PD-AAI-276

Unclassified
CLASSIFICATION

PROJECT EVALUATION SUMMARY (PES) — PART I

Report Symbol U-447

1. PROJECT TITLE	2. PROJECT NUMBER	3. MISSION/AID/W OFFICE
Malaria Control (AID Loan No. 386-U-224)	386-0455	USAID/India

4. EVALUATION NUMBER (Enter the number maintained by the reporting unit e.g., Country or AID/W Administrative Code, Fiscal Year, Serial No. beginning with No. 1 each FY) 82-1

☒ REGULAR EVALUATION ☐ SPECIAL EVALUATION

5. KEY PROJECT IMPLEMENTATION DATES			6. ESTIMATED PROJECT FUNDING	7. PERIOD COVERED BY EVALUATION
A. First PRO-AG or Equivalent FY 78	B. Final Obligation Expected FY 79	C. Final Input Delivery FY 82	A. Total $ 279,540 B. U.S. $ 38,000	From (month/yr.) April, 1980 To (month/yr.) September, 1981 Date of Evaluation Review October, 1981

8. ACTION DECISIONS APPROVED BY MISSION OR AID/W OFFICE DIRECTOR

A. List decisions and/or unresolved issues; cite those items needing further study. (NOTE: Mission decisions which anticipate AID/W or regional office action should specify type of document, e.g., airgram, SPAR, PIO, which will present detailed request.)	B. NAME OF OFFICER RESPONSIBLE FOR ACTION	C. DATE ACTION TO BE COMPLETED
1. Continued monitoring of the status of progress on formulating the 46,029 lbs. of technical Abate and using this material in field programs is required.	Dr. LeSar	9/82
2. Response and completing the audit recommendations made under Malaria Audit Report 5-386-81-15 dated August 17, 1981 is required.	Dr. LeSar	3/82
3. Follow-up action as to distribution and end-use of the 4450 MTs of DDT and 10 Leco fog generators by field visits is required.	Dr. LeSar Dr. Diesh	3/82
4. The final procurment under this loan consisting of 500 MT's DDT and fogger spare parts has been completed. The commodities are expected to arrive in India by February, 1982. Action necessary is to insure receipt in India of these commodities; to obtain the distribution schedule for monitoring and end-use audit purposes; and to reprogram any residual funds (de-obligate, other action).	Dr. LeSar Dr. Diesh	6/82
5. Preparation of a final PES document.	Dr. LeSar	8/82

9. INVENTORY OF DOCUMENTS TO BE REVISED PER ABOVE DECISIONS NONE

- ☐ Project Paper
- ☐ Financial Plan
- ☐ Logical Framework
- ☐ Project Agreement
- ☐ Implementation Plan e.g., CPI Network
- ☐ PIO/T
- ☐ PIO/C
- ☐ PIO/P
- ☐ Other (Specify) _____
- ☐ Other (Specify) _____

10. ALTERNATIVE DECISIONS ON FUTURE OF PROJECT

- A. ☒ Continue Project Without Change
- B. ☐ Change Project Design and/or ☐ Change Implementation Plan
- C. ☐ Discontinue Project

11. PROJECT OFFICER AND HOST COUNTRY OR OTHER RANKING PARTICIPANTS AS APPROPRIATE (Names and Titles)

Dr. John W. LeSar, Health/Population/Nutrition, USAID/India
Mr. John R. Westley, Program Officer, USAID/India
Dr. P. Diesh, Malaria Consultant, USAID/India
Mr. Larry Cowper, Regional Malaria Advisor, USAID

12. Mission/AID/W Office Director Approval

Signature

Typed Name Priscilla M. Boughton
DIRECTOR

Date October 29, 1981

AID 1330-15 (3-78)

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PES - PART II

REGULAR EVALUATION

Project No. 386-0455 Title : Malaria Control

13. Summary

The Malaria Control Loan Agreement was signed on August 26, 1978 between the Government of India (GOI) and the United States (USG). This loan (AID 386-U-224) provided $28 million to the GOI to finance external source commodities to be used in the 1979 and 1980 operational programs of the National Malaria Eradication Program (NMEP). On June 30, 1979 an amendment to this loan was signed between the GOI and the United States which provided an additional $10 million dollars for anti-malaria activities. The total loan amount provided by the USG for this project is $38 million. This loan was planned to be the first in a series of loans to cover insecticide shortfalls in India's malaria control commodity requirements from 1978-1983. As of August 31, 1981 a total of $37,056,303 million had been committed and a total of $36,960,972 million had been accrued as cumulative disbursements from this loan (see financial statement in Annex I). All commodities to be procured under this loan have been contracted and are in the supply line or have already been delivered including the latest order of 500 MTs of DDT and LECO spare parts for foggers. This Project Evaluation Summary (PES) represents the second regular evaluation for this project.

The purpose of the Malaria Control Project is to reduce malaria to a manageable control level which is defined in India to mean that malaria cases should not exceed an Annual Parasite Incidence (API) of 2 cases/ 1,000 population (2,000 cases/million population). This epidemiological target was developed by a GOI Consultant Committee of experts in 1974 and included in the GOI Modified Plan of Operations (MPO) for malaria control. The MPO was approved by the GOI in April 1977 and is used as the policy and program guide in the conduct of the GOI malaria control program. It should be understood that an approved national Modified Plan of Operations for Malaria Control is not binding on any State as the provision of health services is a State function and responsibility in India. The projection of areas for spray coverage using the 2.0 API criteria is attached as Annex II.

The malaria control loan was originally requested by the GOI to support efforts in combatting a massive malaria epidemic which was sweeping India beginning in 1976/77 with the number of malaria cases estimated at between 10-15 million actual cases per year. By 1978 the number of malaria cases were still being reported as over four (4) million in spite of major increases in national financial and resource inputs. The intent of the loan was to provide commodity assistance (mainly malathion and DDT) for the 1979-1983 period with the initial commodity input to arrive for the 1979 spray operations. However, joint negotiations on acceptable insecticide specifications for malathion did not clear GOI procedures as planned and the first shipment of this

insecticide did not reach malaria control operating programs in India until February 1980. This delay in procurement of malathion affected progress in realising a lower API level especially in the States of Gujarat and Maharashtra where the total amount of U.S. - loan supplied malathion was used. Malaria cases in Maharashtra State were marginally reduced from 204,996 in 1979 to 185,267 cases (provisional figure) in 1980. The State of Gujarat reported a case rate of 361,119 in 1979 to 356,124 cases (provisional) in 1980. The malaria case rates for Gujarat would have increased at least 30% if AID-supplied malathion was not available.* The overall malaria situation in India did improve from the 1979 level of 3.0 million cases to an estimated 2.3 million cases (provisional) in 1980. Of the eleven states provided U.S.-loan DDT in their program, seven states reported an improvement in malaria incidence from 1979 to 1980. (See Annex III for detailed summary epidemiological data.)

