PD-AAX-211
54395

8054M

INTEGRATED DEVELOPMENT OF ENGLISH-SPANISH MACHINE TRANSLATION
AID Grant DPE-5542-G-SS-3048-00
1 August 1983 - 31 July 1985

3. C-06

INTERIM PROGRESS REPORT
1 August 1984 - 31 January 1985

ADMINISTRATIVE REPORT

1. General

Administrative support continued during the first half of the second year of the grant period for Tasks 1 and 2 under the Technical Work Plan approved for Grant DPE-5542-G-SS-3048-00. Based on the accomplishments of the first year, work during the period from 1 August 1984 through 31 January 1985 focused on coordination of assignments of the staff in place, contracting of part-time personnel to perform specific tasks as provided under the Plan of Work, coordination of consultants, and coordination of the test translations. Management of equipment and space continued.

During the reporting period the Director of the Pan American Health Organization merged the Machine Translation Program with the traditional translation activity, thereby setting a unique precedent in the United Nations system. Under the new structure, all the in-house professional translators at the level of P.3 are expected to spend part of their time postediting machine translations and working on the dictionaries. All the P.3 translator posts are currently vacant, and these duties are to be included in the generic post description that is circulated as part of the respective vacancy announcements. There are three vacancies in Spanish at this level, which means that there will be three professional translators working regularly on ENGSPAN.

2. Staffing and Assignments

The project head, Dr. Muriel Vasconcellos, continued to devote 35% of her time to activities under the grant. Her work has related to all phases of the project, with special emphasis on the coordination of broad strategies, the development of assignments for staff and consultants, liaison with other offices both inside and outside the Organization, and general management of the project.

Ms. Marjorie León, the senior computational linguist from the regular PAHO staff, continued to devote most of her time to activities under the AID grant, although the pressure of other Organizational duties kept her from giving a full 80% of her time to the project.

Ms. León's work relates to all phases of the ENGSPAN project, with special emphasis on transfer, synthesis, and construction of the overall system architecture. During the reporting period Ms. León introduced new procedures in both the transfer and synthesis components. Also during the period she coordinated all aspects of test translations of 370,253 running words.

In terms of the Plan of Work, Ms. León has addressed Phases 5 and 6 of Task 1 and has coordinated the work of dictionary assistants under Phases 3 through 5 of Task 2. All targets have been surpassed. Details are given in the Technical Report that follows.

As part of the project's activities, Ms. León, together with Ms. Lee Ann Schwartz, attended the Workshop on the Lexicon, Parsing, and Semantic Interpretation (New York, 17-18 January 1985), sponsored jointly by IBM and the City College of New York. While in New York, Ms. León and Ms. Schwartz held technical discussions with Professor Naomi Sager, a consultant whose services were provided for in the Plan of Work. Provision for New York-Washington travel had been included in the budget specifically for the purpose of meeting with Professor Sager.

Ms. Lee Ann Schwartz, the full-time computational linguist, continued her work on the ATN parser, the capabilities of which were expanded during the period. Details are given in the Technical Report and its Appendix A.

Ms. Schwartz' work on the parser was corresponded to Phases 5 of Task 1 of the Plan of Work, i.e. parsing at the clause level. She also continued to address some of the more complex problems associated with certain aspects of the first four phases. Again, all targets have been surpassed.

Three part-time dictionary assistants worked on the project during the period: Ms. Susana Santangelo, Ms. Catherine Howe, and Ms. Lucy Vanderwende. In the English source dictionary, Ms. Howe and Ms. Vanderwende, working under Phase 3 of Task 2, completed the coding of all verbs for selectional and subcategorizational features (NOBJ, 1OBJ, 2OBJ, COMP, LOC, NOPAS, TOINF, UMINF, DCL, ?CL, IMPCL, ING, PREP, DJUN, OBJPR); provided coding for semantic preference for all the verbs; and coded semantic and syntactic preferences for all nouns, ambiguous forms that could be nouns, and all ambiguous forms that could be verbs from the general (nontechnical) half of the dictionary.

On the side of the Spanish target, Ms. Santangelo, working on Phases 2, 4, and 5 of Task 2 simultaneously, integrated her dictionary work with a review of 60,000 running words of text in the field of pesticides, correcting glosses that were inappropriate, adding not-found words, and providing idioms where they were required. With the introduction of transfer units into the system, Ms. Santangelo's work has focused increasingly on the exercise of this capability through the introduction of appropriate forms in the dictionary.

In terms of the Technical Work Plan, Phase 3 under Task 2 is now completed and progress is well advanced under Phases 4 and 5.

The dictionary work was held back by the delay in delivery of the Wang workstation ordered for the project, which did not arrive until December 1983, and by other pressures in the Organization which have resulted in use of this workstation for other purposes.

3. Equipment and Space

Plans began to be made to move the working area to new headquarters at 515 Twenty-second Street, N.W.

In addition to the two Memorex terminals, one Wang workstation, and Wang matrix printer, two additional Wang workstations were rented for the balance of the grant period, since internal pressures in the Organization had prevented utilization of the station that was originally purchased for the project. It is expected to reimburse the project for this additional use of the original station so that there will be no cost overrun. (It will also be remembered that Wang delayed six months in the delivery of the original station.)

4. Reporting and Evaluation

Regular monthly reports continued to be prepared by the two computational linguists, and these automatically became part of the system's documentation.

Program fulfillment continued to be discussed with Ruhl Information Management. Technical fulfillment of the project's linguistic targets was discussed with Professor Naomi Sager.

Various avenues continued to be explored for disseminating the use of ENGSPAN. Use of ENGSPAN for development of a parallel system into Portuguese, now provided for in the regular PAHO budget for 1986, will also be an important way of disseminating the effects of the AID grant.

FINANCIAL REPORTS
26 September 1984 - 24 March 1985

Attached are copies of the last two financial report submitted under the grant, corresponding to the fourth quarter of calendar and fiscal year 1984 and the first quarter of calendar and fiscal year 1985.

Under contractual services, it should be pointed out that the term "review" is in error. Ms. Howe and Ms. Vanderwende worked exclusively on coding the dictionary, and the review done by Ms. Santangelo was preliminary to her work on the dictionary. This same correction applies to all the previous financial reports as well. The language of their respective contracts is correct.

While there appears to be an excessive balance on hand, it should be pointed out that the salary costs for Dr. Vasconcellos and Ms. León have not yet been taken into account. In addition, payment on additional contracts has been obligated.

ACC/GRT-3210-85

4 June 1985

Agency for International Development
AID Controller
FM/PAD
SA-12
Washington, D.C. 20023

Gentlemen:

... Enclosed please find standard forms 1034, 1035 and 269 representing expenditures for the period 1 January through 25 March 1985 on Grant No. DPE-5542-G-SS-3048-00.

We would appreciate your adjusting the amount of $18,733.39 against the letter of credit withdrawal.

Sincerely,

John A. Hunter, Chief,
Accounts Section

... Encl.
cc; ABU
ATP
ACC/GRT

AH/vh

ACC/GRT
ACC

ACC/GRT File

Standard Form 1034
September 1963
4 Treasury FRM 2040
Title 31

PUBLIC VOUCHER FOR PURCHASES AND SERVICES OTHER THAN PERSONAL

VOUCHER NO. 06

U.S. DEPARTMENT BUREAU OR ESTABLISHMENT AND LOCATION
U.S. International Development Agency
Washington, D.C. 20523

DATE VOUCHER PREPARED: 26 March 1985

SCHEDULE NO.

CONTRACT NUMBER AND DATE

PAID BY

REQUISITION NUMBER AND DATE

PAYEE'S NAME AND ADDRESS
Pan American Health Organization
525 Twenty-third St.,N.W.
Washington, D.C. 20037

DATE INVOICE RECEIVED

DISCOUNT TERMS

PAYEE'S ACCOUNT NUMBER: ICP-HEI-020

SHIPPED FROM | TO | WEIGHT

GOVERNMENT B/L NUMBER

NUMBER AND DATE OF ORDER	DATE OF DELIVERY OR SERVICE	ARTICLES OR SERVICES (Enter description, item number of contract or Federal supply schedule and other information deemed necessary)	QUANTITY	UNIT PRICE COST	UNIT PRICE PER	AMOUNT (1)
		See attached details				18,733.39

(Use continuation sheet(s) if necessary)

(Payee must NOT use the space below) TOTAL 18,733.39

PAYMENT
- [ ] COMPLETE
- [ ] PARTIAL
- [ ] FINAL
- [ ] PROGRESS
- [ ] ADVANCE

APPROVED FOR = $

EXCHANGE RATE = $1.00

DIFFERENCES

BY:

TITLE

Amount verified, correct for

(Signature or initials)

Pursuant to authority vested in me, I certify that this voucher is correct and proper for payment.

(Date) (Authorized Certifying Officer) (Title)

ACCOUNTING CLASSIFICATION

PAID BY

CHECK NUMBER ON TREASURER OF THE UNITED STATES

CHECK NUMBER ON (Name of Bank)

CASH $ DATE

PAYEE:

PER

TITLE

If not stated in foreign currency, state name of currency.
Items of this voucher paid by check will be paid per assignment in one payment, one signature only is necessary, either on the face hereof or on the back of the space provided over his official title.
If not paid by check, state the name of a company or corporation in the name of the person signing the company voucher, the name of the company in which he signs must appear. For example: John Doe (Company) per John Doe, Secretary or Treasurer, as the case may be.

U.S. GOVERNMENT PRINTING OFFICE: 1963 O-683-[illegible]

6

PUBLIC VOUCHER FOR PURCHASES AND SERVICES OTHER THAN PERSONAL

06

CONTINUATION SHEET

U.S. Agency for International Development

DETAILS OF EXPENDITURES
FOR THE PERIOD 1 JANUARY - 25 MARCH 1985
PROJECT ICP-HBI-020-PG
(Expressed in US Dollars)

GRANT NO: DPE-5542-G-SS-3048-00
PERIOD: 24 August-31 July 1985
AMOUNT: $146,697.00

SALARIES AND ALLOWANCE			
Lee Ann Schwartz, Salary JAN/MAR 85		6,365.50	
Lee Ann Schwartz, Travel Wash/NY		75.00	
Marjorie Leon, Travel Wash/NYC		120.00	6,560.50
CONTRACTUAL SERVICES			
Susana Santangelo			
350 Hours of Review	3,150.00		
Examing 47,000 running words	3,800.00	6,950.00	
Lucretia H. Vanderwende			
Code Semantic Preferences		1,200.00	8,150.00
SUPPLIES AND MATERIALS			
Wang Laboratories, APO 15974			1,867.72
		SUBTOTAL	16,578.22
Program Support Cost 13% on 16,578.22			2,155.17
		TOTAL EXPENDITURES	$18,733.39

