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# GUIDE FOR THE REPORTS ON THE *Aedes Aegypti* ERADICATION CAMPAIGN IN THE AMERICAS



PAN AMERICAN HEALTH ORGANIZATION  
Pan American Sanitary Bureau, Regional Office of the  
WORLD HEALTH ORGANIZATION

1971



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**PAN AMERICAN HEALTH ORGANIZATION**  
Pan American Sanitary Bureau, Regional Office of the  
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## INTRODUCTION

The present campaign for the eradication of *Aedes aegypti* from the Western Hemisphere is a program of international cooperation in public health, and was undertaken in accordance with the following resolution<sup>1</sup> of the I Meeting of the Directing Council of the Pan American Health Organization (Buenos Aires, 1947):

*The Directing Council Resolves:*

1. To entrust to the Pan American Sanitary Bureau the solution of the continental problem of urban yellow fever, based fundamentally on the eradication of *Aedes aegypti*, without prejudice to other measures that regional circumstances may indicate.

2. To develop the program under the auspices of the Pan American Sanitary Bureau, which, in agreement with the interested countries, shall take the necessary measures to solve such problems as may emerge in the campaign against yellow fever, whether they be sanitary, economic, or legal.

This Guide explains the forms and procedures to be used in the preparation of the reports on the campaign. These are designed for use in the evaluation of the status and the progress of the campaign in a given country as a whole and in each initially positive locality. The usefulness of the reports will be greatly enhanced if they are transmitted regularly and promptly to the Pan American Sanitary Bureau.

The reports are also very useful in the application and implementation of the various definitions and provisions concerning yellow fever transmitted by *A. aegypti* as contained in the *International Health Regulations*,<sup>2</sup> especially those cited below.

Article 1 . . . "infected area" is defined on epidemiological principles by the health administration reporting the disease in its country and need not correspond to administrative boundaries. It is that part of its territory which, because of population characteristics, density and mobility and/or vector and animal reservoir potential, could support transmission of the reported disease:

Article 20.1 Every port and the area within the perimeter of every airport shall be kept free from *Aedes aegypti* in its immature and adult stages and the mosquito vectors of malaria and other diseases of epidemiological significance in international traffic. For this purpose active anti-mosquito measures shall be maintained within a protective area extending for a distance of at least 400 meters around the perimeter.

Article 74.3 . . . Every ship leaving a port in an area where *Aedes aegypti* still exists and bound for an area where *Aedes aegypti* has been eradicated shall be kept free of *Aedes aegypti* in its immature and adult stages.

<sup>1</sup>Pan American Health Organization. Publication No. 247, 1950.

<sup>2</sup>*International Health Regulations* (adopted by the Twenty-Second World Health Assembly in 1969. These represent a revised and consolidated version of the previous International Sanitary Regulations).

Article 74.4 . . . An aircraft leaving an airport where *Aedes aegypti* exists and bound for an area where *Aedes aegypti* has been eradicated shall be disinfected in accordance with Article 26, using methods recommended by the Organization.

Article 81 On arrival of a train, a road vehicle, or other means of transport in an area where the vector of yellow fever is present, the following measures may be applied by the health authority:

. . . (b) disinfecting of the train, road vehicle or other means of transport if it has come from an infected area.

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## I. GENERAL STANDARDS FOR THE AEDES AEGYPTI ERADICATION CAMPAIGN

### A. Definitions

1. For the purposes of this Guide the following definitions will apply:

*“area assumed initially infested”* means the approximate area (in square miles) of the part or parts of the country that are assumed to be originally infested because of the presence of conditions favorable to the development and spread of *Aedes aegypti*. This area is estimated by obtaining the total of the involved areas of the major political units or of their subdivisions;

*“area inspected to date”* means that portion of the area presumed initially infested in which an initial survey, as defined below, has been made. This area is the sum (in square miles) of the individual areas of the counties, districts, or other political subdivisions that have already been inspected for *Aedes aegypti*. The areas of the component parts of large counties, districts, etc., may be included as the inspection of each part is completed;

*“house”* means any structure, irrespective of its use, that has an entrance from a public or private street or road;

*“initial survey”* means the first inspection of a locality for *A. aegypti*, before or after treatment;

*“locality”* means any city, town, or village, and also any inhabited rural area comprising grouped or isolated houses or huts, ranches, farms, etc.;

*“initially negative locality”* means any locality found negative in the initial survey or on resurvey, if any;