An important administrative factor which has slowed efforts to obtain a rapid reduction in malaria incidence was the decision made in November, 1979 by the National Development Council (which consists of the Central Government Cabinet plus Chief Ministers of the States) to change the GOI's financial formula for support of certain health programs, including malaria control, from 100 percent Central Government financing to a 50%-50% Central Government - State Government financial support formula. As a result of this decision many states could not support spray operations at the recommended

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* Due to limited quantity of USAID-financed malathion, Gujarat selected areas which had very high incidence of malaria covering 6.5 million people, or one-third the state population. This effort can be classified as holding operation on these hard core areas to prevent further increase in malaria incidence.

malaria control level outlined in the Modified Plan of Operations and a major reduction in the areas to be sprayed was made by the states for 1980 which is still being used in 1981. The planning estimates for AID's loan were based on GOI's full support of their Modified Plan of Operations. The change in financial strategy made by the National Development Council was not in accord with joint GOI/USG understandings at the time the project was approved. However, the GOI decision was a widespread general policy change which affected many health programs and not only malaria control.

14. PFS Evaluation Methodology

The basic data for AID's technical evaluation of the project is derived from the results and reports of the annual GOI NMEP evaluation and NMEP operation reports. The Project Paper, Section IV.C. describes in some detail this annual evaluation process which has been a regular part of NMEP activities for many years. An AID representative was present at the January 1980 and April 1981 final report sessions of the NMEP evaluation teams as proposed in the Project Paper. The 1981 final reports from thirteen NMEP Evaluation Teams confirmed an overall country-wide decline of malaria in 1980, but increases in malaria cases in specific states were noted such as Uttar Pradesh, Himachal Pradesh and Rajasthan. These NMEP Evaluation Team reports spell out in great detail the progress of malaria control work in various states and federal territories and provided recommended corrective actions.

In addition to results obtained from the formalized annual NMEP review, the PES takes into account data and information obtained from field trips and conferences held at State and District levels by the USAID/I Malaria Consultant and USAID Regional Malaria Advisor over the two operational years of 1980 and 1981. These reports provide specific details on field activities in Gujarat and Maharashtra states where U.S.-supplied malathion was used and focuses on insecticide safety, environmental protection and epidemiological impact of the operating programs in these two States. In February, 1981, the RMA prepared a report "Epidemiological Analysis of the Impact of Malathion Spraying in The States of Gujarat and Maharashtra During 1980", which is used as a background document in this PES. The specific trip reports and epidemiological study are on file in the OHPN, USAID/I.

This PES also reflects the logical framework output objectives of the approved Project Paper for Malaria Control and evaluates planned start-of-project objectives with program accomplishments made up to September, 1981.

15. External Factors

A major external factor influencing progress and expected long term impact of the Project has been the dramatic increase in India's own production capabilities to produce malathion and other insecticides for use in their malaria efforts. The original project planning estimated that malathion needs of the Ministry of Health & Family

Welfare (MOHFW) would not be met from in-country production sources until 1984. However, this increase in production was difficult to accurately estimate and the Project Paper prepared in April, 1978 states (Pg. 43). "The prospects are encouraging for the GOI to have indigenous resources available to supply the necessary insecticides within 3 to 5 years." It was planned in the Project Paper (PP) that AID insecticides inputs into the planned malaria effort each year would be based on differences between India's requirement for malathion and other insecticides and India's capability to manufacture these products in-country. The Indian formulators of insecticides have rapidly expanded their production facilities for malathion and other insecticides during the 1978-1981 period and most of India's public health demands for malathion can be met from in-country production sources. The AID/GOI malaria control project has completed one of its objectives as it has helped to stimulate local manufacturers to develop capabilities to meet the malathion demands for India. The situation in regards to production of DDT is not as good. It is expected that India's malaria control requirements for this product will surpass its local production capabilities for some years. With the rise in malaria cases in Gujarat, in large portions of western Uttar Pradesh and in other areas in 1981, it is expected that considerable amounts of DDT will have to come from external sources for some years. A summary of the 1981 epidemiological situation up to mid-year is attached as Annex IV. Although

the GOI has requested additional loan assistance for CY 1982, this request arrived too late in USAID program cycle to be considered in the Mission's assistance plans.

While the project's success is recognized in stimulating more indigenous production and formulation of malathion, it should also be pointed out that health sector demands for malathion for malaria control activities has decreased due to policy decisions made in November 1979 to transfer 50% of the cost of malaria control insecticides to the States. Previous to this decision, States were supplied insecticide for malaria control by the National Government and this cost was met through national availabilities. Due to lack of financial resources many states made drastic reduction in spray operations scheduled to protect populations in areas of API 2 because of this national policy change. For example, in Gujarat State in 1980, a population of approximately 22 million lived in areas of API 2 or above and should have been scheduled for protection from malaria through residual insecticide spray operations according to the Modified Plan of Operations. In 1980, due to this GOI policy change, a population of approximately 6.5 million were actually provided residual spray protection as the amount of malathion was limited by the Central Government to 2500 metric tons for Gujarat State and the State did not procure insecticide from its own budget. Thus, approximately 16-17 million people in Gujarat were left out of residual spray protection of the planned malaria control program. At best Gujarat State's

malaria control efforts can be classified as a holding operation for 1980 and 1981. In many states the procurement of even BHC insecticide which is produced in India was not carried out due to state budget constraints.

The Malaria Control Project Paper correctly pointed out in its technical review that insecticide resistance would remain a problem requiring continuous attention over the life of the project. The NMEP over the last three years has reported development of malathion resistance on a wide geographic scale and it may well be that persistance of malaria transmission in some areas of India may be due to increasing malathion resistance as well as to incomplete operational coverage. Attached as Annex V is a recent summary review of the resistance status of the major malaria vector, A. culicifacies.

