follows process costing in order to arrive at the cost of production.

11.2 The cost of production of different products is not worked out periodically with reference to cost data available. At factories the annual cost sheet are compiled from the financial books on completion of accounting period. The raw materials including process raw materials DDT(Technical) and packing materials and handling charges are charged on the basis of actual consumption at various process centres. Other expenses are apportioned. In the case of agro-pesticides, the direct material and labour cost and the actual cost of packing material used for them are charged.

11.3 The ratio of apportionment of cost of utilities (Water, Power and Steam), Salaries and Wages, Repairs and Maintenance & other over-heads of each factory is, however, different. The Management stated(February,1985) "Over the past two decades the constant variations in input cost even on a short term basis have, for evident reasons, made the standard costing system an uncertain management tool."

12. FINANCIAL POSITION, WORKING RESULTS AND BUDGETORY CONTROL

12.1 Financial position

The following table indicates the financial position of the Company for the seven years ending 31st March,1991.

TABLE-XLIV

(Rs. in lakhs)

	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91
Liabilities:							
a) Paid-up capital(including amount received from Govt. of India for issue of shares)	2393.24	2568.24	2843.24	3243.24	3468.24	3655.24	3655.24
b) Reserves & Surplus	432.05	461.45	463.24	345.98	307.83	289.62	79.33
c) Borrowings:							
i. From Govt. of India	2383.96	2677.72	2976.83	3475.22	3824.68	4409.71	5311.59
ii.From Bank of Baroda	156.17	442.69	939.68	662.92	52.84	1367.70	642.61
d) Trade dues and other current liabilities (including provisions)	1345.91	961.15	1287.55	1589.44	1962.50	2227.01	2372.58
TOTAL:	6711.33	7111.25	8510.54	9316.80	9616.09	11949.28	12061.35
Assets:							
a) Gross Block	3555.05	3796.48	3882.11	4008.77	4278.41	4320.42	7176.44
b) Less: Depreciation	(-)1670.56	(-)2062.39	(-)2416.21	(-)2719.01	(-)3003.95	(-)3224.63	(-)3417.77
c) Net Block	1884.49	1734.09	1465.90	1289.76	1274.46	1095.79	3758.67
d) Capital Work-in-Progress	1279.67	1523.67	1786.74	2362.29	2737.11	3207.60	398.99
e) Investments	151.50	151.50	151.50	181.86	181.86	181.86	181.86
f) Current Assets, Loans & Advances	3360.32	3240.95	4676.94	5193.13	5187.33	7052.76	6391.43
g) Miscellaneous Expenditure	2.54	2.54	9.59	6.74	26.62	59.98	250.70
h) Profit & Loss Account	32.81	458.50	419.87	283.02	208.71	351.29	1079.70
TOTAL:	6711.33	7111.25	8510.54	9316.80	9616.09	11949.28	12061.35
Capital employed	3972.99	4102.91	4958.37	5007.67	4634.40	6066.76	7933.47
Net Worth	2789.94	2568.65	2877.02	3299.46	3540.75	3533.59	2404.17

Note: i) Capital employed represents net fixed assets plus working capital.
ii) Net Worth represents paid-up capital plus reserves less intangible assets.

12.2 **Working results**

The working results of the Company for the last seven years(1984-85 to 1990-91) are given below:

TABLE- XLV

(Rs. in lakhs)