*“initially positive locality”* means any locality found with *A. aegypti* in the initial survey or on resurvey;

*“locality with international traffic”* means any airport or port as defined below, any frontier post and any locality served by such places;

*“resurvey”* means the reinspection of an initially negative locality;

*“surveillance”* means the quarterly, semiannual, or annual inspection of localities

with international traffic (situated at 1,200 meters or less above sea level) and of cities served by such localities, carried out after the eradication of *A. aegypti* from the country for the purpose of preventing or discovering any infestation with *Aedes aegypti* from areas outside the country where *A. aegypti* still exists. The inspection may be an initial survey, a resurvey, or a verification. Surveillance includes insecticide application to houses in case of infestation, as well as the inspection and disinsectization of transports.

“transport” means:

- (a) an aircraft or ship as defined below, or a train or road vehicle on an international voyage;
- (b) an aircraft, ship, train, or road vehicle of internal traffic, arriving at an airport or port as defined below, or at a frontier post;

“verification” is the reinspection of houses for the purpose of checking the results of one or more insecticide applications to an initially positive locality;

2. The following definitions from Part I, Article 1, of the *International Health Regulations* will also apply:

“*Aedes aegypti* index” means the ratio, expressed as a percentage, between the number of houses in a limited well-defined area on the premises of which actual breeding-places of *Aedes aegypti* are found, and the total number of houses examined in that area;<sup>3</sup>

“aircraft” means an aircraft making an international voyage;

“airport” means an airport designated by the State in whose territory it is situated as an airport of entry or departure for international air traffic;

“international voyage” means—

- (a) in the case of a ship or an aircraft, a voyage between ports or airports in the territories of more than one State, or a voyage between ports or airports in the territory or territories of the same State if the ship or aircraft has relations with the territory of any other State on its voyage but only as regards those relations;

“port” means a seaport or an inland port;

“ship” means a seagoing or an inland navigation vessel making an international voyage.

<sup>3</sup>On the basis of the above definition the formula for the *Aedes aegypti* index is:

Number of houses in a limited well-defined area which are found with *Aedes aegypti*

x 100

Total number of houses inspected in the area

## B. Basic Procedures

The campaign will be carried out by localities and following the steps indicated below.

### *Initial Survey*

1. As defined in I(A), the *initial survey* should be carried out by search for foci in houses and according to the following method:

- (a) in general, inspection of every third house where the houses are contiguous; of every second house where these are noncontiguous and less than 25 meters (27 yards) apart; and of all houses separated by a distance of 25 meters or more;
- (b) in the case of an urban locality known to be highly infested, inspection of the houses by block as specified in (a) above, until the first positive house is found, and then inspection of the next block.

The area found infested with *A. aegypti* and the area found negative in the initial survey of a locality will be known as the *area initially infested* and the *area initially negative*, respectively. If the area initially infested comprises the whole locality, a *generalized initial infestation* is said to exist; whereas if it comprises only part of the locality, a *localized initial infestation* is said to be present.

The initial survey of a locality that is treated with insecticide prior to any inspection, should generally be carried out three months after treatment, or within the time interval required by the residual action of the insecticide used.

The initial survey of urban or rural localities that have been treated two or more times against malaria by residual spraying of all houses in regular cycles, may be conducted from the fourth to the sixth month after the last spraying in the case of urban localities, and from the fourth to the twelfth month after the last spraying in the case of rural localities.

### *First Treatment after the Initial Survey*

2. *First insecticide application to the locality* if the results of the initial survey are positive. This is made using the method of perifocal treatment or of residual intradomestic spraying, according to the following criteria:

- (a) to all houses in the locality, in the case of generalized initial infestation;
- (b) to all houses in the area initially infested and to those within a radius of 100 meters (110 yards) from that area, in the case of localized initial infestation.

### *Three Months after the First Treatment*

3. *First verification of initially positive urban localities.* This verification consists of the inspection of houses by search for foci, according to the following criteria:

- (a) all houses of the locality in the case of generalized initial infestation;
- (b) all houses of the area initially infested in the case of localized initial infestation. If no *A. aegypti* are found in that area, the inspection is extended to the area initially negative by the procedure for the initial survey, as set forth in paragraph 1-a above.

4. *New application of insecticide to the locality* according to the method and criteria described in paragraph 2, if the results of the verification specified in paragraph 3 were positive.

*Six Months after the  
First Treatment*

5. (a) *Second verification of urban localities* by search for foci in houses and according to the criteria in paragraph 3. This inspection is carried out irrespective of the results of the first verification.