The GOI continues to assign high priority to malaria control as evidenced by its fiscal allocations. Budgetary support to the national NMEP has been substantial with 60 to 70 percent of the total public health outlay of the country provided for control of malaria in the last few years. Expenditure for malaria control over the last seven years is as follows:

Years	Expenditure U.S.$ (equiv.)
1974-1975	30.92 million
1975-1976	48.12 million
1976-1977	58.79 million
1977-1978	75.46 million
1978-1979	70.02 million
1979-1980	86.52 million-Central &State
1980-1981	109.03 million-Central &State

It is interesting to note that as the budget was raised, the incidence of malaria decreased. The lack of major progress in 1980 may reflect the lowering of state fiscal inputs into malaria control as the Project Paper estimated that approximately $120 million would be provided in the 1980 operational season. One of the project paper's strategies in providing loan assistance was to provide for only two years of loan input because of the difficulties of projecting firm GOI support levels for malaria control over five year project period (pg. 51). In retrospect, this strategy has proven to be quite appropriate given the events which have occurred within the GOI management system to support its malaria control efforts. GOI major policy changes such as the one made on specific program support are beyond the control of any Project Paper or loan agreement. The Project Paper's logical framework document provides as important assumptions for output that "The States follow the Modified Plan" and "GOI support for NMEP". These assumptions were very much in order.

The Sixth Five Year Plan (1980-1985) provides an allocation of over Rs. 400 crores ($440 million equiv.) for malaria control in the Communicable Disease Control budget which represents approximately 76% of the CDC budget of Rs. 524 crores. The Sixth Five Year Plan projects a total of Rs. 1821 crores for total outlays in the Health Sector which means that malaria control support represents 21.9% of the total health budget, (pg. 382). Approximately, 50% of the 400 crores for malaria control is to come from the States. This level of financial input indicates continuing high GOI priority for malaria control.

16. Inputs

The arrival of USAID loan source commodities (Malathion, DDT, ULV sprayers, Abate) was delayed for over a year after the signing of the Loan Agreement on August 26, 1978. The first deliveries of project commodities to Indian ports was February, 1980 following a procurement action in November, 1979 by the Indian Supply Mission (ISM) in Washington. The year long commodity delay was primarily caused by differences between USAID and GOI technical specifications for insecticide (malathion), packing of the insecticide in cartons rather than in steel containers as well as inspection and warranty requirements. It should be noted that the subject of malathion specifications was of world-wide interest during the 1977-1979 period as the World Health Organization (WHO) through its Expert Committee on Pesticides was modifying its specifications on malathion and related inspection procedures. India often uses WHO specifications as a working base for their own standards. Interestingly enough, the new WHO specifications are almost identical to the AID specifications under which the U.S. Loan commodities were procured for India. The warranty and container differences between the GOI and AID caused additional delays as the 1968 Insecticide Act of India requires a two year warranty on insecticides as well as shipping such insecticides in metal drums. These issues took months to resolve to each Government's

satisfaction. The USAID Regional Malaria Advisor using information provided by AID/W presented to the Central Insecticide Board a cost estimate between use of metal containers and the standard USAID approved fibre box which concluded that shipping malathion strictly in accord with GOI procedures would cost the Indian Government an additional $3.0 million of loan financing. The Central Insecticides Board agreed to an exception on using fibre boxes for U.S.-loan malathion shipments and set up a study on the practicality of using this type of container. It should be pointed out that such USAID approved fibre boxes have been used satisfactorily for approximately 20 years by AID to ship insecticides to such countries as Pakistan, Bangladesh, Sri Lanka, Nepal and Indonesia. This technical input may have far reaching effect on India-based companies who supply and ship insecticides. The total amount of malathion shipped under the loan was 5945 MTs. All malathion procured under the USAID loan was used in Gujarat (2500 MTs) and Maharashtra (3445 MTs) in the 1980 and 1981 spray operations. There are no residual quantities of U.S.-supplied malathion procured under this loan left in India as it has been totally used as planned in the NMEP effort.

Total DDT deliveries to date amount to 14,450 MTs. This amount came on schedule and was distributed as follows:

1st Procurement of 10,000 MT's

State	Amt. in MT's*
Andhra Pradesh	1,071
Bihar	1,030
Karnataka	720
Madhya Pradesh	1,166
Maharashtra	545
Orissa	919
Rajasthan	594
Uttar Pradesh	1,865
Jammu	33
Punjab	341
Himachal Pradesh	197
Other(balance, short)	1,499
	10,000 MT

2nd Procurement of 4450 MTs.

State	Amt. in MT's**
Madhya Pradesh	1700
Bihar	1250
Maharashtra	500
Maharashtra	500
Orissa	1000
	4450 MT's

** Planned Distribution figures (June, 1981, GOI/MOH Letter

* The Audit Report of August 17, 1981 could not accurately verify all shipments and these totals may be adjusted in the accounting process now in progress by NMEP and the States.

In August, 1981, USAID/India approved additional loan procurement of an additional 500 MT's of DDT, 75% and as well as spare parts for the LECO fog generators which obligates the remaining funds from this loan. This order should reach India by January or February of 1982.

Under the USAID loan, twenty two (22) foggers were supplied to the NMEP and this equipment is located at the following points:

1.	Directorate, NMEP, Delhi	1
2.	Directorate of Health Services (DHS) Rajasthan, Jaipur (to Kota)	1
3.	DHS, Gujarat (one machine each to MC Ahmedabad and Baroda)	2
4.	DHS, Andhra Pradesh, Hyderabad	1
5.	DHS, Tamil Nadu (one each at Madras and Salem)	2
6.	DHS, Maharashtra (one each at Poona and Nagpur)	2
7.	DHS, Uttar Pradesh (Lucknow)	1
8.	DHS, Karnataka (Bangalore)	1
9.	DHS, Orissa (Bhuvaneswar)	1
10.	The other 10 fog generators are being supplied to Bhubaneshwar (1); Hyderabad (1); Jaipur (2); Bangalore (1); Lucknow (2); Indore (1); Pondicherry (1); one unit not as yet allotted.	

Total = 22 Fog generators.

The training of approximately 65 operators and maintenance personnel for these twenty-two sprayers has been carried out by a company representative. Many of the spray units have been in use in the 1980 and 1981 spray season primarily in urban areas where residual house spraying is not practical or for emergency disease control purposes.

Abate, a standard larvicide used in anti-malaria and mosquito control program, was provided under the loan in a technical form for

formulation into an emulsifiable concentrate. The total amount of Abate provided to India's malaria effort under this loan was 46,029 pounds. According to last reports, approximately 25% of the total amount of technical Abate (11544 lbs.) has been formulated into emulsifiable concentrate by Hindustan Insecticide Limited (HIL) at their plant in the outskirts of New Delhi. Abate, in its technical form, is quite stable and can be kept for several years without technical deterioration if proper storage and temperature conditions are provided. The formulated Abate, however, is not as stable and should be used within four-six months after its formulation.