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

525 TWENTY THIRD STREET N.W. WASHINGTON D.C. 20037 U.S.A.

CABLE ADDRESS OFSANPAN

IN REPLY REFER TO

TELEPHONE 861-3200

STATEMENT OF CUMULATIVE EXPENSES
FOR THE PERIOD 1 JANUARY-25 MARCH 1985
PROJECT NO. ICP/HBI/020/PG

	Budget	Expenditures this Period	Cumulative Expenditures	Balance
Salaries and Allowances	74,652.00	6,560.50	31,913.05	42,738.95
Contractual Services	45,348.00	8,150.00	25,378.00	19,970.00
Furniture and Equipment	9,820.00	1,867.72	8,480.92	1,339.08
Program Support Cost	16,877.00	2,155.17	8,550.36	8,326.64
	146,697.00	18,733.39	74,322.33	72,374.67

FINANCIAL STATUS REPORT

(Follow instructions on the back)

1. FEDERAL AGENCY AND ORGANIZATIONAL ELEMENT TO WHICH REPORT IS SUBMITTED: U.S. International Development Cooperation Agency

2. FEDERAL GRANT OR OTHER IDENTIFYING NUMBER: DPE-5542-G-SS-3048-00

OMB Approved No 80-R0180

PAGE 1 OF 1 PAGES

3. RECIPIENT ORGANIZATION (Name and complete address including ZIP code)
Pan American Health Organization
525 Twenty-third Street, N.W.
Washington, D.C. 20037

4. EMPLOYER IDENTIFICATION NUMBER

5. RECIPIENT ACCOUNT NUMBER OR IDENTIFYING NUMBER: TCP/HBI/020/PG

6. FINAL REPORT: [ ] YES [X] NO

7. BASIS: [X] CASH [ ] ACCRUAL

8. PROJECT/GRANT PERIOD (See instructions): FROM (Month, day, year) 08/24/83 TO (Month, day, year) 07/31/85

9. PERIOD COVERED BY THIS REPORT: FROM (Month, day, year) 01-01-85 TO (Month, day, year) 03-25-85

10. STATUS OF FUNDS

PROGRAMS/FUNCTIONS/ACTIVITIES ▶	(a)	(b)	(c)	(d)	(e)	(f)	TOTAL (g)
a. Net outlays previously reported	$ 55,588.94	$	$	$	$	$	$ 55,588.94
b. Total outlays this report period	18,733.39						18,733.39
c. Less: Program income credits	-0-						-0-
d. Net outlays this report period (Line b minus line c)	18,733.39						18,733.39
e. Net outlays to date (Line a plus line d)	74,322.33						74,322.23
f. Less: Non-Federal share of outlays	-0-						-0-
g. Total Federal share of outlays (Line e minus line f)	74,322.23						74,322.23
h. Total unliquidated obligations	18,426.00						18,426.00
i. Less: Non-Federal share of unliquidated obligations shown on line h	-0-						-0-
j. Federal share of unliquidated obligations	18,426.00						18,426.00
k. Total Federal share of outlays and unliquidated obligations	92,748.23						92,748.23
l. Total cumulative amount of Federal funds authorized	146,697.00						146,697.00
m. Unobligated balance of Federal funds	53,948.77						53,948.77

11. INDIRECT EXPENSE

a. TYPE OF RATE (Place "X" in appropriate box) [ ] PROVISIONAL [X] PREDETERMINED [ ] FINAL [ ] FIXED

b. RATE	c. BASE	d. TOTAL AMOUNT	e. FEDERAL SHARE
13%	16,578.22	2,155.17	2,155.17

12. REMARKS. Attach any explanations deemed necessary or information required by Federal sponsoring agency in compliance with governing legislation

13. CERTIFICATION
I certify to the best of my knowledge and belief that this report is correct and complete and that all outlays and unliquidated obligations are for the purposes set forth in the award documents.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL

DATE REPORT SUBMITTED: 4-6-85

TYPED OR PRINTED NAME AND TITLE: John A. Hunter, Chief Accounts Section

TELEPHONE (Area code, number and extension): (202)861-3336

269-102

STANDARD FORM 269 (7-76)
Prescribed by Office of Management and Budget
Circ. No. A-110

ACC/GRT-1735-85
ICP/MAI/020/PG

26 March 1985

Agency for International Development
AID Controller
FM/PAD
SA-12
Washington, D.C. 20023

Gentlemen:

... Enclosed please find standard forms 1034, 1035, 269 and 272 representing expenditures for the period 26 September thru 31 December 1984 on Grant No. DPE-5542-G-SS-3045-00.

We would appreciate your adjusting the amount of $21,894.42 against the letter of credit withdrawal.

Sincerely,

John A. Hunter
Chief, Accounts Section

... Encl.

cc: ABU
ATP ✓
ACC/GRT

DCN/acw

ACC/GRT
ACC

ACC/GRT file

10

Standard Form 1034
September 1973
4 Treasury FRM 2000

PUBLIC VOUCHER FOR PURCHASES AND SERVICES OTHER THAN PERSONAL

VOUCHER NO: 05

U.S. DEPARTMENT, BUREAU, OR ESTABLISHMENT AND LOCATION:
U.S. International Development Agency
Washington, D.C. 20523

DATE VOUCHER PREPARED: 26 March 1985

CONTRACT NUMBER AND DATE: DPE-5542-G-SS-3048-00

REQUISITION NUMBER AND DATE:

SCHEDULE NO:

PAID BY:

PAYEE'S NAME AND ADDRESS:
Pan American Health Organization
525 Twenty-third Street, N.W.
Washington, D.C. 20037

DATE INVOICE RECEIVED:

DISCOUNT TERMS:

PAYEE'S ACCOUNT NUMBER: ICP-HBI-020

SHIPPED FROM: TO: WEIGHT:

GOVERNMENT B/L NUMBER:

NUMBER AND DATE OF ORDER	DATE OF DELIVERY OR SERVICE	ARTICLES OR SERVICES (Enter description, item number of contract or Federal supply schedule, and other information deemed necessary)	QUANTITY	UNIT PRICE COST	UNIT PRICE PER	AMOUNT (1)
		See attached details				21,894.42

(Use continuation sheet(s) if necessary)

(Payee must NOT use the space below)

TOTAL

PAYMENT: ☐ COMPLETE ☐ PARTIAL ☐ FINAL ☐ PROGRESS ☐ ADVANCE

APPROVED FOR = $

EXCHANGE RATE = $1.00

DIFFERENCES

BY:

TITLE:

Amount verified, correct for

(Signature or initials)

Pursuant to authority vested in me, I certify that this voucher is correct and proper for payment.

(Date) (Authorized Certifying Officer)[1] (Title)

ACCOUNTING CLASSIFICATION

PAID BY

CHECK NUMBER ON TREASURER OF THE UNITED STATES

CHECK NUMBER ON (Name of bank)

CASH $ DATE

PAYEE[2]

PER

TITLE

[1] When stated in foreign currency, insert name of currency.
[2] If the duties of certifying and authority to approve are combined in one person, one signature only is necessary; otherwise the approving official signs in the space provided over his official title.
[3] When a check is to be issued in the name of a company or corporation, the name of the person writing the company or corporation name as well as the capacity in which he signs must appear. For example: John Doe (Company) per John Doe, Secretary, or Treasurer, as the case may be.

U.S. GOVERNMENT PRINTING OFFICE

Standard Form 1035
September [illegible]
4 Treasury FRM 2000
[illegible]

PUBLIC VOUCHER FOR PURCHASES AND SERVICES OTHER THAN PERSONAL

CONTINUATION SHEET

VOUCHER NO
SCHEDULE NO
SHEET NO

U.S. DEPARTMENT BUREAU OR ESTABLISHMENT
U.S. Agency for International Development

NUMBER AND DATE OF ORDER	DATE OF DELIVERY OR SERVICE	ARTICLES OR SERVICES (Enter description, item number of contract or Federal supply schedule and other information deemed necessary)	QUANTITY	UNIT PRICE COST	UNIT PRICE PER	AMOUNT

DETAILS OF EXPENDITURES
FOR THE PERIOD 26 SEPTEMBER-31 DECEMBER 1984
PROJECT ICP-HBI-020-PG
(Expressed in US Dollars)

GRANT NO: DPE-5542-G-SS-3048-00
PERIOD: 24 August-31 July 1985
AMOUNT: $146,697.00

SALARIES AND ALLOWANCES		
Lee Ann Schwartz, November/December 1984		4,178.40
CONTRACTUAL SERVICES		
Susana Santangelo 301 Hours of Review	2,709.00	
Catherine Howe 203 Hours of Review	1,825.00	
Lucretia H. Vanderwende 450 Hours of Review	4,050.00	8,584.00
SUPPLIES AND MATERIALS		
WANG Laboratories, APO 15974		6,613.20
	SUBTOTAL	19,375.60
Program Support Cost 13% on $19,375.60		2,518.82
	TOTAL EXPENDITURES	$21,894.42

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

525 TWENTY THIRD STREET N.W. WASHINGTON D.C. 20037 U.S.A.

CABLE ADDRESS OFSANPAN

IN REPLY REFER TO

TELEPHONE 861-3200

STATEMENT OF CUMULATIVE EXPENSES
FOR THE PERIOD 26 SEPTEMBER - 31 DECEMBER 1984
PROJECT NO. ICP/HBI/020/PG

	Budget	Expenditures this Period	Cumulative Expenditures	Balance
Salaries and Allowances	74,652.00	4,178.40	25,352.55	49,299.45
Contractual Services	45,348.00	8,584.00	17,228.00	28,120.00
Furniture and Equipment	9,820.00	6,613.20	6,613.20	3,206.80
Program Support Cost	16,877.00	2,518.82	6,395.19	10,481.81
	146,697.00	21,894.42	55,588.94	91,108.06

FINANCIAL STATUS REPORT

(Follow instructions on the back)

1. FEDERAL AGENCY AND ORGANIZATIONAL ELEMENT TO WHICH REPORT IS SUBMITTED: U.S. International Development Cooperation Agency

2. FEDERAL GRANT OR OTHER IDENTIFYING NUMBER: DPE-5542-G-SS-3048-00

OMB Approved No 80-R0180

PAGE 1 OF PAGES

3. RECIPIENT ORGANIZATION (Name and complete address, including ZIP code)

Pan American Health Organization
525 Twenty-third Street, N.W.
Washington, D.C. 20037

4. EMPLOYER IDENTIFICATION NUMBER

5. RECIPIENT ACCOUNT NUMBER OR IDENTIFYING NUMBER: ICP/HB1/020/PG

6. FINAL REPORT: ☐ YES ☐ NO

7. BASIS: ☐ CASH ☐ ACCRUAL

8. PROJECT/GRANT PERIOD (See instructions): FROM (Month, day, year) 08/24/83 TO (Month, day, year) 07/31/85

9. PERIOD COVERED BY THIS REPORT: FROM (Month, day, year) 09/26/84 TO (Month, day, year) 12/31/84

10. STATUS OF FUNDS

PROGRAMS/FUNCTIONS/ACTIVITIES ▶	(a)	(b)	(c)	(d)	(e)	(f)	TOTAL (g)
a. Net outlays previously reported	$ 33,694.52	$	$	$	$	$	$ 33,694.52
b. Total outlays this report period	21,894.42						21,894.42
c. Less: Program income credits	-0-						-0-
d. Net outlays this report period (Line b minus line c)	21,894.42						21,894.42
e. Net outlays to date (Line a plus line d)	55,588.94						55,588.94
f. Less: Non Federal share of outlays	-0-						-0-
g. Total Federal share of outlays (Line e minus line f)	55,588.94						55,588.94
h. Total unliquidated obligations	5,030.00						5,030.00
i. Less: Non Federal share of unliquidated obligations shown on line h	-0-						-0-
j. Federal share of unliquidated obligations	5,030.00						5,030.00
k. Total Federal share of outlays and unliquidated obligations	60,618.94						60,618.94
l. Total cumulative amount of Federal funds authorized	146,697.00						146,697.00
m. Unobligated balance of Federal funds	86,078.06						86,078.06

11. INDIRECT EXPENSE

a. TYPE OF RATE (Place "X" in appropriate box): ☐ PROVISIONAL ☐ PREDETERMINED ☐ FINAL ☐ FIXED

b. RATE	c. BASE	d. TOTAL AMOUNT	e. FEDERAL SHARE
13%	19,375.60	2,518.82	2,518.82

12. REMARKS: Attach any explanations deemed necessary or information required by Federal sponsoring agency in compliance with governing legislation.