	1984-85	1985-86	1986-87	1987-88	1988-89	1989-90	1990-91
A. INCOME							
Sales	5268.40	3887.84	4789.55	5553.29	5475.56	4936.49	6436.04
Other Income	24.07	34.80	28.85	33.64	61.30	86.12	89.48
TOTAL:	5292.47	3922.64	4818.40	5586.93	5536.86	5022.61	6525.52
B. EXPENDITURE							
Salaries & Wages	719.61	714.90	792.40	924.33	1043.28	1290.32	1590.59
Cost of raw materials & manufacturing expenses	3477.72	2563.13	2990.07	3669.78	3512.92	2982.86	4467.87
Cost of Packing Materials	172.09	161.52	140.00	157.61	177.33	203.57	228.98
Overheads	242.18	254.81	269.87	311.64	298.63	283.19	568.64
Interest on Loan	251.27	213.14	254.77	298.56	284.01	305.11	419.50
	4862.87	3907.50	4447.11	5361.92	5316.17	5065.05	7275.58
C. NON CASH CHARGES							
Depreciation	370.36	390.97	351.86	303.23	271.98	221.34	201.14
Total Expenditure(B+C)	5233.23	4298.47	4798.97	5665.15	5588.15	5286.39	7476.72
D. Adjustment on account of Investment Allowance Reserve	10.58	34.69	12.33	--	9.41	4.06	--
TOTAL(B+C+D)	5243.81	4333.16	4811.30	5665.15	5597.56	5290.45	7476.72
Profit(+)/Loss(-) for the year	(+)48.66	(-)410.52	(+)7.10	(-)78.22	(-)60.70	(-)267.84	(-)951.20
Add(+)/Deduct(-) prior period adjustment	(-)28.16	(-)20.46	(+)20.99	(+)97.81	(+)87.45	(+)102.99	(+)12.50
Profit(+)/Loss(-) before tax	(+)20.50	(-)430.98	(+)28.09	(+)19.59	(+)26.75	(-)164.85	(-)938.70
Tax Provision	--	--	--	--	--	--	--
Profit(+)/Loss(-) after Tax	(+)20.50	(-)430.98	(+)28.09	(+)19.59	(+)26.75	(-)164.85	(-)938.70
Percentage of Profit/Loss before tax to:							
Sales	0.39	(11.09)	0.58	0.35	0.49	(3.34)	(14.59)
Gross Block	0.58	(11.35)	0.72	0.49	0.63	(3.82)	(13.08)
Capital employed	0.52	(10.50)	0.57	0.39	0.58	(2.72)	(11.83)
Net Worth	0.73	(16.78)	0.97	0.59	0.76	(4.67)	(39.04)
Equity Capital	0.86	(16.78)	0.98	0.60	0.77	(4.51)	(25.68)

12.3 The profit/loss shown under para 12.2 should be viewed in the light of observations of Statutory Auditors' on the accounts of the Company each year, which have a direct impact on profit/loss of the Company for that year. Some of the major observations of the Statutory Auditors' affecting profitability of the Company are given below:-

(i) Endosulfan Technical Project capitalised at total cost of Rs.24.33 crores(including Rs.12.49 crores of revenue expenditure). But depreciation has been provided only on Rs.2.24 crores. Thus, accumulated loss has been understated by Rs.12.49 crores, besides short provision of depreciation. Capitalised value includes discarded equipment valued at Rs.122.15 lakhs; overvaluation of closing stock of finished goods and work in progress by Rs.34.35 lakhs; Receivable from NMEP overstated by Rs.6.91 crores(Paras 2(e)(i),(v) and (vii) of Auditors' Report for 1990-91).

(ii) Sundry Debtors include Rs.9.69 crores due from NMEP being difference between final prices and adopted prices, Rs.3.83 crores disputed by NMEP, overvaluation of closing stock by Rs.61.37 lakhs(Paras3(i), (ii) and 2(i) of Auditors' Report 1989-90).

(iii) The Company had not provided for doubtful debts (Rs.301.62 lakhs); difference between final prices accepted by NMEP over adopted prices (Rs.206.60 lakhs); shortage of raw material(Rs.3.23 lakhs) & packing materials(Rs.1.58 lakhs), overvaluation of work-in-progress by revenue expenditure (Rs.223.74 lakhs) and closing stock by including financing charges, Head Office expenses and marketing expenses (Rs.7.93 lakhs);(Paras 2,9,10,14 and 20 of Auditors' Report for 1988-89).

(iv) The Company had not provided for doubtful debts and loans and advances amounting to Rs.431.77 lakhs towards fuel charges payable to Delhi Electric Supply Undertaking on the basis of ascertainable rates, overstated capital work-in-progress by revenue expenditure of Rs.268.14 lakhs, profit and debtors by Rs.206.60 lakhs due to non accountal of final prices fixed

by NMEP and closing stock of work-in-progress by Rs.11.73 lakhs(Paras 2, 9, 10 and 17 of Auditors' Report for 1987-88).