Following the 1978-79 period when development of new malathion technical specifications, inspection procedures and packing took place, USAID/I financed the services of a U.S. Consultant in January 1980 to assist the GOI in modifying their insecticide standards to be more in line with world standards. The GOI found the consultant's services (Dr. Jim Miles of CDC/Atlanta) to be very helpful and have used many of the excellent technical suggestions given by Dr. Miles in their insecticide standards review.

The project paper (pg. 59) outlines AID's project management role and these practices have been followed with good results. The Regional Malaria Advisor (RMA) has responded as planned in the PP to Mission requests and has provided field monitoring services; coordinated with the Mission's malaria consultant; and carried out necessary

project evaluations, epidemiological reviews and documentation. The major USAID Mission input for field monitoring and required official liaison with the GOI for this project has been carried out through the services of a contract USAID/I national medical officer. The assignment of full time monitoring services was projected in the original PP and has proven essential in managing this assistance effort. The USAID/I Officer concentrated his primary attention on malathion safety procedures; staff training in malathion application, storage and handling; proper cholinesterase testing of spray personnel; and provision of necessary protective equipment/uniforms to working units. A number of innovative field procedures such as the individual spray team inspection forms and cholinesterase history records for individual sprayman have been developed by the USAID monitors and are now used in some state programs. Several hundred operation personnel from Gujarat and Maharashtra have received specialized training in malathion safety procedures. The idea of using an experienced scientific officer from the host-country for a project monitor has worked so successfully that a neighboring USAID in Nepal has followed the same procedure in monitoring its malaria activities and another USAID (Sri Lanka) is seriously considering the idea.

Another important input to the project was the provision of services of the Regional Malaria Advisor in May, 1980 to develop, write and finalize an Environmental Assessment (EA) for Malaria

Control. This EA was approved in AID/W in July, 1980. This input was planned in the project paper and is in line with AID policy on integrating environmental concerns with other aspects of program design in development of major assistance efforts. The EA concluded that application of the U.S.-supplied residual insecticides used in the program and applied by standard malaria program methodologies has no significant adverse impact on the environment. Similar environmental studies completed for Thailand, Sri Lanka and Nepal have reached the same conclusions in their EA documents.

It should be recognized that AID's fiscal percentage input into the total costs of India's malaria effort over the 1978-1981 period has been modest and is estimated at approximately 15%. However, in spite of this level of input from AID the project was able to provide an important interim level of support for required external source commodities during the period when India's production capabilities increased.

17. Output

The expected program outputs for the malaria control project are detailed in the Project Paper (Pg. 28). A summary of expected project outputs and actual accomplishments during the course of the project period is outlined below:

Item	Summary Accomplishment
1. GOI will provide a Modified Plan of Operations for Malaria Control (MPO)	1. The Modified Plan of Operations has been approved by GOI, Central Government, as a policy guide for State's Malaria Control efforts. As Health is a state responsibility in India, adherence to the MPO has varied with the individual state.
2. Training of Personnel will be carried out during the project	2. (a) General malaria control training at the National Institute of Communicable Diseases (NICD) has continued for training medical officers, entomologists and other technical personnel. (b) In training aspects of direct concern to AID, there has been a large amount of training carried out in the program on safe malathion handling and application. An estimated 2,500 persons have received some level of training in this area during the project. One of the major projects outputs has been the development of schedules, materials, education materials for such insecticide training. (c) It should be noted that due to this intensive training and field monitoring, no serious cases of malathion intoxication occurred in the 1980 and 1981 spray programs in Gujarat and Maharashtra State.

3. Community support for the program is implemented.	3. The GOI has involved Panchayats, school teachers in the process of malaria drug distribution and in notification of health workers of detected malaria cases. In addition, special efforts have been made to open Drug Distribution Centers (DDC) in tribal areas in collaboration with Tribal Welfare Departments. A film on malaria called "The Threat" has been completed and released in fourteen regional languages. Special orientations on malaria have been given to Panchayat leaders and secretaries of village councils. All-India Radio and TV has assisted in providing special broadcasts on malaria.
4. Spraying Operations are to be effectively executed.	4. The spray operations have been carried out, but the areas protected in some states (i.e., Gujarat) have been reduced from the MPO recommended design. In some areas, spray operations were late in starting in 1980 (i.e., Maharashtra) due to logistical and management difficulties in moving U.S. loan-source commodities from Indian ports to field areas. As a result of these changes in the planned program, the incidence of malaria did not respond as expected.

5. Laboratories are effectively operating	5. It was the general concensus of the 13 assessment teams which review the NMEP in April 1981 that the laboratory services of the NMEP were of good standard and operating in a satisfactory manner.
6. Drug Distribution Centers (DDC) and Fever Treatment Depots (FTD) operating.	6. The GOI has been very successful in development of volunteer collaborators on malaria control through its Community Health Volunteer (CHV) program. There are presently approximately 365,000 FTDs and DDCs operating in the country.
7. Required equipment available and operating	7. The equipment provided through the project was limited to 22 fog generators. These units are used in Urban Malaria Control programs or health emergencies. Adequate spray pumps were available for the field operations.
8. Research Schemes implemented in the NMEP.	8. Support of malaria research was not a part of this USAID project. However, the GOI/NMEP has had an active research activity during the project period supported by GOI, WHO/TDR or other bi-lateral source funds. Research activities include (1) monitoring of P. falciparum resistance to chloroquin in six field research areas using both in-vitro and in-vivo tests;

(ii) testing of alternative anti-malaria drugs;

(iii) research in entomology as to its role in malaria transmission.

9. Alternative Control Methods executed.

9. The NMEP has increased operational inputs into larviciding and in use of fog generators especially in its urban malaria programs. At present 125 towns are covered in NMEP's urban malaria activities.

10. Environmental Assessment (EA) will be prepared on the Project

10. The EA on the project was prepared in May 1980 and accepted by the Asia Bureau in July, 1980.

11. Annual Evaluations of the NMEP are to be held.

11. Annual evaluations of the NMEP program were held in February 1980 and April, 1981. An AID representative took part in both final report seasons as planned in the Project Paper (Pg. 67).