13. CERTIFICATION: I certify to the best of my knowledge and belief that this report is correct and complete and that all outlays and unliquidated obligations are for the purposes set forth in the award documents.

SIGNATURE OF AUTHORIZED CERTIFYING OFFICIAL

DATE REPORT SUBMITTED: 26 March 1985

TYPED OR PRINTED NAME AND TITLE: John A. Hunter, Chief
Accounts Section

TELEPHONE (Area code, number and extension): (202)861-3336

STANDARD FORM 269 (7-76)
Prescribed by Office of Management and Budget
Cir No A-110

TECHNICAL REPORT
1 August 1984 - 31 March 1985

1. General Statement of Progress

During the third semester of the grant[1] significant strides were made in all three areas of the ENGSPAN architecture: analysis, transfer, and synthesis. The interaction of these components, which were placed in operation during the previous semester, brought the system to a level of full translation capability.

In keeping with the schedule for Phase 5 of Task 1 in the Program of Work, this capability was challenged in a major test that involved the translation of more than 370,000 words of running text. In this test, the Spanish output was examined by the computational linguists and postedited by native Spanish-speakers. The problems which were encountered provided the impetus for further development of the program and the dictionaries. The following documents were translated:

Title	No. Words
WHO Pesticide Data Sheets	162,745
The Agromedical Approach to Pesticide Management	103,914
PAHO Budget Narratives	103,594
	370,253

In the analysis component, improvements were made in the source word lookup procedure, the parsing mechanism, and the ATN grammar. The major effort during the reporting period was devoted to the expansion of the grammar. The new types of constructions which are now being parsed include imperatives, embedded questions, conjoined clauses, conjoined verb phrases, conjoined prepositions, subordinate clauses lacking a subject and tensed verb, correlative scope markers, quantifier phrases containing units of measure, proper names, and some types of postmodification in the noun phrase.

In the grammar, the number of states went from 63 to 64, while the number of arcs increased from 184 in August 1984 to 237 at the end of the reporting period. The number of conditions increased from 62 to 112 and the number of actions from 38 to 55. The new configuration is shown in Appendix A. The parameter controlling the maximum length of a sentence was raised from 40 to 70 words, and the number of phrase information structures which can be allocated for a sentence was increased from 25 to 40. With the larger grammar and the use of the well-formed phrase list, the parser is able to analyze a higher percentage of the input strings encountered, and there has also been

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[1]Reporting period is 1 August 1984 - 31 March 1985 owing to problems with Wang equipment.

improvement in the average length of the strings that can be parsed successfully.

As the coverage of the analysis increased, the transfer and synthesis procedures were modified to handle the new types of sentences being parsed. The synthesis of conjoined verb phrases was revised to utilize the information provided by the parser. New types of transfer units were implemented which increase the capability of specifying alternative target translations for a single source word. Finally, a new noun phrase synthesis procedure was written which permits the synthesis of conjoined phrases, hyphenated modifiers and heads, possessive phrases, and quantifiers containing units of measure.

The unedited machine translations of four samples of running text (7,468 words), selected from the documents listed above, are reproduced in Appendix B. The proportion of successfully parsed sentences was 81.7%. In another test with new random text (7,635 words), 66.6% of the input strings were parsed; the average length of a successfully parsed string was 12 words, and the longest string parsed contained 40 words. The speed of translation is approximately 900 words per minute in CPU time and 400 words per minute in clock time. Appendix A shows the network used for all the translations presented in this report.

In keeping with the plan for Phase 4 under Task 2 of the Scope of Work, the dictionary-building activity during the period took into account the new approaches introduced for the handling of idioms--i.e. transfer units and analysis units. The number of source items in the English dictionary increased from 42,169 to 44,662. The number of target glosses increased from 43,500 to 46,238. These figures include 1,200 substitution units, 218 analysis units, and 215 transfer units. All verb entries (3,500) were coded for subject and object preferences. A total of 8,700 nouns (PAHO corpus and general vocabulary) were coded for syntactic and semantic features.

2. Source Word Lookup

The lemmatization and lookup procedures were revised to handle additional discrepancies between British and American spelling conventions. When a translation job is sent with the British flag turned on, if a word can not be found in the dictionary, automatic conversions are made from British to American spelling. Earlier versions of the program contained provisions for recognizing the British spellings -our, -re, -ise, -yse, and -isation and changing them to -or, -er, -ize, -yze, and -ization, respectively. The new capabilities allow for the degemmination of final l's and for the conversion of vowel sequences ae and oe to e.

The method of identifying and removing prefixes was modified so that it now handles any number of prefixes up to 5 characters in length. The following prefixes are identified by the current version of the program: un-, non-, sub-, re-, pre-, inter-, intra-, extra-, multi-, anti-, and semi-.

Gap analysis has been enhanced to make a better guess at the part of speech of a word that is not in the dictionary. If the word is capitalized, if it is not the first word of a sentence, and if it is not part of a title, it is considered to be a proper name. If the lemmatization program has isolated an affix that is restricted to certain parts of speech, only these and no other parts of speech are considered for the word in question. On the other hand, if the lemmatization program isolates an affix on a word that is already in the dictionary, and if the parts of speech of that word are not compatible with the suffix found, the word remains not found.

Ordinal numbers consisting of arabic numerals and a suffix (-th, -nd, -rd, -st) are now recognized by the lookup routine and synthesized in Spanish without the need of dictionary entries.

3. The Parser

The major emphasis of the work carried out during the reporting period was on expanding the ATN grammar. In addition, changes were made in the parsing mechanism to cope with sentences containing parentheses and quotation marks. The grammar has been enhanced to cover the types of constructions that are described below under: the complex noun phrase, the conjoined verb phrase, conjoined prepositions, and the clause and sentence levels.

3.1 The Complex Noun Phrase

Although the targets for the noun phrase (NP) under Phase 1, Task 1, have long since been met, the texts of the new corpus required the capability of dealing with the following NP constructions: conjoined noun phrases with a correlative scope word; quantifier phrases consisting of a number followed by a unit of measure; postmodifying strings consisting of letters, numbers, reflexive pronouns, and infinitive verbs; and proper names, both as noun heads and premodifiers.

The handling of these and other new NP constructions is illustrated in examples 1-9, the translations for which appear in Exhibit 1.

(1) Computer services will continue to support both the administrative
(correlative scope word)
and technical work of the Organization and the Member Countries.
(conjoined modifiers)

(2) There is a need for strategies with emphasis on key management development areas to strengthen both the delivery of technical cooperation
(correlative scope word)
and the management of the internal resources of the Organization.
(conjoined heads)

Exhibit 1

|COMPUTER SERVICES WILL CONTINUE TO SUPPORT BOTH THE ADMINISTRATIVE AND TECHNICAL WORK OF THE |ORGANIZATION AND THE |MEMBER |COUNTRIES .	CK TU
|THERE IS A NEED FOR STRATEGIES WITH EMPHASIS ON KEY MANAGEMENT DEVELOPMENT AREAS TO STRENGTHEN BOTH THE DELIVERY OF TECHNICAL COOPERATION AND THE MANAGEMENT OF THE INTERNAL RESOURCES OF THE |ORGANIZATION .	OK
|DIAZOTIZE AT 0.5 WITH 0.1 MOL/L SODIUM NITRITE .	CK
|THE STEPS IN THIS PHASE ARE ILLUSTRATED IN FIGURE 3-2 .	CK
|MIX 350 ML OF SOLUTION |A WITH 130 ML OF SOLUTION |B .	CK
|THE PESTICIDE ITSELF CAN CAUSE MUCH HARM .	OK
|THE IMPLEMENTATION OF CONTROL ACTIVITIES TO REDUCE SEVERE DISEASE AND MORTALITY WILL BE ACCOMPANIED BY A SYSTEM OF EVALUATION OF OPERATION AND IMPACT .	CK
*|LANI |RICE IS RESPONSIBLE FOR THE STUDY ON PRIMARY HEALTH CARE .	SD CK TU
||PAHO/||WHO TECHNICAL COOPERATION IS PROVIDED IN THE FOLLOWING AREAS :	CK

|LOS SERVICIOS DE COMPUTACIO/N CONTINUARA/N APOYANDO EL TRABAJO ADMINISTRATIVO Y TE/CNICO DE LA |ORGANIZACIO/N Y LOS |PAI/SES |MIEMBROS .	
|HAY UNA NECESIDAD DE ESTRATEGIAS CON E/NFASIS EN A/REAS CLAVES DE DESARROLLO GERENCIAL PARA REFORZAR LA ENTREGA DE COOPERACIO/N TE/CNICA Y LA GERENCIA DE LOS RECURSOS INTERNOS DE LA |ORGANIZACIO/N .	
|DIAZOAR A 0.5 CON NITRITO DE SODIO DE 0.1 MOL/L .	
|LOS PASOS EN ESTA FASE SE ILUSTRAN EN LA FIGURA 3-2 .	
|MEZCLAR 350 ML DE SOLUCIO/N |A CON 130 ML DE SOLUCIO/N |B .	
|EL PLAGUICIDA MISMO PUEDE CAUSAR MUCHO DAN*O .	
|LA INSTRUMENTACIO/N DE ACTIVIDADES DE CONTROL PARA REDUCIR ENFERMEDAD GRAVE Y MORTALIDAD SERA/ ACOMPAN*ADA POR UN SISTEMA DE EVALUACIO/N DE OPERACIO/N Y REPERCUSIO/N .	
|LANI |RICE ES RESPONSABLE DEL ESTUDIO SOBRE ATENCIO/N PRIMARIA DE SALUD .	
|LA COOPERACIO/N TE/CNICA DE LA ||OPS//OMS SE PROPORCIONA EN LAS A/REAS SIGUIENTES :	

Exhibit 1

(3) Diazotize at 0.5 with 0.1 mol/l sodium nitrite.
(number followed by a unit of measure)

(4) The steps in this phase are illustrated in figure 3-2.
(postmodified by number)

(5) Mix 350 ml of solution A with 130 ml of solution B.
(postmodified by letter)

(6) The pesticide itself can cause much harm.
(postmodified by reflexive pronoun)

(7) The implementation of control activities to reduce severe disease and
(postmodified by infinitive verb)
mortality will be accompanied by a system of evaluation of operation and impact.