(b) *Verification of rural localities* by search for foci in all houses. If the results of this inspection are completely negative, work will be stopped and the mosquito will be considered eradicated, provided that the initial infestation was not generalized and that no ovular endurance has been found.

6. *New application of insecticide to the locality* according to the method and criteria in paragraph 2, if the results of the verification under paragraph 5 were positive.

*Nine Months after the  
First Treatment*

7. *Third verification of urban localities* by search for foci in houses and according to the criteria in paragraph 3. This inspection is made only if the locality is found positive in the second verification, or if found negative in the second but positive in the first verification. It is not made if the locality was negative in the first and second verifications.

8. *New insecticide application to the locality* according to the method and criteria in paragraph 2, if the results of the verification under paragraph 7 were positive.

*Twelve Months after the  
First Treatment*

9. *New verification of rural localities* by search for foci in all houses. This inspection is made only if the results of the verification made six months previously were positive. Work will be stopped and the mosquito will be considered eradicated if this new inspection is negative and the requirements at the end of paragraph 5-b are met. The process of treatment with insecticide and verification six months after treatment is continued until completely negative results are obtained.



*Twelve Months after the  
Last Treatment*

10. *Special verification of urban localities* according to the criteria in paragraph 3, by the combined method of search for foci and of capture of adult mosquitoes in houses. The search for adult mosquitoes is effected preferably in bedrooms while the search for foci is made throughout the house. This inspection is conducted only if the locality was found negative in the first and second verifications. If the results of this special examination are negative, work will be stopped and the mosquito will be considered eradicated, provided that the initial infestation of the locality was not generalized and that no ovular endurance has been found.

*Eighteen Months after the  
Last Treatment*

11. *Fourth verification of urban localities with generalized initial infestation or ovular endurance*, by search for foci in houses and according to the criteria in paragraph 3. This inspection is made only if the results of the special verification prescribed in paragraph 10 are negative.

*Twenty-Four Months after the  
Last Treatment*

12. (a) *Fifth verification of urban localities with generalized initial infestation or ovular endurance*, by search for foci in houses and according to the criteria in paragraph 3. This inspection is effected only if the results of the fourth verification are completely negative.

(b) *Second verification of rural localities with generalized initial infestation or ovular endurance*, by search for foci in all houses. This inspection is made only if the results of the verification performed 18 months earlier under paragraph 5-b are completely negative.

### C. Criteria of Eradication

1. In general, eradication of *Aedes aegypti* in an urban locality will be considered to have been attained when three consecutive negative verifications have been made within the period of one year from the last treatment with insecticide, as follows: the first and second verifications by search for foci and the third one by the combined method of search for foci and of capture of adult mosquitoes in houses. In the case of generalized initial infestation or ovular endurance, two more consecutive negative verifications, by search for foci, will be an additional requirement, the first carried out six months and the second 12 or more months after the third consecutive negative verification of the locality.

2. In general, eradication of *A. aegypti* in a rural locality will be considered to have been attained when a single negative verification of all houses by search for foci has been made six months after the last insecticide application. In the case of generalized initial infestation or ovular endurance, a second negative verification by search for foci in all houses of the area, performed at least 18 months after the first negative verification, will be an additional requirement.

3. For an urban locality with localized initial infestation, the three consecutive negative verifications prescribed in paragraph 1 above should be extended from the area initially infested to the area initially negative in the following manner: of every three contiguous houses, a different house is examined in each verification; of every two non contiguous houses less than 25 meters (27 yards) apart, a different house is inspected in at least each of two verifications, preferably the first and second verifications; all houses at a distance of 25 meters or more from each other should be examined in at least one verification, preferably the second.

4. In the case of ovular endurance in an urban locality with localized initial infestation, each one of the two additional verifications prescribed in paragraph 1 above is to be extended to a different part of the area initially negative, and effected in accordance with the procedure for the initial survey as set forth in Section B (1-a).