12. Malaria levels should be brought under control over the life of the project. For India, this level would be approximately 2 cases per 1000 population and control of P. falciparum. (An API

12. (a) The reported case rates for India over the last five years is as follows:

	No. of Cases
1976	6,467,215
1977	4,740,500
1978	4,144,385
1979	3,064,697
1980	2,320,162 (Provisional)*

* unofficial figures are estimated at 2.7 million.

of 2 or less would equate to an annual country case incidence of less than 1.4 million cases)

(b) The case rates for States using USAID-supplied malathion.

	No. of Cases	
	1979	1980
Gujarat	361,119	356,124(Prov.
Maharashtra	204,996	185,267(Prov.

(c) Case rates of malaria for States using USAID-supplied DDT.

	No. of Cases	
State	1979	1980*
Andhra Pradesh	55,575	29,436 (-)
Bihar	73,457	335,313 (+)
Himachal Pra.	39,870	48,036 (+)
Jam. /Kash.	11,580	5,307 (-)
Karnataka	276,832	188,549 (-)
Madhya Pradesh	270,819	176,797 (-)
Maharashtra	204,996	185,267 (-)
Orissa	310,952	228,429 (-)
Uttar Pradesh	149,919	151,034 (+)
Punjab	325,227	197,893 (-)
Rajasthan	83,394	92,110 (+)

* Provisional figures.

(d) The reported deaths due to malaria are as follows:

1974-03	1978- 74
1975-99	1979-198
1976-59	1980-206
1977-55	1981- 26 (up to June)

(e) For India as a whole, the API of 2 has not been reached. However, some areas have met this criteria. It is difficult to assess the epidemiological impact of the AID insecticide inputs as (1) these inputs are only a portion of the total insecticide used by the NMEP and (2) most of the material

was used in only one operational year which is not sufficient to observe accurate trends. The epidemiological report prepared in February, 1981 by the RMA does provide some insights as the impact of the spray operation in various PHC's and districts in Gujarat and Maharashtra. In brief, where malathion was was applied on time, there was reduction of malaria.

18. Purpose

The project purpose is "to bring malaria under control" which is defined in the Modified Plan of Operation (MPO) as an Annual Parasite Incidence (API) of 2 cases per 1,000 population or 2,000 cases per million. The GOI has made considerable progress in reducing malaria in recent years as can be seen in Section No. 17 of this PES (Item 12). A summary of malaria incidence by State for the years 1978-1980 for India is given in Annex III.

The 1978 Project Paper on Malaria Control (Annex E) estimated that India would be able to obtain the following malaria case rates and API levels with the proposed program of the Modified Plan of Operation.

Year	Project Paper Expected Cases (000s)	Project Paper Projected API	Actual Cases of Malaria Reported(000)by NMEP	Actual API*
1979	3,893	6.70	3,064	4.6
1980	2,669	4.50	2,320	3.5
1981	1,815	3.00	1,900 (Est.)	2.9
1982	1,234	2.00	-	
1983	1,006	1.60	-	

* Using 660 million population as baseline.

As can be seen the project estimates are statistically within a reasonable margin of error. One could project that if the NMEP has sustained its planned level of operational activity that the project would have probably met its estimated API target objectives.

19. Goal/Sub-Goal

The goal of this project is "to reduce morbidity and mortality from endemic diseases through the establishment of a responsive, effective and efficient nationwide health service." The USAID Malaria Control Project has significantly contributed to this goal by assisting in reduction of reported malaria morbidity and mortality. The gains over the project period can be attributed to (1) continuation of residual insecticide spray application and (2) establishment of over 365,000 Drug Distribution Centers and Fever Treatment Depots.

The GOI/NMEP has made special program efforts in those districts where P. falciparum (Pf) malaria is major problem in order to reduce morbidity from the disease. Fifty-five districts were identified in various states and union territories as being responsible for 80% of Pf. infections in India. The P. falciparum Containment Program (PFCP) was launched by the NMEP in October 1977 with assistance of WHO/SIDA. In view of the increasing amount of chloroquin-resident Pf. malaria being detected, it was necessary to intensify the activities of the program. The PFCP now covers a population of over 110 million people living in 119 districts which are distributed in 18 states and Union Territories. The North-Eastern portion of India (Zone I-PFCP) was reported as responding favorably to program efforts, but Pf. continues to expand into other parts of India.

20. Beneficiaries

The primary beneficiaries of the malaria control program are the rural poor of India as malaria remains essentially a rural disease. As 85% of the population live in rural areas in India and 95% of the country is at malaria risk, it is to this rural situated group that the project provides the most benefit. The urban malaria problem caused primarily by the mosquito, *An. stephensi*, is being given attention and approximately 125 towns are now in the NMEP urban malaria scheme. There are plans to increase this urban malaria program to 135 towns in 1982.

The PFCP is mainly concentrating in the North-East States of India and provides major benefits in health to an area which is considerably behind the rest of India in its economic and social development.

The active collaboration of village and community volunteers with GOI activities is socially beneficial to India. The people of a village learn through such collaboration that the Government is interested in their problems and in turn they can learn to take a role in overcoming a health menace to themselves and to their families. The carry-over of such successful experiences to other areas of health or to other community-action programs is extremely useful in over-all rural development.

21. Unplanned Effects

The project has had a number of unplanned effects in the course of its operation. Some of these effects are summarized below:

a) The GOI has undertaken considerable re-evaluation of its 1968 National Insecticides Act in the light of knowledge obtained

during the USAID-GOI negotiations for malathion procurement. This re-evaluation has led GOI to try new procedures, inspection methodology and packaging. The Central Insecticide Board has given intensive review to the newer worldwide specifications for malathion which may not have happened so quickly if the project had not been agreed to by the two Governments.

b) The project has also increased environmental awareness of GOI/NMEP officials at both Central and State levels to the human and ecological effects of mass applications of insecticides. It is believed that a good deal of research planning in alternative malaria control methodology has in part been stimulated by the project's emphasis on environmental protection. There is no question that insecticide safety precautions and environmental protection are now given a more prominent place in the state's training schedules for spray personnel and in planning malaria control operational activities.

c) The lack of insecticides and funds to procure them have stimulated the NMEP to greater efforts in community involvement and in establishing volunteers to provide anti-malaria drugs to actual or suspected malaria cases at the village level.