(8) Lani Rice is responsible for the study on primary health care.
(proper name as head)

(9) PAHO/WHO technical cooperation is provided in the following areas:
(proper name as premodifier)

3.2 The Conjoined Verb Phrase

Under Phases 5 and 6, Task 1, the target verb phrase network was modified to cover conjoined verbal elements of different tenses and aspects, optionally bound by a correlative scope marker either at the beginning of the structure or after the auxiliary, as shown in Exhibit 2.

(10) Containers must either be burned or buried below topsoil.

(11) Containers either must be burned or buried below topsoil.

(12) Suriname is situated on the north coast of the South American Continent and shares borders with Guyana, Brazil and French Guiana.

(13) The operator should avoid working in spray mist and avoid contact with the mouth.

Exhibit 2

|CONTAINERS MUST EITHER BE BURNED OR BURIED BELOW TOPSOIL .	CK	|LOS ENVASES SE DEBEN QUEMAR O ENTERRARSE DEBAJO DE LA CAPA SUPERIOR DEL SUELO .
|CONTAINERS EITHER MUST BE BURNED OR BURIED BELOW TOPSOIL .	CK	|LOS ENVASES SE DEBEN QUEMAR O ENTERRARSE DEBAJO DE LA CAPA SUPERIOR DEL SUELO .
|SURINAME IS SITUATED ON THE NORTH COAST OF THE |SOUTH |AMERICAN |CONTINENT AND SHARES BORDERS WITH |GUYANA , |BRAZIL AND |FRENCH |GUIANA .	CK TU	|SURINAME ESTA/ SITUADO EN LA COSTA NORTE DEL |CONTINENTE SUDAMERICANO Y COMPARTE FRONTERAS CON |GUYANA , |BRASIL Y |GUAYANA |FRANCESA .
|THE OPERATOR SHOULD AVOID WORKING IN SPRAY MIST AND AVOID CONTACT WITH THE MOUTH .	CK	|EL OPERADOR DEBE EVITAR TRABAJAR EN NEBULIZACIO/N DE ROCIADO Y EVITAR CONTACTO CON LA BOCA .
|SURINAME HAS AN UNEVENLY DEVELOPED ECONOMY WITH A FEW MODERN ENTERPRISES DOMINATED BY FOREIGN CAPITAL AND PRODUCING MOST OF THE COUNTRY'S OUTPUT AND EXPORTS .	CK TU	|SURINAME TIENE UNA ECONOMI/A DESIGUALMENTE DESARROLLADA CON UNAS POCAS EMPRESAS MODERNAS DOMINADAS POR CAPITAL EXTRANJERO Y GENERANDO LA MAYORI/A DE PRODUCCIO/N Y EXPORTACIONES DEL PAI/S .
|THE NEXT STAGE COMPRISING MEDICAL SERVICES FOR THE UNDERPRIVILEGED POPULATION WILL START IN 1984 AND WILL COVER ANOTHER SIGNIFICANT PART OF THE POPULATION .	CK	|LA PRO/XIMA ETAPA QUE COMPRENDE SERVICIOS ME/DICOS PARA LA POBLACIO/N MENOS PRIVILEGIADA COMENZARA/ EN 1984 Y CUBRIRA/ OTRA PARTE SIGNIFICATIVA DE LA POBLACIO/N .
|A LIST OF ESSENTIAL DRUGS WITH SOME 200 GENERIC NAMES WAS PREPARED IN 1983 AND IS BEING USED BY THE |STATE |HEALTH |INSURANCE AND GOVERNMENT INSTITUTIONS .	CK	|UNA LISTA DE MEDICAMENTOS ESENCIALES CON ALREDEDOR DE 200 NOMBRES GENE/RICOS SE PREPARO/ EN 1983 Y ESTA/ SIENDO EMPLEADO POR EL |SEGURO DE |SALUD |ESTATAL E INSTITUCIONES DEL GOBIERNO .
|TRAFFIC ACCIDENTS ARE ON THE INCREASE AND ARE TAKING A HIGH DEATH TOLL ESPECIALLY AMONG YOUNG ADULTS .	CK TU TU	|LOS ACCIDENTES DE TRA/NSITO ESTA/N EN EL AUMENTO Y ESTA/N COBRANDO UNA MORTALIDAD ALTA ESPECIALMENTE ENTRE ADULTOS JO/VENES .

|SEVERAL COUNTRIES IN THE |REGION HAVE REVIEWED , UPDATED AND CODIFIED THEIR HEALTH LEGISLATION EITHER WITH OR WITHOUT ASSISTANCE FROM ||PAHO .	CK	|VARIOS PAI/SES EN LA |REGIO/N HAN REVISADO , ACTUALIZADO Y CODIFICADO SU LEGISLACIO/N DE SALUD CON O SIN ASISTENCIA DE LA ||OPS .

Exhibit 2

(14) Suriname has an unevenly developed economy with a few modern enterprises dominated by foreign capital and producing most of the country's output and exports.

(15) The next stage comprising medical services for the underprivileged population will start in 1984 and will cover another significant part of the population.

(16) A list of essential drugs with some 200 generic names was prepared in 1983 and is being used by the State Health Insurance and government institutions.

(17) Traffic accidents are on the increase and are taking a high death toll especially among young adults.

3.3 Conjoined Prepositions

Also under Phases 5 and 6 of Task 1, the prepositional phrase network has been enhanced to allow for prepositions without head noun phrases in conjoined structures, both with and without a correlative scope word (see Exhibit 2, bottom).

(18) Several countries in the Region have reviewed, updated and codified their health legislation either with or without assistance from PAHO.

3.4 The Clause and Sentence Levels

Work under Phases 5 and 6 also yielded the capability of parsing embedded questions, imperatives, and conjoined main clauses. In addition, the parser can analyze sentences consisting of one main clause and one or more optional subordinate clauses, along with optional sentence-initial adverbs and prepositional phrases. The sentence network also allows for dependent clauses consisting of a subordinate conjunction followed by a verb phrase or an adjective. Examples are given in Exhibit 3.

(19) The professor demonstrated what he meant.
(embedded question)

(20) Place approximately 75 ml of the sample in a 250 ml beaker.
(simple imperative)

Exhibit 3

|THE PROFESSOR DEMONSTRATED WHAT HE MEANT .	CK TU	|EL PROFESOR DEMOSTRO/ LO QUE QUISO DECIR .
|PLACE APPROXIMATELY 75 ML OF THE SAMPLE IN A 250 ML BEAKER .	CK	|COLOCAR APROXIMADAMENTE 75 ML DE LA MUESTRA EN UN BOCAL DE 250 ML .
|A WELL ORGANIZED AND DOCUMENTED MEDICAL LIBRARY IS OFFERED AT THE |FACULTY OF |MEDICINE , AND A NEW |DOCUMENTATION |CENTER IS BEING PLANNED FOR THE |MINISTRY OF |HEALTH .	CK TU	|UNA BIBLIOTECA ME/DICA BIEN ORGANIZADA Y DOCUMENTADA SE OFRECE EN LA |FACULTAD DE |MEDICINA , Y UN |CENTRO NUEVO DE |DOCUMENTACIO/N SE ESTA/ PLANIFICANDO PARA EL |MINISTERIO DE |SALUD .
|REMOVE THE FLASK AND QUANTITATIVELY TRANSFER THE RESIDUE TO A 50 ML VOLUMETRIC FLASK AND DILUTE THE SOLUTION TO VOLUME WITH METHYLENE CHLORIDE .	CK	|EXTRAER EL MATRAZ Y CUANTITATIVAMENTE TRASLADAR LOS RESIDUOS A UN MATRAZ VOLUME/TRICO DE 50 ML Y DILUIR LA SOLUCIO/N A VOLUMEN CON CLORURO DE METILENO .
|USUALLY , IF THE SEASON IS SHORT THE HARVEST WILL NOT BE GOOD .	CK	|GENERALMENTE , SI LA ESTACIO/N ES BREVE LA COSECHA NO SERA/ BUENA .
|AS WAS INDICATED ABOVE , THE CONCENTRATION INCREASES RAPIDLY WHEN THE CHEMICAL IS ADDED .	CK	|SEGU/N SE INDICO/ ARRIBA , LA CONCENTRACIO/N AUMENTA RA/PIDAMENTE CUANDO EL PRODUCTO QUI/MICO SE AGREGA .

Exhibit 3

(21) A well organized and documented medical library is offered at the Faculty of Medicine, and a new Documentation Center is being planned for the Ministry of Health.
(conjoined declarative clauses)

(22) Remove the flask and quantitatively transfer the residue to a 50 ml volumetric flask and dilute the solution to volume with methylene chloride.
(conjoined imperative clauses)

(23) Usually, if the season is short the harvest will not be good.
(adverb) (subordinate clause)

(24) If necessary, the dose may be increased to 5 mg.
(subordinate conjunction and adjective)

(25) As was indicated above, the concentration increases rapidly when the chemical is added.
(subordinate conjunction and verb phrase)
(subordinate clause)

3.5 Parenthetical Phrases and Quoted Material

The parser skips over parentheses and the material enclosed within them, and it then picks up the analysis after the closing parenthesis. Double hyphens, representing dashes, are treated in the same way as parentheses. The text that is skipped over by the parser is processed by the backup analysis routines. Quotation marks are skipped over, but the material within them is parsed. The following examples are given in Exhibit 4:

(26) The apparent density is calculated by dividing the weight (g) of the sample taken by the volume (ml) of the sample in the cylinder.

(27) The second will generate "supervision packages" made up of different combinations of principal variables (frequency of contact, site, amount of in-service training, amount of administrative monitoring).

(28) In a Carribbean country, an outbreak of poisoning--79 cases including 17 deaths--occurred due to the contamination of cotton sacks which contained flour.