(v) The Company had not provided depreciation(Rs.12 lakhs); possible loss from Southern Pesticides Corporation Limited (SPEC); Inclusion of revenue expenditure of Rs.257.76 lakhs on Endosulfan Technical Plant in capital work-in-progress; Rs.216.43 lakhs being the higher prices adopted by the NMEP for the year 1986-87, Rs.206.60 lakhs being difference between the final prices of NMEP fixed by Government and prices adopted by the Company in the accounts for the year 1981-82, 1983-84 and 1984-85; Rs.79.28 lakhs on account of irrecoverable advances; Rs.14.61 lakhs on account of penal interest payable to Steel Authority of India, etc.(Paras 2(ii) to (xvi) of Auditors' Report for 1986-87).

(vi) The net loss for the year 1985-86 has been understated by Rs.544.43 lakhs due to (i) non-accountal of loss of Rs.206.60 lakhs being the difference of final prices and prices adopted by the Company for the supplies made to NMEP during 1981-82, 1983-84 and 1984-85(ii) Rs.200.65 lakhs due to adoption of higher price than the provisional price fixed for supplies made to NMEP for 1985-86, (iii) non provision of Rs.48.94 lakhs doubtful debts and others(iv) capitalisation of revenue expenditure of Rs.46.40 lakhs and change in practice of allocation of common expenses of Rs.41.84 lakhs(Paras d(b),(c),(d),(e),(f) and (g) of Auditors' Report for 1985-86).

(vii) The net loss for the year 1984-85 has been understated by Rs.334.18 lakhs due to (i) non-provision of Rs.315.53 lakhs on account of lower tentative prices/provisional prices over adopted prices for the supply made to NMEP during 1982-83, 1983-84 and 1984-85 and (ii) non-provision of liability to the extent of Rs.18.65 lakhs (Paras d(b), (c), (d) and (f) of Auditors' Report for 1984-85).

12.4 **Inter unit comparison of profitability**

The table below indicates profit, net profit, turnover and percentage of net profit to turnover in respect of Delhi, Udyogamandal and Rasayani factories for the period from 1987-88 to 1990-91:-

TABLE- XLVI

(Rs. in lakhs)

	1987-88	1988-89	1989-90	1990-91
i)Profit(+)/Loss(-) as per accounts				
Delhi Factory	(+)90.75	(+) 78.89	(-) 3.62	(-)219.91
Udyogamandal Factory	(-)28.77	(+)108.66	(+)81.15	(-)15.92
Rasayani Factory	(+) 7.39	(+)105.84	(-)209.52	(-)352.74
(ii) Net Profit(+)/Loss(-) (After prior period adjustment, extra oridinary items and write back of development rebate reserve and provision for income tax, etc.)				
Delhi Factory	(+)97.40	(+)101.98	(-) 5.50	(-)216.19
Udyogamandal Factory	(-) 5.25	(+)123.16	(+)78.90	(-)19.09
Rasayani Factory	(+)52.12	(-)68.60	(-)204.90	(-)337.46
(iii) Turnover				
Delhi Factory	1291.39	1160.73	1087.44	1456.63
Udyogamandal Factory	802.43	926.19	881.59	1008.78
Rasayani Factory	2624.99	2679.82	2325.82	2321.91
(iv) Percentage of Net Profit/ Loss to Turnover				
Delhi Factory	(+)7.54	(+)8.79	(-)0.51	(-)14.84
Udyogamandal Factory	(-)0.65	(+)13.30	(+)8.95	(-)1.89
Rasayani Factory	(+)1.99	(-)2.56	(-)8.81	(-)14.53

(a) The profitability of the Delhi Factory has shown a declining level after 1988-89. The Unit has earned net profit of Rs.97.40 lakhs and Rs.101.98 lakhs in 1987-88 and 1988-89 respectively and thereafter suffered losses of Rs.5.50 lakhs and Rs.216.19 lakhs in the years 1989-90 and 1990-91.

(b) The Udyogamandal Factory has suffered loss of Rs.5.25 lakhs in 1987-88 and thereafter earned net profit of Rs.123.16 lakhs in 1988-89 and Rs.78.90 lakhs in 1989-90. The Unit has again suffered loss of Rs.19.09 lakhs in 1990-91.

(c) The Rasayani unit has earned net profit of Rs.52.12 lakhs in 1987-88 and thereafter suffered a loss of Rs.68.60 lakhs, Rs.204.90 lakhs and Rs.337.46 lakhs in the years 1988-89, 1989-90 and 1990-91 respectively.