22. Lessons Learned

The resources from AID Malaria Control Project constitutes a small portion of total GOI expenditures on malaria control. The delays in negotiating procurement of project commodities, if judged from the GOI's point

of view, did not severely curtail their operation and did not result in a major long term health set-back. It is useful for assisting agencies to consider longer lead times for project development and implementation in projects which are only marginal in fiscal input to a major GOI activity. GOI officers must devote their major attentions and energies to those sources that provided 90% of their support rather than 90% of their time on funding sources which may provide 10% of activity support. AID offices should take into account the practical difficulties for GOI officers to produce AID format-type Quarterly reports, program statistics and commodity status sheets within a short time-frame as there are a number of demands on their time from their own Government as well as other bi-lateral donors and trained middle management staff are in short supply. The lesson to be learned is that simplification of all AID's project assistance procedures and requirements for a Host Government is essential if project implementation and evaluation are to operate smoothly. There is simply not enough GOI trained manpower (nor will there be) to respond to specific reporting requirements and the various program forms of all donor groups in a timely fashion. This malaria control project probably is closer to the way that an assistance loan should be negotiated with the GOI as far as documentation and evaluation, but it could have been improved by simplifying the quarterly report procedures from the beginning. It was of immense help in managing the project to have an established institution to work with in carrying out project activities.

It would have been helpful to the project to have more technical and management inputs at an earlier stage of the project, so the delays which occurred could have been shortened or resolved earlier. The Agency should recognize that technical projects cannot be handled solely through non-technical personnel, but require continuous technical inputs. There was break in technical communications between the USAID and GOI after the project was approved and negotiations on procurement could have been shortened with additional technical assistance at the appropriate time. The development and management of commodity reports and technical data systems is an area of weakness in most developing areas. A major share of the commodity control difficulties of this project are due to the lack of a proper management system. More AID efforts should be devoted to this need. The project's usefulness would also have been increased by a continuing technical presence to review the epidemiological impact and technical implications of the project's inputs.

Internationally, the program has had effect as it is a subject on which Indian and Pakistan scientists inspite of other differences as well as malaria officers from Nepal, Sri Lanka, Burma, Bangladesh and the Maldives can meet to discuss their common border or inter-country malaria problems. Such joint country meetings have been held during the course of the project and have provided useful interchange. It may be worthwhile for other parts of the world who have similar malaria conditions within the countries in their regions to consider such border and inter-country meetings.

A lesson to be remembered in carrying out malaria control projects is the importance of inter-sectoral cooperation between malaria activities and other offices of Government, e.g., irrigation, public works, health services, roads and agriculture. Such coordination at the planning stages lessens the risk of creating conditions through development activities which lead to an increase of malariogenic conditions. AID should expand its attention to such inter-sectoral relationships in its projects as well as give more encouragement to Host Governments to follow similar planning in its programs.

23. Special Comments or Remarks

A. No additional policy or program management comments need to be included. All specific epidemiological data by District and PHC for Gujarat and Maharashtra state are filed in OHPN, USAID/India.

B. The number of pages for this PES is 28 plus Annexes on the fiscal status of the project as of August 31, 1981; summary 1979-81 epidemiological status by State, susceptability status of *A. culicifacies* in India.

USAID/INDIA

Summary Financial Status Of Active Loans As Of

August 31, 1981

Project, Loan and Disbursing Authorizations	Commitments & Uncommitted Bal. Date Issued (Original)	Amount	Disbursements Cumulative	Undisbursed Balance
Malaria Control (0455)				
Loan 386-U-224A(PH) 8/26/78				
CP's met 5/1/79 - 1st Disb. 8/08/79				
PACD 12/31/80 - TDD 9/30/81				
L/COM - 001 - Londes Eng.	02/13/80	39,840	39,840	-
L/COM - 002 - Montrose Chem Corp.	12/30/80	1,460,160	1,460,160	-
		1,500,000	1,500,000	-
			(100%)	
Loan 386-U-224B (HF) 8/26/78				
CP's met 5/1/70 - 1st Disb. 12/27/79				
PACD 12/31/80 - TDD 9/30/81				
L/COM - 001 - Montrose Chem	12/07/79	13,097,700	13,097,700	-
L/COM - 002 - Thornton Labs	06/09/80	151,567	110,672	40,895
L/COM - 003 - Southern Mill Creek	12/20/79	4,693,138	4,693,138	-
L/COM - 004 - Dyson Shipping	09/23/80	4,449,691	4,428,893	20,798
L/COM - 005 - Montrose Chem. Corp.	12/30/80	4,089,363	4,089,363	-
L/COM - 006 - Thornton Labs	12/29/80	18,541	18,541	-
Total Loan		26,500,000	26,438,306	61,694
			(97.7%)	
Loan 386-U-224C (HF) 6/30/79				
CP's met 9/28/79 - 1st Disb. 02/22/80				
PACD 12/31/81 - TDD 9/30/82				
L/COM - 001 - Cynamid Intl.	02/19/81	6,778,531	6,778,531	-
L/COM - 002 - Montrose Chem. Corp	03/04/81	1,036,477	1,036,433	44
L/COM - 003 - Dyson Shipping Corp.	03/03/81	1,202,110	1,168,517	33,593
L/COM - 004 - Lowndes Engineering	04/03/81	39,185	39,185	-
Total Committed		9,056,303	9,022,666	33,637
Uncommitted Balance		943,697	-	943,697
Total Loan		10,000,000	9,022,666	977,334
			(90.2%)	
Total Project				
Total Loan:		38,000,000	36,960,972	1,039,028
Uncommitted:		943,697		

Population with API 2 and above required to be covered/ sprayed based on 1977 data.
(NMEP - 1979 estimates).

(In 000,000)

State/Union Territory*	DDT	BHC	Malathion	Total
1. Andhra Pradesh	121.35	-	-	121.35
2. Assam	73.26	-	-	73.26
3. Bihar	92.61	-	-	92.61
4. Gujarat	45.03	206.50	55.00	306.53
5. Haryana	97.95	7.50	17.80	123.25
6. Himachal Pradesh	18.78	-	-	18.78
7. Jammu & Kashmir	14.96	-	-	14.96
8. Karnataka	101.76	55.90	23.20	180.86
9. Kerala	1.19	-	-	1.10
10. Madhya Pradesh	180.40	225.60	-	406.00
11. Maharashtra	248.28	96.20	76.50	420.98
12. Manipur	2.62	-	-	2.62
13. Meghalaya	7.75	-	-	7.75
14. Nagaland	1.20	-	-	1.20
15. Orissa	167.16	20.40	-	187.56
16. Punjab	-	139.31	-	139.31
17. Rajasthan	174.68	87.00	-	261.68
18. Sikkim	0.15	-	-	0.15
19. Tamil Nadu	14.36	-	7.50	21.86
20. Tripura	8.81	-	-	8.81
21. Uttar Pradesh	165.21	200.00	-	365.21
22. West Bengal	38.37	13.48	-	51.86
23. A & N Islands	1.54	-	-	1.54
24. Arunachal Pradesh	4.20	-	-	4.20
25. Chandigarh	3.00	-	-	3.00
26. Coalfields	2.87	-	-	2.87
27. Delhi	14.14	5.50	-	19.64
28. DVK Project	3.07	-	-	3.07
29. Goa, Daman & Dieu	2.30	-	-	2.30
30. DAN Haveli	0.90	-	-	0.90
31. Lakshdweep	0.02	-	-	0.02
32. Mizoram	0.62	2.60	-	3.22
33. Pondicherry	0.15	-	-	0.15
Total:	1608.68	1060.00	180.00	2848.68**