Exhibit 4

|THE APPARENT DENSITY IS CALCULATED BY DIVIDING THE CK
WEIGHT (G) OF THE SAMPLE TAKEN BY THE VOLUME (ML) OF
THE SAMPLE IN THE CYLINDER .

|THE SECOND WILL GENERATE " SUPERVISION PACKAGES " MADE CK
UP OF DIFFERENT COMBINATIONS OF THE PRINCIPAL VARIABLES (
FREQUENCY OF CONTACT , SITE , AMOUNT OF IN-SERVICE TRAINING
, AMOUNT OF ADMINISTRATIVE MONITORING) .

|IN A |CARIBBEAN COUNTRY , AN OUTBREAK OF POISONING--79 CK
CASES INCLUDING 17 DEATHS--OCCURRED DUE TO THE
CONTAMINATION OF COTTON SACKS WHICH CONTAINED FLOUR .

|LA DENSIDAD APARENTE SE CALCULA AL DIVIDIR EL PESO (G
) DE LA MUESTRA TOMADA POR EL VOLUMEN (ML) DE LA MUESTRA
EN EL CILINDRO .

|EL SEGUNDO GENERARA/ " MO/DULOS DE SUPERVISIO/N "
CONFORMADOS DE COMBINACIONES DIFERENTES DE LAS VARIABLES
PRINCIPALES (FRECUENCIA DE CONTACTO , SITIO , CANTIDAD DE
CAPACITACIO/N EN SERVICIO , CANTIDAD DE MONITORI/A
ADMINISTRATIVA) .

|EN UN PAI/S DEL |CARIBE , UN BROTE DE INTOXICACIO/N--79
CASOS QUE INCLUYEN 17 DEFUNCIONES--OCURRIO/ DEBIDO A LA
CONTAMINACIO/N DE BOLSAS DE ALGODO/N QUE CONTENI/AN HARINA

Exhibit 4

Work on the parser also included development of a strategy for explicit backtracking. In preparation for implementation of this strategy, modifications were made to the well-formed list, i.e. the mechanism which controls the saving, reusing, and freeing up of successfully parsed phrases. When preparing to backtrack, the parser saves not only all the completed phrases consisting of words to the right of the word to which the parser is about to return, but also all the higher-level phrases which include that word. The parser only frees up a successfully parsed phrase when an identical configuration already appears on the well-formed list. These modifications to the well-formed list mechanism ensure that all successfully parsed phrases are available to the parser when it decides to backtrack either chronologically or explicitly.

In the coming months the procedure for explicit backtracking will be incorporated into the parser, and the ATN grammar will be extended to cover parenthetical adverbial phrases, reduced relative clauses which consist of adjective phrases, reduced relative clauses which are delimited by commas, and participial constructions which function as subjects of clauses or objects of prepositional or verb phrases.

4. Transfer Procedures

4.1 Syntactic Procedures

Work on syntactic transfer procedures included modification of the verb phrase synthesis procedure to permit the introduction of the reflexive pronouns (se, me, and nos) for Spanish verbs such as referir which always require them. A strategy has also been developed for synthesizing the reflexive pronoun when certain verbs are used intransitively. Additional options for the synthesis of BE + past participle are also being studied. Problems to be addressed during the next few months include the synthesis and ordering of object pronouns, the triggering of the subjunctive mood, the synthesis of nominalized verb forms for some uses of the present participle in English, and the selection of adjectival glosses for certain nouns that occur as premodifiers in English.

4.2 Lexical Procedures

The lexical transfer procedure for the selection of alternative target glosses was expanded during the period to include new types of transfer units, and the algorithm which applies the units was enhanced. The previous report described three types of transfer units: one which tests the object of the verb, one which tests the object of a preposition, and one which tests the coda of the verb. The new capabilities test for the following conditions:

- The complement of the verb is a specific word or has certain features;

- The subject of the verb is a specific word or has certain features;

- The coda of the verb is a prepositional phrase containing a specific preposition and its object is a specific word or has certain features;

- An adjective or noun modifies a specific word or a word with certain features; or

- A noun is followed by a specific preposition.

The procedure which tests for the conditions specified in the transfer units was enhanced so that the direct object of a two-object verb can be identified as a passive sentence when the subject position is occupied by the indirect object. The argument in a transfer unit can be either a single word or a substitution unit. A "NOT" operator can be specified in any transfer unit that tests for only one condition. If the condition is not met, the unit will be accepted. The units which check for the subject and object of the verb may also be used to specify that the subject or object noun phrase be synthesized with feminine gender. Transfer units are illustrated in examples 29-54 (Exhibit 5).

(29) The worker held the employer responsible for the accident.
(specific word as complement)

(30) The worker held that the employer was responsible for the accident.
(default gloss)

(31) The woman became ill during the night.
(specific word as complement)

(32) The patient became hysterical.
(adjective as complement)

(33) The agromedical capability became a valuable resource.
(default gloss)

(34) The study showed high rates of infection.
(specific word as subject)

(35) The patient showed the rash to the nurse.
(default gloss)

(36) The concept gave birth to a new development effort.
(subject [-ANIM])

(37) The dog gave birth to six puppies.
(subject [-HUM] but [+FEM])

(38) The patient gave birth to twins.
(subject [+HUM], [+FEM])

THE WORKER HELD THE EMPLOYER RESPONSIBLE FOR THE ACCIDENT .	CK TU	EL TRABAJADOR RESPONSABILIZO/ AL EMPLEADOR DEL ACCIDENTE .
THE WORKER HELD THAT THE EMPLOYER WAS RESPONSIBLE FOR THE ACCIDENT .	CK	EL TRABAJADOR SOSTUVO QUE EL EMPLEADOR FUE RESPONSABLE DEL ACCIDENTE .
THE WOMAN BECAME ILL DURING THE NIGHT .	CK TU	LA MUJER SE ENFERMO/ DURANTE LA NOCHE .
THE PATIENT BECAME HYSTERICAL .	CK TU	EL PACIENTE SE PUSO HISTE/RICO .
THE AGROMEDICAL CAPABILITY BECAME A VALUABLE RESOURCE .	CK	LA CAPACIDAD AGROME/DICA SE CONVIRTIO/ EN UN RECURSO VALIOSO .
THE STUDY SHOWED HIGH RATES OF INFECTION .	CK TU	EL ESTUDIO REVELO/ TASAS ALTAS DE INFECCIO/N .
THE PATIENT SHOWED THE RASH TO THE NURSE .	CK	EL PACIENTE MOSTRO/ LA ERUPCIO/N A LA ENFERMERA .
THE CONCEPT GAVE BIRTH TO A NEW DEVELOPMENT EFFORT .	CK TU	EL CONCEPTO PRODUJO UN ESFUERZO NUEVO DE DESARROLLO .
THE DOG GAVE BIRTH TO SIX PUPPIES .	CK TU	LA PERRA PARIO/ SEIS CACHORROS .
THE PATIENT GAVE BIRTH TO TWINS .	CK TU	LA PACIENTE DIO/ A LUZ GEMELOS .
WE NEED A ROUGH ESTIMATE OF THE NUMBER OF POTENTIAL USERS .	CK TU	NECESITAMOS UNA ESTIMACIO/N APROXIMADA DEL NU/MERO DE USUARIOS POTENCIALES .
THIS SURFACE IS TOO ROUGH .	OK	ESTA SUPERFICIE ES DEMASIADO A/SPERA .
PLACE THE SOLUTION IN A GLASS JAR .	CK TU	COLOCAR LA SOLUCIO/N EN UN JARRO DE VIDRIO .
MIX THE SOLUTION IN A GLASS .	CK	MEZCLAR LA SOLUCIO/N EN UN VASO .
THE PESTICIDE DID NOT AFFECT THE FEMALE REPRODUCTIVE ORGANS .	CK TU	EL PLAGUICIDA NO AFECTO/ LOS O/RGANOS REPRODUCTIVOS FEMENINOS .
THE FEMALE RATS WERE FED A HIGHER DOSE .	CK TU TU	LAS RATAS HEMBRAS SE ALIMENTARON CON UNA DOSIS MAYOR .
THE MINISTER ADVISED IMMEDIATE ACTION .	CK TU	EL MINISTRO RECOMENDO/ ACCIO/N INMEDIATA .
THE MINISTER ADVISED THE PRESIDENT ON MANY MATTERS .	CK	EL MINISTRO ASESORO/ AL PRESIDENTE EN MUCHOS ASUNTOS .
THE ORGANIZATION PUBLISHED A STUDY ON THE EFFECTS OF THE DRUGS .	CK TU	LA ORGANIZACIO/N PUBLICO/ UN ESTUDIO SOBRE LOS EFECTOS DE LAS DROGAS .
THE CHILDREN DON'T WANT TO STUDY ON THE BUS .	CK	LOS NIN*OS NO DESEAN ESTUDIAR EN EL O/MNIBUS .
THE CHILD CAME DOWN WITH THE MEASLES .	OK TU	EL NIN*O CONTRAJO EL SARAMPIO/N .
PRICES ARE COMING DOWN .	CK	LOS PRECIOS ESTA/N BAJANDO .
HOW CAN WE GET OUT OF THIS SITUATION ?	CK	X¿CO/MO PODEMOS SALIR DE ESTA SITUACIO/N ?
THERE IS A SPECIAL CHEMICAL THAT WILL GET OUT THAT STAIN .	CK TU	HAY UN PRODUCTO QUI/MICO ESPECIAL QUE SACARA/ ESA MANCHA .
THE COMMITTEE IS MADE UP OF REPRESENTATIVES FROM EACH AGENCY .	CK TU	EL COMITE/ ESTA/ CONSTITUIDO POR REPRESENTANTES DE CADA AGENCIA .
WE HAVE MADE UP FOR THE LOSS OF TIME .	CK TU	HEMOS COMPENSADO LA PE/RDIDA DE TIEMPO .

Exhibit 5

(39) We need a rough estimate of the number of potential users.
(head [-CONC])

(40) This surface is too rough.
(default gloss)

(41) Place the solution in a glass jar.
(head [+CONC])

(42) Mix the solution in a glass.
(default gloss)

(43) The pesticide did not affect the female reproductive organs.
(head [-ANIM])

(44) The female rats were fed a higher dose.
(head [-HUM])

(45) The minister advised immediate action.
(object [-HUM])

(46) The minister advised the president on many matters.
(default gloss)

(47) The Organization published a study on the effects of the drugs.
(noun followed by on)

(48) The children don't want to study on the bus.
(default gloss for on)

(49) The child came down with the measles.
(preposition with as coda of SU, object is [+COND])

(50) Prices are coming down.
(default gloss for SU)

(51) How can we get out of this situation?
(default gloss for SU)

(52) There is a special chemical that will get out that stain.
(SU verb with direct object)

(53) The committee is made up of representatives from each agency.
(default gloss for SU verb, of as coda of verb)

(54) We have made up for the loss of time.
(for as coda of SU verb)

5. Synthesis

5.1 Noun Phrases

A new procedure was written for the synthesis of noun phrases. In previous versions of the program, a pattern-matching procedure was used to identify noun phrases, reorder their constituents, and determine the concordance between the head and its modifiers. This approach proved to be inadequate for synthesizing the complex noun phrases which are now being analyzed by the parser. The old procedure handled up to three conjoined adjectives, but it did not handle longer premodifying strings, adjectives as heads, conjoined or hyphenated heads, phrasal possessives, many types of hyphenated modifiers, or expressions of quantification.

The new procedure is based on a stacking algorithm which moves from right to left until it encounters a noun phrase. The constituents are then examined from both the left and right boundaries of the phrase and are placed on one of five different stacks depending on their role in the phrase and the context-free and context-sensitive information contained in each dictionary record.

The same synthesis procedure is used for all sentences, regardless of whether or not they were successfully parsed. Of course, when the parser has been able to produce an analysis, the results of noun phrase synthesis are usually better. The procedure must also contain sufficient constraints to limit the scope of the phrase when no boundary information has been supplied by the parser. In addition to reordering the constituents, the procedure provides for the concordance of gender and number, insertion of de, insertion of the definite article, insertion of personal a, and the synthesis of hyphenated modifiers, quantifying expressions, and parenthetical material.