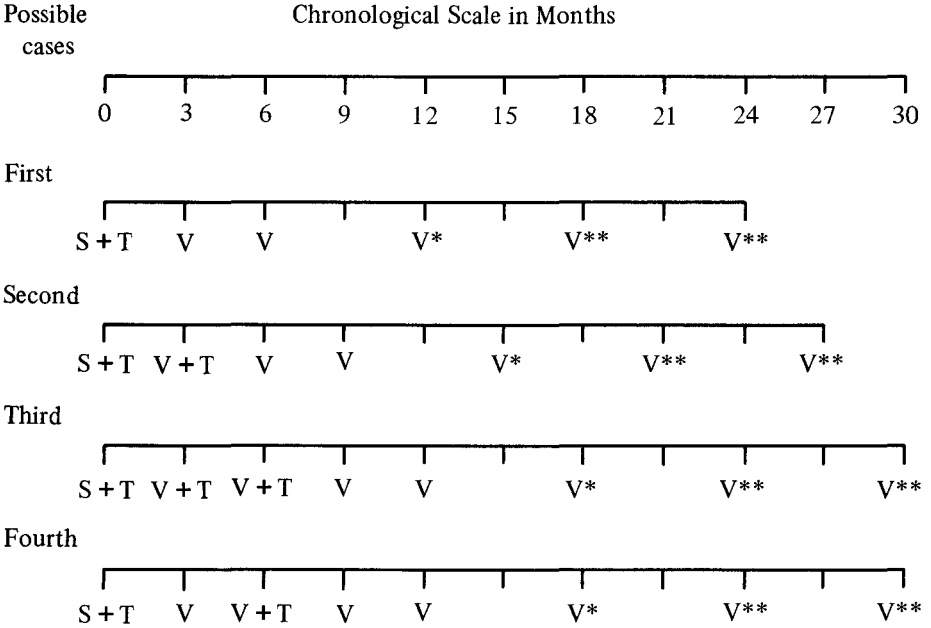
5. Whenever possible, verifications of a locality should be made during the season of greatest prevalence of the mosquito.

6. An airport, port, or frontier post which is free of *A. aegypti* and has traffic coming from infested localities should be inspected at intervals of 6 to 12 months. There should also be available a service for disinsecting of transports on arrival and for surveillance of installations. This service should remain in operation until all the positive localities, where the transports come from, become free of *A. aegypti* as prescribed in paragraphs 1 and 2 above.

7. A locality which is reinfested by *A. aegypti* after eradication has been achieved in accordance with paragraphs 1 and 2 above, must be subjected to the process of treatment with insecticide and verification described in I(B), paragraphs 2 to 12. In this case, the criteria of eradication in paragraphs 1 and 2 above will apply to the area found with *A. aegypti* and to the area found negative at the time of the inspection during which the reinfestation of the locality was discovered.

8. The eradication requirements, prescribed in paragraphs 1 and 2 above, must be met before the declaration of *Aedes aegypti* eradication by a country will be adopted by the Governing Bodies of the Pan American Health Organization. The last or final verification confirming eradication should always be made with the collaboration of the technical staff of the Pan American Sanitary Bureau.

9. The following scheme shows the possible results of the first and second verifications of a locality, and subsequent negative verifications, as described in paragraphs 1-4 above.



Symbols:

S + T = Positive initial survey by search for foci, followed by treatment with insecticide.

V + T = Positive verification by search for foci, followed by treatment with insecticide.

V = Negative verification by search for foci.

V\* = Special negative verification by the combined method of search for foci and of capture of adult mosquitoes.

V\*\* = Additional negative verification by search for foci in the case of a locality with generalized initial infestation or ovular endurance.

## II. INSTRUCTIONS ON THE USE OF THE FORM PAHO 601 FOR REPORTS ON THE Aedes Aegypti ERADICATION CAMPAIGN

Form PAHO 601 (PAHO 602 in Spanish) is the model for reporting the results of the *Aedes aegypti* eradication campaign. It should be completed monthly and yearly for those countries with an eradication campaign in progress, and quarterly as well as yearly for those countries in which the campaign is in the stage of "surveillance" as defined in Section I(A).

The campaign stage is indicated at the upper left-hand corner of the form by checking the appropriate block, viz.: "Progress" in the case of the activities from the beginning to the end of the campaign, or "Surveillance."

Spaces are also provided at the top of the form for recording the "area assumed initially infested" and the "area inspected to date," as defined in I(A), as well as the name of the country and the reporting period.

The form includes three sections which are described below:

### PART I

This table is used to record every locality for which data are available on some operation that was started, completed, or continued during the reported month or quarter, as well as revised data or information not previously reported.

For monthly and quarterly reports, and for the yearly reports of programs in the stage of "surveillance" as defined in I(A), both the localities initially positive and the localities initially negative that were covered in the reporting period should be listed in Part I.