The set back in the working results of the units during 1989-90 and 1990-91 was mainly due to under-utilisation of capacity of the plants as discussed vide paragraphs 7.3.1, 7.4.1 and 7.5.1.

12.5 Budgetory control

12.5.1 Although the Bureau of Public Enterprises had issued instructions in March,1968 for compiling a Comprehensive Budget Manual, neither has any Manual been compiled nor have responsibility-cum-cost-control centres been established. The budgets are compiled by the Company on the basis of historical data and information collected from the units. The budgets are not being prepared in the proforma prescribed by the Bureau of Public Enterprises.

12.5.2 It was also suggested by the B.P.E. that the profit and loss account and balance sheet should be prepared every quarter and placed before the Board of Directors for their perusal. This is also not being done. The effectiveness of the system of budgetory control in the organisation, therefore, leaves much to be desired.

13. INTERNAL AUDIT

13.1 In pursuance of the decision taken by Board of Directors in the 51st meeting held in November,1964 Internal Audit Cells headed by an Internal Auditor and consisting of an Upper Division Clerk and a Stock Verifier were set up at Delhi and Udyogamandal units in 1966-67. Till 6th May,1978 the Internal Auditor was working under the overall control of Financial Controller. Thereafter, the Internal Audit Officers heading Delhi, Rasayani and Udyogamandal Units were required to report to the Director(Finance) through Chief(Finance). The internal audit of Head Office also was conducted by the Internal Audit Officer of Delhi Unit. A post of Internal Audit Manager at Head Office, was created in July,1985 to coordinate the internal audit work of all the units and offices. It was vacant uptill March,1988 and was filled in with effect from 28th April,1988. The internal audit of Regional Sales Offices was being conducted by the Chartered Accountant appointed by the Company upto 1987-88 and thereafter, was being done departmentally.

13.2 The Committee on Public Undertakings in their Fifteenth Report(Fourth Lok Sabha-April,1968) on Financial Management of Public Undertakings recommended that the function of Internal Audit should include a critical review of the system, procedures and operations, as a whole, rather than merely of accounting work. The Ministry of Finance(Bureau of Public Enterprises) while accepting the above recommendation, directed the public enterprises vide their office memo. No.46/Adv.F/BPE/68/13 dated 12th september,1968 to introduce such a system. No such review of overall performance was conducted till 1987. However, as a part of Internal Audit programme, evaluation of existing policies & systems, etc. is being made since 1988-89 and comments/ suggestions wherever felt necessary are also being made in the internal audit reports.

14. RESEARCH & DEVELOPMENT ACTIVITIES

14.1 . With a view to providing quality products and to develop in-house technology for various pesticides identified for expansion and diversification of the Company's activities, Government accorded approval in May,1980 for setting up centralised Research & Development facilities for Pesticides Research at a cost of Rs.60 lakhs. The R&D Centre established at Gurgaon started functioning in January,1984. The actual R&D project could not be started at the initial stages due to irregular power supply and other necessary research facilities in centre. The regular work could start only in January,1985 after the installation of a D.G. Set.

14.2 Specific areas of R&D activities include development of technology for new generation insecticides, fungicides and weedicides, development of chemical intermediate for pesticides, process development for new formulations like WDG and SC, bioefficacy, toxicity, residue and related areas and development of better pollution control techniques. The studies on R&D is also actively engaged in improving and updating the processes for the existing line of products.

14.3 R&D Complex is also engaged in a UNDP aided project "Pesticides Development Programme of India"(PDPI)' for which Government has nominated the Company as the implementing agency. Government of India approved in January,1981, the Company's participation in PDPI with the assistance from UNIDO/UNDP. Its objects were institution building for research & development of pesticides formulations and training of personnel, development of formulation technology, data generation of bio-efficacy and toxicity of the products for CIB registration, quality control and studies on environmental aspects, etc. This programme was to continue for five years upto June,1986. Due to delay in construction of project buildings, provision of water, power and other facilities, the activities of the programme could commence only by the beginning of 1984. Training Programme conducted with the assistance of foreign consultants were limited

and did not contribute to the progress of the activities commensurate with the time elapsed. As a result, this programme had to be extended upto June,1988. Out of 12 projects identified, the work was started only on six projects viz. evaluation of carrier surfactants from indigenous sources, shelf life studies, formulation of Vitavax as aqueous, suspensional concentrates, evaluation of grindability of pesticides carriers. It was done as per decision taken in a tripartite meeting of representatives of Government, UNDP and H.I.L.