Many of the types of noun phrases which are now synthesized correctly are included in the previous examples. The insertion of personal a can be seen in examples 29 and 46. Examples 55-71 (Exhibit 6) illustrate some of the new synthesis capabilities.

(55) relevant geographic, climatic, demographic, political, economic and social characteristics

(56) highly qualified and very dedicated staff

(57) safe, effective use of pesticides

(58) the elderly, the handicapped or the working population

(59) 15 subregional and national production centers

Exhibit 6

< RELEVANT GEOGRAPHIC , CLIMATIC , DEMOGRAPHIC , POLITICAL , ECONOMIC AND SOCIAL CHARACTERISTICS >	OK	< CARACTERI/STICAS RELEVANTES GEOGRA/FICAS , CLIMA/TICAS , DEMOGRA/FICAS , POLI/TICAS , ECONC/MICAS Y SOCIALES >
< HIGHLY QUALIFIED AND VERY DEDICATED STAFF >	OK	< PERSONAL ALTAMENTE CALIFICADO Y MUY DEDICADO >
< SAFE , EFFECTIVE USE OF PESTICIDES >	OK	< USO SEGURO , EFECTIVO DE PLAGUICIDAS >
< THE ELDERLY , THE HANDICAPPED OR THE WORKING POPULATION >	OK	< LOS ANCIANOS , LOS IMPEDIDOS O LA POBLACIO/N ACTIVA >
< 15 SUBREGIONAL AND NATIONAL PRODUCTION CENTERS >	OK	< 15 CENTROS DE PRODUCCIO/N SUBREGIONALES Y NACIONALES >
< MORE SOPHISTICATED AND SENSITIVE EQUIPMENT >	OK	< EQUIPO MA/S COMPLEJO Y SENSIBLE >
< ONGOING MONITORING AND EVALUATION >	OK	< MONITORI/A Y EVALUACIO/N CONTINUA >
< HEALTH POLICY AND STRATEGIES >	OK	< POLI/TICA Y ESTRATEGIAS DE SALUD >
< MORBIDITY AND MORTALITY STATISTICS >	OK	< ESTADI/STICAS DE MORBILIDAD Y DE MORTALIDAD >
< THE WORKERS' MENTAL ABILITY >	OK	< LA CAPACIDAD MENTAL DE LOS TRABAJADORES >
< APPROXIMATELY 5 MONTHS' IMPORTS >	OK	< LAS IMPORTACIONES DE APROXIMADAMENTE 5 MESES >
< A MIXTURE OF 60 ML ANHYDROUS DIETHYL ETHER AND 1 ML METHANOL >	OK	< UNA MEZCLA DE 60 ML DE E/TER DIETI/LICO ANHIDRO Y 1 ML DE METANOL >
< A 50 ML VOLUMETRIC FLASK >	OK	< UN MATRAZ VOLUME/TRICO DE 50 ML >
< 3-*NITRANILINE-4-SULFONIC ACID >	SD NO	< A/CIDO 3-NITRANILINE-4-SULFO/NICO >
< CENTRAL/REGIONAL MINI-COURSES >	OK	< MINI-CURSOS CENTRALES/REGIONALES >
< OTHER NUTRITION-RELATED DISEASES >	OK	< OTRAS ENFERMEDADES RELACIONADAS CON NUTRICIO/N >
< THE TWO BAUXITE-PRODUCING COMPANIES >	OK	< LAS DOS EMPRESAS QUE PRODUCEN BAUXITA >
< A THREE-GENERATION REPRODUCTION STUDY >	OK	< UN ESTUDIO DE REPRODUCCIO/N DE TRES GENERACIONES >

Exhibit 6

(60) more sophisticated and sensitive equipment

(61) ongoing monitoring and evaluation

(62) health policy and strategies

(63) morbidity and mortality statistics

(64) the workers' mental ability

(65) approximately 5 months' imports

(66) a mixture of 60 ml anhydrous diethyl ether and 1 ml methanol

(67) 3-nitraniline-4-sulfonic acid

(68) central/regional mini-courses

(69) other nutrition-related diseases

(70) the two bauxite-producing companies

(71) a three-generation reproduction study

6. Unedited Translation of Typical Running Text

The four texts that are attached as Appendix B represent typical translation done by ENGSPAN during the period. A certain amount of minimal, basic dictionary work has been done, but there has been no postediting. This output is included in the present report in order to demonstrate that ENGSPAN is now capable of meeting the challenge of random text.

APPENDIX A

THE ATN GRAMMAR

The following pages contain a copy of the ATN grammar, preceded by a list of codes that appear therein.

List of codes

The codes for the parts of speech represented in the grammar follow.

Code	Part of speech
01	Preposition
02	Coordinate conjunction
03	Subordinate conjunction
05	Auxiliary
07	not
09	than and as
11	Noun
12	Verb
13	Adjective
14	Adverb
21	Predeterminer
22	Determiner
23	Non-predicative adjective
32	Ordinal number
33	Quantifier
34	Cardinal number
38	Proper name
39	Personal title
41	Subject pronoun only
42	Subject and object pronoun
43	Object pronoun only
44	Possessive pronoun
45	Reflexive pronoun
51	Modifier of adjective and/or adverb
52	Modifier of numerative
53	General purpose modifier
75	Prefix
96	Comma

The following codes appear in the network as seek arcs and as labels on subnetworks.

Code	Phrase type
ST	Sentence
CL	Clause
CM	Comparative clause
NP	Noun Phrase
VP	Verb Phrase
V2	Participial verb phrase
PP	Prepositional Phrase
SN	Sentence Nominalization (for/to complementation and infinitive phrases)
HY	Hyphenated compound
MT	Comparative phrase

The codes XX and YY appear in the network as labels for jump and send arcs, respectively.

Sentence

NETWORK		STATE			
1	C2	1	1	31	0
2	CL	3	1	5	86
3	XX	3	1	0	0
4	14	3	1	73	0
5	PP	2	1	0	78

NETWORK		STATE			
1	S6	3	1	0	0
2	XX	3	1	0	0

NETWORK		STATE			
1	C3	3	1	78	0
2	S6	3	1	0	0
3	CL	3	1	72	86
4	V2	3	1	56	86
5	VP	3	1	58	86
6	NP	3	1	58	81
7	YY	0	0	31	0
8	S6	4	1	81	0

NETWORK		STATE			
1	PP	4	1	0	0
2	YY	0	0	31	0

Clause

NETWORK		STATE			
1	14	6	2	94	14
2	C5	3	2	13	53
3	VP	10	2	95	99
4	14	2	2	85	99
5	14	1	2	73	0
6	NP	2	2	21	16
7	NP	4	2	21	89
8	PP	2	2	21	16
9	NP	4	2	0	8
10	PP	1	2	0	0
11	VI	13	2	82	0
12	SN	1	2	29	0
13	SN	4	2	37	8
14	S6	1	2	0	0

NETWORK		STATE			
1	C5	3	2	38	20
2	XX	3	2	55	0
3	VP	11	2	70	0

NETWORK		STATE			
1	XX	5	2	94	0
2	NP	0	2	0	8

NETWORK		STATE			
1	C5	5	2	38	20
2	VP	5	2	38	0
3	VP	13	2	0	0
4	XX	13	2	0	0

NETWORK		STATE			
1	14	7	2	94	14

NETWORK		STATE			
1	VP	8	2	0	0

NETWORK		STATE			
1	V2	8	2	0	94
2	XX	13	2	91	0

NETWORK		STATE			
1	NP	12	2	22	8
2	XX	13	2	91	0

NETWORK		STATE			
1	V2	13	2	52	0
2	VP	13	2	55	0

NETWORK		STATE			
1	14	11	2	94	14
2	NP	11	2	0	8

NETWORK		STATE			
1	NP	12	2	0	8

NETWORK		STATE			
1	SN	13	2	0	0
2	XX	13	2	0	0

NETWORK		STATE			
1	S6	14	2	64	0
2	C2	14	2	9	0
3	YY	0	0	9	0

NETWORK		STATE			
1	S2	14	2	9	0
2	CL	15	2	0	95

NETWORK		STATE			
1	YY	0	0	0	0

Noun Phrase

NETWORK 3 STATE 1

1	YY	0	79	26
2	39	14	0	0
3	22	1	65	0
4	22	2	0	1
5	41	3	19	6
6	43	12	45	6
7	44	3	0	0
8	MT	1	37	0
9	XX	2	0	0
10	42	6	0	6
11	21	1	0	1
12	21	3	0	1
13	CL	10	59	80

NETWORK 3 STATE 2

1	52	2	0	4
2	54	15	0	71
3	34	2	100	4
4	33	5	0	1
5	34	7	0	2
6	33	7	0	2
7	51	3	0	3
8	53	3	0	3
9	53	2	0	3
10	53	2	0	3
11	33	3	0	4
12	HY	3	0	17
13	XX	3	0	0
14	33	7	106	2

NETWORK 3 STATE 3

1	34	15	0	71
2	14	3	75	3
3	13	3	0	3
4	HY	3	0	17
5	13	7	10	2
6	XX	15	100	0
7	11	7	104	3
8	XX	14	97	0
9	XX	4	69	0

NETWORK 3 STATE 4

1	42	5	47	19
2	45	5	45	19
3	11	4	15	3
4	11	5	96	19
5	11	3	35	3
6	11	2	12	19
7	XX	5	11	7
8	11	4	113	3

NETWORK 3 STATE 5

1	45	10	41	74
2	34	6	0	0
3	CL	10	60	18
4	35	5	0	0
5	XX	6	0	0
6	11	6	98	19

NETWORK 3 STATE 6

1	V3	7	16	17
2	XX	7	0	0
3	V2	7	99	17

NETWORK 3 STATE 7

1	SN	10	36	0
2	PP	9	90	84
3	XX	9	0	0
4	PP	8	57	0

NETWORK 3 STATE 8

1	C3	9	5	15
2	XX	10	0	0

NETWORK 3 STATE 9

1	CL	10	71	0
2	CL	10	0	0

NETWORK 3 STATE 10

1	S6	11	64	0
2	C2	11	63	0
3	C9	12	0	0
4	YY	0	86	5

NETWORK 3 STATE 11

1	C2	11	63	0
2	NP	13	84	12

NETWORK 3 STATE 12

1	CM	13	0	0

NETWORK 3 STATE 13

1	YY	0	0	0

NETWORK 3 STATE 14

1	39	14	93	75
2	33	12	12	19
3	01	14	33	0
4	38	10	93	92
5	38	3	93	75

NETWORK 3 STATE 15

1	11	3	101	72
2	HY	3	102	72

Verb Phrase

NETWORK 4 STATE 1

1	55	1	4	55	0
2	15	1	4	22	26
3	12	1	4	20	21
4	51	1	4	38	0
5	14	1	4	61	0

NETWORK 4 STATE 2

1	05	2	4	22	22
2	55	2	4	55	0
3	57	2	4	23	23
4	12	2	4	24	24
5	51	2	4	0	0
6	14	2	4	51	0
7	XX	2	4	11	0

NETWORK 4 STATE 3

1	07	3	4	25	2
2	14	3	4	32	29
3	24	3	4	28	33
4	21	3	4	32	29
5	54	3	4	29	34
6	14	3	4	54	0
7	03	3	4	32	6
8	XX	4	4	30	9
9	23	3	4	56	31
10	MT	7	4	37	0
11	51	3	4	2	0
12	14	3	4	74	32
13	CL	5	4	51	0
14	XX	3	4	11	0
15	YY	0	0	7	0
16	PP	3	4	26	31