For the yearly reports of programs in the progress stage, no locality initially negative is listed, in Part I, but each and all localities initially positive covered from the beginning of the campaign through the last day of December of the reported year are recorded.

Column 1. In this column each locality is numbered successively, so that the last serial number equals the number of localities listed.

Column 2. The localities to be recorded in this column should be grouped by geographic divisions (state, province, department, etc.) and by subdivisions (county, district, municipality, etc.). The geographic divisions, their subdivisions, and the localities in each subdivision should be listed in alphabetical order.

The name of a locality with international traffic as defined in I(A) is written followed by one of the following symbols or the proper combination thereof:

A = airport; P = maritime, river, or lake port;  
F = frontier post.

Column 3. The serial number of the latest cycle, whether completed or not, for which current data are available, should be entered here.

Column 4. The type of the latest cycle is indicated in this column by writing one of the following symbols:

S = initial survey; R = resurvey; T = treatment with insecticide; V = verification; ST, RT or VT = combination of positive initial survey, resurvey, or verification with treatment.

Column 5. This column records the *A. aegypti* index, as defined in I(A), that was found during the first positive inspection of houses in a locality. A plus sign (+) is entered if the figures on this inspection are not available. A zero (0) is recorded if the results of all the inspections performed so far have been negative for *A. aegypti*.

Column 6. The total number of inspections performed so far are shown in this column, including any inspection not yet completed that continues into the next period and for which there are current data available.

Column 7. Indicate in this column the number of consecutive verifications with negative results for *A. aegypti* that have been performed so far in the locality initially positive. No entry is made if the locality remains positive according to the results of the latest inspection.

Column 8. Enter in this column the month in roman numerals and the last two digits of the year in which the latest inspection with positive results was conducted.

Columns 9 to 12. These are used for recording the data of the latest inspection of the locality. The latest inspection may be an initial survey, a resurvey, or a verification as defined in I(A).

Column 9. The day, month, and year in which the latest inspection was completed are specified in this column. Write "Inc." (incomplete) in the case of an inspection not yet completed that continues into the next period and for which there are current data available.

Column 10. The present number of houses in the locality or the latest estimated total is entered in this column.

Columns 11 and 12. The totals to be recorded in these columns are the total number of houses inspected and the number of houses found with *A. aegypti*, respectively, in the reporting period. The *complete results* of an inspection carried out in more than one period (month or quarter) should be indicated in the report for the period in which the inspection was completed. For instance, if the inspection started early in March and ended about the middle of June of the same year, current data should be shown in the report for the corresponding period but the complete results of the entire inspection should be shown in the report for June or for the second quarter, depending on whether the campaign is in progress or in the "surveillance" stage.

Column 13. Specify here the total number of treatments with insecticide applied so far to the locality, including any treatment not yet completed that continues into the next period and for which there are current data available.

Column 14. Enter in this column the month in roman numerals and the last two digits of the year in which the first treatment with insecticide for the eradication of *A. aegypti* was applied to the locality.

Column 15. In this column are recorded the day, month, and year in which the latest treatment with insecticide, applied to the locality, was completed. Write "Inc." (incomplete) in the case of a treatment not yet completed that continues into the next period and for which current data are available.

Column 16. The number of houses in the locality that were treated with insecticide during the reporting period should be recorded in this column. The *complete data* of a treatment carried out in more than one period (month or quarter) should be shown in the report for the period in which the treatment was completed.

## PART II

Part II of the form is used to register the country totals of localities and houses covered during the month or quarter, during the year and since the beginning of the campaign.

Column 1. This column shows the types of totals that are to be recorded as specified below.

In the first row either the monthly or the quarterly totals are recorded, depending on whether the campaign is in the progress or the "surveillance" stage as defined in I(A). The monthly or quarterly totals of localities should include every locality for which data are available on some operation (initial survey, resurvey, treatment or verification) that was started, completed, or continued during the reporting period. A dash (-) should be entered in the proper column on the first row if any of the operations of the campaign was not performed during the reporting period.

The cumulative totals for the year and the cumulative totals for the period from the beginning of the campaign to date, respectively, are recorded in the second and third rows. A locality or a house is included and remains included in the above cumulative totals starting from the month or quarter in which it was reported for the first time as inspected or treated, as the case may be. Exception is made for the cumulative totals in columns 6 and 14 where the corresponding units remain included as long as they continue to be positive, and cease to be included when they become negative.