14.4 Though it was contended that the process of production of Butachlor, Chlorobenzillate, P.P. Dichlorobenzil, Methyl Parathion, Carboxin, etc. had been developed and perfected at laboratory level yet semi-commercial/commercial operations of these products except Butachlor process technology have not been started so far(October,1991).

14.5 The Board decided (September,1986) not to carry out any further Research & Development of technology of Methyl Parathion and Metha Midophos as its registration was not forthcoming due to their high toxicity. However, in their meeting held on 27th November,1986, the Board of Directors approved the research & development on Methyl Parathion and Carboxin. Though the problem on effluent treatment plants at Delhi & Rasayani persists, the Company did not have a full fledged division for undertaking R&D on effluent treatment plants.

14.6 Capital expenditure and recurring expenditure on R&D Complex is given below:-

TABLE-XLVII

(Rs.)

	1987-88	1988-89	1989-90	1990-91
a. Capital	57,51,757	50,78,218	41,36,577	60,57,117
b. Recurring	19,22,849	28,59,214	32,08,563	41,55,480
c. Total	76,74,606	79,37,432	73,45,140	1,02,12,597
d. Total R&D expenditure as a percentage to total turnover.	1.38	1.45	1.49	1.59

It is noticed that a good portion of recurring expenditure goes to the maintenance of vast agricultural fields and experimental plots maintained by R&D and capital expenditure is incurred on building up infrastructural facilities and the total R&D expenditure as in relation to the total turnover of the Company is not even the minimum R&D expenditure of 2 per cent made by different standard agro-chemical companies. Consequently, the Company could hardly attach much importance to the development of technology for new generation insecticides, fungicides and weedicides, process development for new formulations and development of better pollution control techniques.

15. OTHER TOPICS OF INTEREST

15.1 Avoidable payment of electricity charges

The Rasayani Unit was assured the supply of its requirements of power by Maharashtra State Electricity Board(MSEB) both for its construction and subsequent production activity. Fact Engineering Design Organisation(FEDO), the project consultants had recommended a power requirement of 4500 KVA for production activities. Accordingly, an agreement was signed by the Company with MSEB in June,1979 for the above energy demand. As per the terms of the supply irrespective of the actual consumption, a minimum charge of 75 per cent of the contracted demand would be levied by MSEB even if the energy consumption falls below this contracted demand. In addition, a penalty was also to be levied for the reduced power factor. It was seen that for all the years from 1980-81 onwards the actual load consumed by the Company was far less than the project requirements. The additional payments made by the Company on this account works out to Rs.50.65 lakhs as detailed below:-

TABLE-XLVIII

Year	Excess on demand charges	Penalty for low power factor
	(Rs. in lakhs)	
1980-81	4.42	0.78
1981-82	5.14	0.20
1982-83	3.46	0.27
1983-84	2.52	--
1984-85	2.81	--
1985-86	3.47	--
1986-87	4.33	--
1987-88	5.26	0.29
1988-89	6.43	--
1989-90	3.24	1.53
1990-91	5.24	1.26
	46.32	4.33

The Company stated(February,1985) that the actual consumption of electricity was lower than the contracted demand of 4500 KVA due to lower production. The maximum demand was given keeping in view the power requirement at full capacity production as any enhancement of power load at a later stage would be very difficult. The Company, however, did not take timely action to reduce the contracted demand even when it achieved 81.79 per cent & 60.48 per cent production of its installed capacity of DDT(F) & Malathion(F) plants respectively in 1984-85.

15.2 **Avoidable expenditure of Rs.1.27 lakhs on re-packing and re-transportation of Hiltaklor.**

Under instructions from Head Office, Delhi Factory despatched(December,1983) 17 KL Hiltaklor in 1 litre and 5 litre containers to Regional Sales Office(South) even though the market potential assessed and intimated by RSO(S) to Head Office was 10 KL only. Since the supply was not according to the indent RSO(S) returned the whole quantity for re-packing in new containers of modified design. Delhi Factory informed (June,1984) Head Office that repacking of material would involve extra expenditure of Rs.1.00 lakh besides loss of material in repacking. Head Office decided(June,1984) in favour of repacking the material in new containers in the interest of business and to maintain Company's image. It shows that formulation of material and its packing were done without assessing the market demand and investigating the types of containers in actual demand. This resulted into an avoidable expenditure of Rs.1.27 lakhs(Rs.1.00 lakh on repacking and Rs.0.27 lakh on transportation to and from), besides loss of material in repacking.