* The list includes two special agencies at 26 and 22 which are otherwise within the territory of 31 states and union territories

** 284.8 million.

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SURVEILLANCE DATA

	1978	1979	1980 (Prov.)	JANUARY - MAY	
1. No. of B.S. Examined (in million)	60.46	61.42	52.81	17.67	17.86
2. No. of Cases found Positive cases	4740900	3064697	2320162	610545	572138

Sl. No.	Name of the States/UTs	1978	1979	1980	JANUARY - MAY 1980	JANUARY - MAY 1981
1.	Andhra Pradesh	71723	55575	29436	9748	9723
2.	Assam	80078	73397	44308	11537	12328
3.	Bihar	44787	73457	335313	10259	11902
4.	Gujarat	399254	351119	356124	81136	66585
5.	Haryana	708098	435984	270004	68290	73937
6.	Himachal Pradesh	49947	39870	48036	7422	15701
7.	Jammu & Kashmir	27376	11580	5307	976	574
8.	Karnataka	318390	276832	188549	93082	59934
9.	Keral a	6196	3972	1993	773	731
10.	Madhya Pradesh	261740	270814	176797	20852	63352
11.	Mahrashtra	215733	204996	185267	58176	30629
12.	Manipur	3655	4234	2635	636	367
13.	Meghalaya	9947	17342	16712	5496	3639
14.	Nagaland	8424	12019	8362	2878	1703
15.	Orissa	374591	310952	228429	72109	72801
16.	Punjab	467558	325227	197803	48381	41097
17.	Rajasten	154549	83304	62110	11606	12248
18.	Sikkim	45	66	43	12	18
19.	Tamilnadu	76227	95009	70570	25197	20896
20.	Tripura	12918	10679	5000	1429	1058
21.	Uttar Pradesh	360059	149919	151034	16147	37728
22.	West Bengal	11850	11909	12130	3440	1775
23.	Andaman & Nicobar	2810	7481	9075	3850	1728
24.	Arunachal Pradesh	30127	35595	22430	6864	5291
25.	Chandigarh	38676	36453	42657	8821	7424
26.	Coalfields Mines	3804	3917	3285	1346	618
27.	Delhi	375077	588112	48227	12490	9072
28.	DNK Project	17078	31453	254117	14208	4281
29.	Goa	450	270	188	70	45
30.	Lakshdweep	83	18	4	2	0
31.	Miz oram	12361	19345	17473	5236	4041
32.	Pndicherry	302	378	441	160	133
33.	Dadra & Nagar Hav eli	NA	1937	3800	696	1271
	TOTAL:	4141385	3064697	2320162	610545	572138

N.B: 1. The figures for 1980 represent reports received at Dte. NMEP up to ~~till~~ 25th July, 1981.
2. The figures of incidence in respect of Delhi have been shown as per records of MCCCO, Delhi.
3. Figures for 1980 are provisional and subject to revision.

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EPIDEMIOLOGICAL SITUATION OF MALARIA IN THE STATES/UTs IN INDIA DURING 1981 AS PER REPORTS RECEIVED UPTO 31.8.1981

Sl. No.	Name of the States/Union Territories	1980 (Corresponding Period) B.S. Examined	In-cidence	P.F. Cases	1981 B.S. Examined	Inc-cidence	PF. Cases	%age increase(+)/Decrease(-) 1981 over 1980 Total Incidence	P.F. Cases	Period upto which information relates
1.	Andhra Pradesh	2960242	13922	2794	3215545	12505	5024	(-) 10.18	(+) 79.81	June
2.	Assam	643560	25325	15926	725652	19970	11866	(-) 22.07	(-) 25.49	-do-
3.	Bihar	1159974	19126	9918	1071788	21466	10176	(+) 12.23	(+) 2.60	-do-
4.	Gujarat	2022498	146074	4391	1980549	170562	4776	(+) 16.76	(+) 8.77	July
5.	Haryana	1502327	123691	303	1704058	148419	5381	(+) 19.99	(+)1675.91	-do-
6.	Himachal Pradesh	217942	21150	1	417188	45106	18	(+)113.27	(+)1700.00	-do-
7.	Jammu & Kashmir	139855	1576	-	136560	894	-	(-) 43.27	-	June
8.	Karnataka	2351952	131641	3861	2524139	85759	3236	(-) 34.85	(-) 16.19	-do-
9.	Kerala	136045	534	10	132757	534	4	-	(-) 60.00	April
10.	Madhya Pradesh	1219814	38173	14663	1122768	64471	14117	(+) 68.89	(-) 3.72	June
11.	Maharashtra	3429261	117404	16535	2637584	58750	5589	(-) 49.96	(-) 66.20	July
12.	Manipur	4202	647	255	45876	367	98	(-) 43.28	(-) 61.57	May
13.	Meghalaya	98781	6762	5874	77823	4518	3473	(-) 23.19	(-) 40.88	June
14.	Nagaland	28005	3306	1321	19572	1632	785	(-) 50.64	(-) 40.58	May
15.	Orissa	1042906	90708	68717	817819	80958	64087	(-) 10.75	(-) 6.74	May
16.	Punjab	1381294	106633	78	1350124	113483	404	(+) 6.42	(+)417.95	July
17.	Rajasthan	2109648	20577	1318	1994443	30773	1883	(+) 49.55	(+) 42.87	-do-
18.	Sikkim	17361	27	3	16175	28	1	(+) 3.70	(-) 66.67	-do-
19.	Tamilnadu	1327976	25268	1870	1344743	22119	917	(-) 12.46	(-) 50.96	May
20.	Tripura	39534	1889	1301	28595	1058	825	(-) 43.99	(-) 36.59	May
21.	Uttar Pradesh	4124027	50296	1955	4335907	81159	2002	(+) 61.36	(+) 2.40	July
22.	West Bengal	592537	4217	724	609948	5546	469	(+) 31.52	(-) 35.22	May
23.	Andaman & Nicobar	39814	4710	269	33544	1993	281	(-) 57.69	(+) 4.46	June
24.	Arunachal Pradesh	51985	7139	1302	40653	6021	1034	(-) 15.66	(-) 20.58	May
25.	Chandigarh	44486	12856	3	42181	10909	5	(-) 15.14	(+) 66.67	June
26.	Coalfields	23679	1123	95	18743	618	124	(-) 44.97	(+) 30.53	April
27.	DVK Project	50690	11652	7502	32252	5469	3911	(-) 52.10	(-) 47.87	June
28.	D.&.N.Haveli	8692	1311	164	10643	1985	72	(+) 51.41	(-) 56.10	July
29.	Delhi	735051	29194	6	733188	29017	26	(-) 0.61	(+)333.33	16.8.81
30.	Goa	40404	971	31	27285	710	4	(-) 26.88	(-) 87.10	June
31.	Lakshdweep	1406	2	-	622	-	-	-	-	June
32.	Mizoram	27633	2739	2143	41114	4041	2186	(+) 8.08	(+) 2.01	April
33.	Pondicherry	57649	215	2	50276	167	2	(-) 22.33	-	June
	TOTAL:	27873030	1022168	163335	27441114	1031007	142776	(+) 0.86	(-) 12.59	