Columns 2 and 3. Enter in column 2 the monthly or quarterly and the cumulative totals of localities in which an initial survey or resurvey has been effected. Record the corresponding number of localities found with *A. aegypti* at the time of the initial survey or resurvey in column 3.

Column 4. The monthly or quarterly and the cumulative totals of localities initially positive that have been treated with insecticide one or more times after the initial survey are recorded in this column.

Column 5. Enter in this column the monthly or quarterly and the cumulative totals of localities initially positive that have been verified, i.e., inspected after treatment, according to the definition of "verification" in I(A). Each total in this column must be equal to the sum of the totals on the same line in columns 6 to 9.

Column 6. Insert in this column, for each total in column 5, the number of localities where *Aedes aegypti* still exists.

Columns 7 to 9. These columns will record, for each total in column 5, the number of localities that have become free of *Aedes aegypti*, as follows: column 7, the number of localities verified a single time as negative; column 8, the number of localities verified two consecutive times as negative; and column 9, the number of localities verified three or more consecutive times as negative. The sum of the totals on the same line in columns 7 to 9 gives the total number of localities initially positive in which *Aedes aegypti* is no longer found.

Columns 10 to 14. In these columns the numbers of houses corresponding to the totals of localities entered in columns 2 to 6 are recorded.

Columns 15 and 16. Enter in column 15 the monthly or quarterly and the cumulative totals of transports, as defined in I(A), that have been inspected. In column 16 specify, for each total in column 15, the corresponding number of transports found with *A. aegypti*.

### PART III

Part III is designed for the inclusion of information regarding the inspection with positive results of any transport on an international voyage.

Only the following columns require explanation:

Column 4. Specify all localities where the carrier stopped within 30 days prior to its arrival.

Column 6. The results of the inspection are indicated by using one of the following symbols or the proper combination thereof:

FA = egg or larval foci; FAN = pupae (nymph) foci;  
MA = adult mosquitoes.

### REMARKS

Space is provided in this section for comments, supplementary data, or additional information.

**REPORT ON THE AEDES AEGYPTI ERADICATION CAMPAIGN**

Page \_\_\_\_\_ of \_\_\_\_\_

Stage  Progress Area assumed initially infested \_\_\_\_\_ Sq. mi. Country \_\_\_\_\_

Surveillance Area inspected to date \_\_\_\_\_ Sq. mi. Period \_\_\_\_\_

**PART I. RESULTS OF OPERATIONS BY LOCALITY**

Locality		Cycle				Inspections				Treatments with insecticide					
No.	Name*	No.	Type	Initial index	Number		Month and year of latest positive	Date	Latest		Month and year of first	Date	Total houses treated		
					Total	Negative consecutive			Total in the locality	Number of houses				Total	
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)

Signature \_\_\_\_\_ Name \_\_\_\_\_ Position \_\_\_\_\_  
 Office \_\_\_\_\_ Place \_\_\_\_\_ Date \_\_\_\_\_

\*After the name of the locality write *A* if airport; *P* if maritime, river, or lake port; or *F* if frontier post.



PART II. COUNTRY TOTALS ON THE RESULTS OF OPERATIONS

Type of total	Number of localities						Number of houses				Transports inspected					
	Inspected (initial survey)		Verified			Inspected (initial survey)		Verified								
	Total	With <i>A. aegypti</i>	Treated	Still with <i>A. aegypti</i>	Without <i>A. aegypti</i>		Total	With <i>A. aegypti</i>	Treated	Still with <i>A. aegypti</i>						
					Once	Twice				3 or more times		Total	With <i>A. aegypti</i>			
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	
MONTHLY QUARTERLY	<input type="checkbox"/>	<input type="checkbox"/>														
CUMULATIVE: YEAR																
CUMULATIVE: FROM THE BEGINNING																

PART III. TRANSPORTS ON AN INTERNATIONAL VOYAGE, FOUND WITH *AEDES AEGYPTI*

Inspection airport, port or frontier post* (1)	Transport		Inspection	
	Name (2)	Type (3)	Arrived from* (4)	Date (5) Results (6)

REMARKS:

\* After the name of the locality write *A* if airport; *P* if maritime, river, or lake port; or *F* if frontier post.

N.B. - Upon completion of this report send the original to Pan American Sanitary Bureau, Regional Office of the World Health Organization, Washington, D.C., U.S.A., and one copy to the appropriate Zone Office of PASB. The equivalent form in Spanish is PAHO 602.

PAHO 601 (back)