NETWORK 4 STATE 4

1	01	4	4	32	29
2	14	4	4	32	29
3	03	6	4	33	0
4	NP	5	4	77	11
5	MT	7	4	37	12
6	XX	5	4	2	0
7	PP	3	4	32	31

NETWORK 4 STATE 5

1	01	5	4	42	29
2	14	5	4	42	29
3	SN	8	4	34	33
4	XX	3	4	0	0

NETWORK 4 STATE 6

1	CL	3	4	0	10

NETWORK 4 STATE 7

1	CM	8	4	0	0

NETWORK 4 STATE 8

1	21	8	4	0	0
2	14	8	4	0	32
3	SN	8	4	29	34
4	NT	8	4	0	27
5	PP	8	4	0	31
6	XX	3	4	0	0

NETWORK 4 STATE 9

1	SN	10	4	54	0
2	33	10	4	33	0
3	YY	0	0	7	0
4	YY	0	0	43	0

NETWORK 4 STATE 10

1	33	10	4	63	0
2	VP	11	4	34	55
3	V2	11	4	34	55
4	VI	11	4	34	55

NETWORK 4 STATE 11

1	YY	0	0	0	0

Prepositional Phrase

NETWORK			STATE			
5			1			
1	YY	0	0	0	79	26
2	22	1	5		95	0
3	21	2	5		0	0
5			2			
1	V2	3	5		3	0
2	N3	3	5		0	85
3	XX	3	5		11	0
4	YY	0	0		46	0
5			3			
1	56	4	5		64	0
2	22	4	5		63	0
3	YY	0	0		0	0
4	YY	0	0		43	77
5			4			
1	53	4	5		63	0
2	PP	5	5		84	95
5			5			
1	YY	0	0		0	0

Hyphenated Compound

NETWORK			STATE			
7			1			
1	55	1	7		0	0
2	34	1	7		0	0
3	34	4	7		0	82
4	32	4	7		0	0
5	XX	2	7		0	0
7			2			
1	75	3	7		0	0
2	14	4	7		0	0
3	13	4	7		0	0
4	11	4	7		0	82
7			3			
1	14	4	7		0	0
2	XX	4	7		0	0
7			4			
1	12	4	7		17	13
2	11	4	7		0	82
3	13	4	7		0	82
4	PP	4	7		0	82
5	YY	0	0		1	73

Sentence Nominalization

NETWORK			STATE			
6			1			
1	55	1	6		55	0
2	54	4	6		39	0
3	C1	2	6		45	0
4	XX	4	6		0	0
6			2			
1	N2	3	6		0	0
6			3			
1	11	4	6		42	0
6			4			
1	V2	5	6		49	0
6			5			
1	55	5	6		34	0
2	55	6	6		64	0
3	55	6	6		63	0
4	YY	0	0		0	0
6			6			
1	52	6	6		63	0
2	55	7	6		34	95
6			7			
1	YY	0	0		0	0

Comparative Phrase

NETWORK			STATE			
8			1			
1	51	2	3		0	0
8			2			
1	C3	3	3		0	0
8			3			
1	YY	0	0		0	0

APPENDIX B. UNEDITED TRANSLATION OF TYPICAL RUNNING TEXT

DESCRIPTION OF THE COUNTRY AND ITS HEALTH SITUATION	OK	DESCRIPCION DEL PAIS Y SU SITUACION DE SALUD
Country: SURINAME - Date: November 1984	OK OK OK OK	País: SURINAME - La fecha: Noviembre 1984
Country Narrative Summary	OK	Resumen de Narrativa de País
Suriname	OK	Suriname
O. Relevant Geographic, Climatic, Demographic, Political, Economic and Social Characteristics	OK	O. Características Relevantes Geográficas, Climáticas, Demográficas, Políticas, Económicas y Sociales
O.1 Geography and Climate - Suriname is situated on the north coast of the South American Continent and shares borders with Guyana, Brazil and French Guiana. The land area totals about 163,000 km_2_ including approximately 90,000 km_2_ of disputed area with Guyana and French Guiana. Most of the population lives along the coastal strip which is about 3% of the total land area. The sparsely populated interior consists mainly of dense tropical forest with small settlements along the rivers. The climate is tropical with an average temperature of 26C; the mean annual rainfall is 2,000 to 2,500 mm. There has been no major natural disaster in recent history.	OK OK TU OK OK OK TU OK OK OK	O.1 Geografía y Clima - Suriname está situado en la costa norte del Continente sudamericano y comparte fronteras con Guyana, Brasil y Guayana Francesa. La superficie terrestre totaliza cerca de 163,000 km_2_ que incluyen aproximadamente 90,000 km_2_ de área disputada con Guyana y Guayana Francesa. La mayoría de la población vive a lo largo de la franja costera que es cerca de 3% de la superficie terrestre total. El interior ralamente poblado consta principalmente de bosque tropical denso con asentamientos pequeños a lo largo de los ríos. El clima es tropical con una temperatura media de 26C; la precipitación anual media es 2,000 a 2,500 mm. No ha habido desastre natural principal en historia reciente.
O.2 Demographic Factors - The population is about 360,000 and consists mainly of Hindustani, Creole, Javanese, Amerindians, and Chinese. About two thirds of the population is concentrated in the capital city of *Paramaribo.	OK OK TU SD NO	O.2 Factores Demográficos - La población es cerca de 360,000 y consta principalmente de indostani, criollo, javaneses, amerindios, y chinos. Cerca de dos tercios de la población está concentrado en la ciudad capital de Paramaribo.
O.3 Political System - Administratively the country is divided into nine districts including the capital district of *Paramaribo. These districts are administered by Commissioners with limited authority.	OK SD OK OK	O.3 Sistema Político - Administrativamente el país está dividido en nueve distritos que incluyen el distrito capital de Paramaribo. Estos distritos son administrados por Comisionados con autoridad limitada.
O.4 Economy - Suriname has an unevenly developed economy with a few capital-intensive modern enterprises dominated by foreign capital and producing most of the country's output and exports. In addition to the two bauxite-producing companies, there are also large agricultural enterprises engaged in rice research, cultivation, and production and in wood processing.	OK OK TU OK	O.4 Economía - Suriname tiene una economía desigualmente desarrollada con unas pocas empresas modernas capitales-intensivas dominadas por capital extranjero y generando la mayoría de producción y exportaciones del país. Además de las dos empresas que producen bauxita, hay también empresas grandes agrícolas ocupadas en investigación de arroz, cultivo, y producción y en procesamiento de madera.

Despite the large-scale immigration in recent years and the OK
rapid growth of the public sector, unemployment is still
around 18% of the labor force. The overall balance of OK
payments position has remained relatively strong in recent
years. This is mainly the result of the imposition of the OK
levy on bauxite production and a substantial increase in
foreign aid. Official reserves at the end of 1982 were OK
equivalent to approximately 5 months' imports.

A pesar de la inmigración en gran escala en años recientes y el crecimiento rápido del sector público, el desempleo es todavía alrededor de 18% de la fuerza laboral. La posición global de balanza de pagos ha permanecido relativamente fuerte en años recientes. Esto es principalmente el resultado de la imposición de la recaudación en producción de bauxita y un aumento sustancial en ayuda extranjera. Las reservas oficiales al final de 1982 fueron equivalentes a las importaciones de aproximadamente 5 meses.

0.5 Social and Family Characteristics - The literacy rate OK OK
is about 83% for men and about 75% for women. Through OK
literacy programs now being executed, there should be 100%
literacy within a few years. Attendance at primary school OK TU
is compulsory and remains high throughout secondary school.
The University of Suriname includes Faculties of Medicine, OK
Social Sciences, Engineering, and Law. A number of housing OK
programs have been implemented by the Government to improve
public housing. The road and telecommunication systems are NO
extensive and of good quality. The national carrier, NO GI
Suriname Airways, provides air links with neighboring
countries, the United States of America, and Europe. The OK
Government of Suriname has one television station and one
radio station.

0.5 Características Sociales y de Familia - La tasa de alfabetismo es cerca de 83% para los hombres y cerca de 75% para mujeres. A través de programas de alfabetismo ahora siendo ejecutado, debe haber el alfabetismo de 100% dentro de unos pocos años. La asistencia en escuela primaria es obligatoria y permanece alta en todo escuela secundaria. La Universidad de Suriname incluye a Facultades de Medicina, Ciencias Sociales, Ingeniería, y Ley. Varios programas habitacionales han sido instrumentados por el Gobierno para mejorar vivienda pública. La carretera y sistemas de telecomunicación son exhaustivos y de calidad buena. El portador nacional, *Vías Aéreas de Suriname, proporciona nexos de aire con países vecinos, los Estados Unidos de América, y Europa. El Gobierno de Suriname tiene una estación de televisión y una estación de radio.

1. Development of the Health System OK

1. Desarrollo del Sistema de Salud

1.1 Health Policy and Strategy - After the Revolution of OK OK
February 1980, there has been a reorientation of the
developmental policies based on the principles of
renovation in the political administrative order, the
socioeconomic order, and the education system. Within this OK
framework, health policies were defined with the Alma-Ata
Declaration as a background. Health is to be available, PP
accessible, affordable, and acceptable to the population
and the policy focus is directed at the development of
primary health care. The participation of the community in OK
this process is essential.

1.1 Política y Estrategia de Salud - Después de la Revolución de febrero 1980, ha habido una reorientación de las políticas del desarrollo basadas en los principios de renovación en el orden administrativo político, el orden socioeconómico, y el sistema de educación. Dentro de este marco, políticas de salud se definieron con la Declaración de Alma-Ata como unos antecedentes. La salud es estar disponible, accesible, alcanzable, y aceptable a la población y el foco de política está dirigido al desarrollo de atención primaria de salud. La participación de la comunidad en este proceso es esencial.

The Government is committed to the strategy of health for all through its national health policies, and there is a high degree of congruence between national health policies and the Regional Strategies for attaining health for all by the year 2000. Population groups living in rural areas have been singled out for special attention in the development of primary health care. In view of their vulnerability, mothers and children also receive special attention. No special programs have been implemented for the elderly, the handicapped or the working population. A number of medical and social provisions, however, have been in existence for a long time for these groups of the population.