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Status of Insecticide resistance of **A. culicifacies** in India - 1980.

Sr. No.	State	Total districts (No.)	Resistance detected (No. of districts) DDT	HCH	Malathion
1.	Andhra Pradesh	23	4	3	-
2.	Bihar	31	11	6	-
3.	Delhi	1	1	1	-
4.	Gujarat	19	18	18	6
5.	Haryana	12	12	12	-
6.	Jammu & Kashmir	10	3	3	-
7.	Karnataka	20	13	10	-
8.	Madhya Pradesh	45	17	10	-
9.	Maharashtra	26	17	7	4
10.	Orissa	14	4	4	- 2
11.	Punjab	13	11	8	-
12.	Rajasthan	26	13	11	-
13.	Tamil Nadu	15	4	2	-
14.	Uttar Pradesh	56	26	5	-
15.	West Bengal	17	4	-	-
	Total	328 *	157	99	10
	(for 1977:	-	(114)	(33)	(2)

* In India total number of districts are 402 in 31 States and Union Territories.

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EPIDEMIOLOGICAL SITUATION OF MALARIA IN THE STATES/UTs IN INDIA DURING 1981 AS PER REPORTS RECEIVED UPTO 31.8.1981

Sl. No.	Name of the States/Union Territories	1980 (Corresponding Period) B.S. Examined	1980 Incidence	1980 P.F. Cases	1981 B.S. Examined	1981 Incidence	1981 PF. Cases	%age increase(+)/Decrease(-) 1981 over 1980 Total Incidence	P.F. Cases	Period upto which information relates
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2.	Assam	643560	25325	15926	725652	19970	11866	(-) 22.07	(-) 25.49	-do-
3.	Bihar	1153974	19126	9918	1071788	21466	10176	(+) 12.23	(+) 2.60	-do-
4.	Gujarat	2022498	146074	4391	1980549	170562	4776	(+) 16.76	(+) 8.77	July
5.	Haryana	1302327	123691	303	1704058	148419	5381	(+) 19.99	(+)1675.91	-do-
6.	Himachal Pradesh	317942	21150	1	417188	45106	18	(+)113.27	(+)1700.00	-do-
7.	Jammu & Kashmir	139855	1576	-	136560	894	-	(-) 43.27	-	June
8.	Karnataka	2351952	131641	3861	2524139	85759	3236	(-) 34.85	(-) 16.19	-do-
9.	Kerala	136045	534	10	132757	534	4	-	(-) 60.00	April
10.	Madhya Pradesh	1219814	38173	14663	1122768	64471	14117	(+) 68.89	(-) 3.72	June
11.	Maharashtra	3429261	117404	16535	2637584	58750	5589	(-) 49.96	(-) 66.20	July
12.	Manipur	4202	647	255	45876	367	98	(-) 43.28	(-) 61.57	May
13.	Meghalaya	38781	6762	5874	77823	4518	3473	(-) 23.19	(-) 40.88	June
14.	Nagaland	28005	3306	1321	19572	1632	785	(-) 50.64	(-) 40.58	May
15.	Orissa	1042906	90708	68717	817819	80958	64087	(-) 10.75	(-) 6.74	May
16.	Punjab	1381294	106633	78	1350124	113483	404	(+) 6.42	(+)417.95	July
17.	Rajasthan	2109648	20577	1318	1994443	30773	1883	(+) 49.55	(+) 42.87	-do-
18.	Sikkim	17361	27	3	16175	28	1	(+) 3.70	(-) 66.67	-do-
19.	Tamilnadu	1327976	25268	1870	1344743	22119	917	(-) 12.46	(-) 50.96	May
20.	Tripura	39534	1889	1301	28595	1058	825	(-) 43.99	(-) 36.59	May
21.	Uttar Pradesh	4124027	50296	1955	4335907	81159	2002	(+) 61.36	(+) 2.40	July
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24.	Arunachal Pradesh	51985	7139	1302	40653	6021	1034	(-) 15.66	(-) 20.58	May
25.	Chandigarh	44486	12856	3	42181	10909	5	(-) 15.14	(+) 66.67	June
26.	Coalfields	23679	1123	95	18743	618	124	(-) 44.97	(+) 30.53	April
27.	DVK Project	50690	11632	7502	32252	5469	3911	(-) 53.10	(-) 47.87	June
28.	D.&N.Haveli	8692	1311	164	10643	1985	72	(+) 51.41	(-) 56.10	July
29.	Delhi	735051	29194	6	733188	29017	26	(-) 0.61	(+)333.33	16.8.81
30.	Goa	40404	971	31	27285	710	4	(-) 26.88	(-) 87.10	June
31.	Lakshdweep	1406	2	-	622	-	-	-	-	June
32.	Mizoram	27633	2739	2143	41114	4041	2186	(+) 8.08	(+) 2.01	April
33.	Pondicherry	57649	215	2	50276	167	2	(-) 22.33	-	June
	TOTAL:	27873030	1022168	163335	27441114	1031007	142776	(+) 0.86	(-) 12.59	

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