15.3 **Unwarranted special discount of Rs.3.93 lakhs on sale of DDT(Tech.)**

The sale price of DDT(Tech.) was fixed at Rs.18,000/- per MT w.e.f. 21st April,1981. A proposal for further

revision of the sale price of DDT(Tech.) was put up before the Board of Directors in their 137th Meeting held on 29th September,1981. The revised price for DDT(Tech.) was fixed at Rs.23,050 per MT against the cost of production of Rs.20,980 per MT. While approving the new sale price of DDT(Tech.), Director(Marketing) informed that some parties had already deposited 10 per cent advance towards supply of about 30-40 MT. As per existing terms, the price ruling on the date of despatch was applicable. As a special gesture it was decided to allow a special discount equivalent to the difference between the old price and the revised price to those parties provided they made the remaining 90 per cent payment within 15 days and lift the material within that period. Though above discount was to be allowed for the supply of 31.8 MT in respect of which Bank Drafts were already received, the Company supplied 109.550 MT of DDT(Tech.) at the pre-revised rates. The action of the Company to allow the special discount in respect of supplies of additional quantity of 77.750 MT for which approval of the Board was not obtained resulted into grant of an unauthorised aid of Rs.3.93 lakhs to the parties. As the pre-revised price was less than the cost of production, Company absorbed loss of Rs.2.32 lakhs on 77.750 MT.

The Management stated(November,1989) that to avoid discrimination amongst parties and to liquidate the stock, supplies were made at pre-revised rates against advance payments.

15.4 **Avoidable expenditure on transportation of Chlorine**

For the construction of bulk storage tanks and transport carriers for chlorine gas, the Company placed orders for two storage tanks of 40 MT capacity, each in June,1979 on M/s. Triveni Structurals at a cost of Rs.5.30 lakhs. Order of 8 dry liquid chlorine tankers was placed in August,1979 on

M/s. Richardson and Cruddas Ltd. for a total value of Rs.24.71 lakhs including Rs.10.64 lakhs for 8 movers and Rs.4.68 lakhs for 8 trailors. The storage tanks were to be delivered by December,1979 and the tankers were to be delivered by June, 1980 by respective suppliers. The storage tanks were actually devliered in February,1983 and the tankers were received in October,1984 to March,1985. As the storage tanks were not ready for commissioning after the testing and certification, the Company started using the transport tankers by directly decanting the chlorine into the process vessels. As this practice was not statutorily permissible and was objected to by the Controller of Explosives, the usage of transport tankers was stopped and the Company started transporting the chlorine in returnable cylinders. The work relating to testing and commissioning of the storage tanks is still not completed. As such, the storage tanks and the transport tankers received by the Company could not be put to use so far(October,1991). Besides, the Company were deprived of the benefit of the concessional tariff allowed by the Chlorine suppliers, if the chlorine is lifted in bulk by the Company's own tankers. The quantum of benefit lost for the period from April,1985(by which the tankers were received and could be utilised) to end of August,1986, amounted to Rs.3.34 lakhs. As the Company has not taken action to get the storage tanks tested and certified by Controller and Explosives, equipment valued at about Rs.30 lakhs remained idle for over six years. In addition, Company lost Rs.40.58 lakhs (upto March,1989) by paying higher price on purchase of Chlorine in cylinders. This practice is being followed even now(October, 1991) resulting in avoidable expenditure. As the suppliers have not quoted separate rates for supply in bulk in Company's own tankers during 1989-90 and 1990-91 the avoidable expenditure could not be worked out for these two years.

The storage tanks of Chlorine could not be commissioned due to design defects and other technical problems.

The Ministry stated(September,1990) that the proposal of disposal of Chlorine tanks was under examination.

(P.K.SARKAR)
Deputy Comptroller and Auditor General
(Commercial)-cum-Chairman, Audit Board

New Delhi
The 28 APR 1992

Countersigned

(C.G.SOMIAH)
Comptroller and Auditor General of India

New Delhi
The 28 APR 1992

Annexure

ORGANISATIONAL CHART

Referred to Para 1.6