1.2 The Health System - The Ministry of Health has a regulatory, legislative, coordinating, and initiating role. It is also directly responsible for the health care of approximately one fourth of the population through its health institutions. This comprises two major hospitals, a regional health service responsible for primary health care in the coastal area, and preventive medicine services. The private sector is made up of two hospitals and a large number of private medical practitioners. A privately organized but publicly funded foundation is responsible for primary health care in the interior of the country where 10% of the population lives. In 1981, a State Health Insurance Foundation started, which at this stage, covers curative medical services for state employees. The next stage comprising medical services for the underprivileged population will start in 1984 and will cover another significant part of the population. In a later stage, small independent employers will be invited to join the scheme. Larger employers already have insurance schemes for their employees and families and often provide their own health services. It is estimated that the majority of the total population will be covered by the State Health Insurance eventually.

El Gobierno está comprometido a la estrategia de salud para todos a través de sus políticas nacionales de salud, y hay un grado alto de congruencia entre políticas nacionales de salud y las Estrategias Regionales para lograr salud para todos en el año 2000. Los grupos de población que viven en áreas rurales se han individualizado para atención especial en el desarrollo de atención primaria de salud. En vista de su vulnerabilidad, madres y niños también recibir atención especial. Ningunos programas especiales se han instrumentado para los ancianos, los impedidos o la población activa. Varias provisiones médicas y sociales, sin embargo, han estado en existencia por un tiempo largo para estos grupos de la población.

1.2 El Sistema de Salud - El Ministerio de Salud tiene un regulador, legislativo, coordinador, e iniciando función. Es también directamente responsable de la atención de la salud de aproximadamente un cuarto de la población a través de sus instituciones de salud. Esto comprende dos hospitales principales, un servicio de salud regional responsable de atención primaria de salud en el área costera, y servicios de medicina preventiva. El sector privado está conformado de dos hospitales y un gran número de médicos privados. Una fundación privadamente organizada pero públicamente financiada es responsable de atención primaria de salud en el interior del país donde un 10% de la población vive. En 1981, una Fundación de Seguros de Salud Estatal comenzada, que en esta etapa, cubre servicios médicos curativos para empleados estatales. La próxima etapa que comprende servicios médicos para la población subprivilegiada comenzará en 1984 y cubrirá otra parte significativa de la población. En una etapa posterior, empleadores pequeños independientes se invitarán para unir el esquema. Los empleadores más grandes ya tienen esquemas de seguro para sus empleados y familias y a menudo proporcionan sus propios servicios de salud Se estima que la mayoría de la población total será cubierta por el Seguro de Salud Estatal eventualmente.

Currently, the health information system is very deficient. OK
Separate subsystems exist with little or no coordination OK
or central collection. Specific plans exist to improve the OK
situation in 1984-1985. A national definition of coverage OK
has not been made. Three levels of care exist in the OK
country. In general, accessibility and referral have to be NO
acceptable, especially in view of the very low population
density in some areas. Over the past decade most attention NO
went to the development of adequate secondary and tertiary
care. Presently, more attention is being given to the OK TU
development of primary health care services.

1.4 Community Involvement - A number of efforts have been OK OK
undertaken to increase community participation in various
parts of the country. In addition, the Ministry of Health OK TU
continues to rely strongly on a traditional health
education department.

1.5 Mobilization of Resources - The country is dependent OK OK
on external supplies and equipment. National drug OK
registration was started in 1981. In 1983, the NO
Pharmaceutical Services Department of the Ministry of
Health was organized. A list of essential drugs with some OK
200 generic names was prepared in 1983 and is being used by
the State Health Insurance and government institutions. OK
National research and health technology policies are not
yet defined. There is one major research institute in the OK
health field while smaller units of the Ministry such as
the Central Laboratory have some research functions. A OK
well organized and documented medical library is offered at
the Faculty of Medicine, and a new Documentation Center is
being planned for the Ministry of Health. The development OK
of human resources in the health sector continues to be a
priority.

Actualmente, el sistema de información de salud es muy deficiente. Los subsistemas separados existen con poca o ninguna coordinación o recolección central. Los planes específicos existen para mejorar la situación en 1984-1985. Una definición nacional de cobertura no se ha hecho. Tres niveles de atención existen en el país. En general, accesibilidad y referencia tienen que ser aceptable, especialmente en vista de la densidad de población muy baja en algunas áreas. Más del último decenio la mayoría de atención fue al desarrollo de atención adecuada secundaria y terciaria. Actualmente, más atención se está prestando al desarrollo de servicios de atención primaria de salud.

1.4 Participación Comunitaria - Varios esfuerzos se han emprendido para aumentar participación comunitaria en diversas partes del país. Además, el Ministerio de Salud continúa dependiendo fuertemente de un departamento de educación de salud tradicional.

1.5 Movilización de Recursos - El país es dependiente en suministros y equipo externo. El registro nacional de drogas se comenzó en 1981. En 1983, el Departamento de Servicios Farmoquímicos del Ministerio de Salud se organizó. Una lista de medicamentos esenciales con alrededor de 200 nombres genéricos se preparó en 1983 y está siendo empleado por el Seguro de Salud Estatal e instituciones de gobierno. La investigación y políticas de tecnología de salud nacionales no todavía son definida. Hay un instituto de investigación principal en el campo de salud mientras que unidades más pequeñas del Ministerio como el Laboratorio Central tienen algunas funciones de investigación. Una biblioteca médica bien organizada y documentada se ofrece a la Facultad de Medicina, y un Centro nuevo de Documentación se está planificando para el Ministerio de Salud. El desarrollo de recursos humanos en el sector salud continúa siendo una prioridad.

Although there are enough well-qualified physicians available, there continues to be a need for qualified mid-level personnel, as well as for specific high-level personnel, such as health administrators, sanitary engineers, statisticians, and entomologists. The School of Dental Auxiliaries is continuing to produce graduates who are starting to work in rural areas in cooperation with the regional health services. In nursing, a Central School for Nursing and Related Professions has been set up which will gradually replace the various schools of nursing.

1.6 Intersectoral Cooperation - The health sector participates in programs and intersectoral development projects mainly with the Departments of Education, Social Affairs and Labor.

1.7 International Cooperation - PAHO/WHO technical cooperation is provided in the following areas: entomological surveillance, malaria eradication, Aedes aegypti eradication, control of leprosy, occupational health, planning and information systems, dental health, environmental sanitation, and veterinary public health.

2. Health Status

2.1 Protection and Promotion of Health

Food and Nutrition - Data from a recent nutritional survey in 5 to 8 year olds do not show signs of an acute malnutrition problem, although there may have been a nutritional problem in earlier years. Plans for a nutritional survey in a younger age group are underway. Other nutrition-related diseases such as diabetes, hypertension, and obesity are highly prevalent. No special programs currently exist in this area.

Oral Health - Oral health, especially in school-age children, is a serious reason for concern. A special program to train dental auxiliaries for youth dental health was started several years ago.

Aunque hay suficientes médicos bien-calificados disponibles, allí continúa siendo una necesidad de personal calificado de medio nivel, así como para personal específico de nivel alto, como administradores de salud, ingenieros sanitarios, estadísticos, y entomólogos. La Escuela de Auxiliares Dentales está continuando produciendo graduados que están comenzando a trabajar en áreas rurales en cooperación con los servicios de salud regionales. En enfermería, una Escuela Central para Enfermería y Profesiones Conexas ha sido instalar que gradualmente reemplazará las diversas escuelas de enfermería.

1.6 Cooperación Intersectorial - El sector salud participa en programas y proyectos de desarrollo intersectorial principalmente con los Departamentos de Educación, Asuntos Sociales y Mano de Obra.

1.7 Cooperación Internacional - La cooperación técnica de la OPS/OMS se proporciona en las áreas siguientes: la vigilancia entomológica, erradicación de malaria, erradicación de Aedes aegypti, control de lepra, salud ocupacional, planificación y sistemas de información, salud dental, saneamiento ambiental, y salud pública veterinaria.

2. Estado de Salud

2.1 Protección y Promoción de Salud

Alimentación y Nutrición - Los datos de un estudio reciente nutricional en 5 a 8 años de edad no muestran signos de un problema +de malnutrición+ aguda, aunque puede haber habido un problema nutricional en años anteriores. Los planes para un estudio nutricional en un grupo de edad más joven están en desarrollo. Otras enfermedades relacionadas con nutrición como diabetes, hipertensión, y obesidad son altamente prevalentes. Ningunos programas especiales actualmente existen en esta área.

Salud Oral - La salud oral, especialmente en niños en edad escolar, es una razón seria para inquietud Un programa especial a capacitar auxiliares dentales para salud dental de juventud se comenzó varios años atrás.

At the central level, it has worked well, but outreach activities suffer from logistical and organizational problems. OK

En el nivel central, ha trabajado bien, pero actividades de extensión sufren de problemas logísticos y de organización.

Accidents - Traffic accidents are on the increase and are taking a high death toll especially among young adults. Accident prevention programs are being implemented by the Police Department. OK OK TU TU OK

Accidentes - Los accidentes de tránsito están en el aumento y están cobrando una mortalidad alta especialmente entre adultos jóvenes. Los programas de prevención de accidente están siendo instrumentados por el Departamento Policial.

Mental Health - Various mental health programs have been identified. Alcohol and drug abuse cause serious concern, although no exact data are available as to their extent. OK OK OK

Salud Mental - Diversos programas de salud mental se han identificado. El uso indebido de alcohol y drogas causan inquietud seria, aunque ningunos datos exactos están disponibles en cuanto a su grado.

2.2 Environmental Health OK

2.2 Salud Ambiental

Drinking Water - The National Program for Drinking Water Supply has the goal to expand to full coverage the already existing distribution system. Only part of the water supply is being totally disinfected. OK NO OK

Agua Potable - El Programa Nacional para Abastecimiento de Agua Potable tiene la meta para ampliar a cobertura plena el ya sistema existente de distribución. Unica parte del abastecimiento de agua está siendo totalmente desinfectado.

Excreta Disposal - Excreta disposal programs are offered at a lower level of coverage, but also receive full attention from the Government. OK OK

Eliminación de Excretas - Los programas de eliminación de excretas se ofrecen a un nivel inferior de cobertura, pero también reciben atención plena del Gobierno.

Solid Waste - The Solid Waste Program is currently being handled by several different Ministries. Coverage is high for collecting and disposing of solid waste. OK OK OK

Desechos Sólidos - El Programa de Desechos Sólidos actualmente está siendo manejado por varios Ministerios diferentes. La cobertura es alta para recoger y eliminar desechos sólidos.

Food Protection - Food protection is a long-standing priority of the Ministry of Health with a special section devoted to this problem. A new program is now being organized to correct current problems which includes training new people and expanding into new fields such as coverage of food processing plants. OK OK PP

Protección de Alimentos - La protección de alimentos es una prioridad de larga data del Ministerio de Salud con una sección especial dedicada a este problema. Un programa nuevo está siendo ahora organizado a problemas de corriente correcta el cuál incluye personas nuevas de capacitación y ampliando en campos nuevos como cobertura de plantas de procesamiento de alimentos.

Physical and Chemical Pollution - A number of major agricultural development plants have been announced for the rural areas. It is not known which health effects they may have and the health sector is not actively participating in them. OK OK PP

Contaminación Física y Química - Varias plantas de desarrollo agrícola principales se han anunciado para las áreas rurales. No es conocido qué efectos de salud pueden tener y el sector salud no activamente está participando en ellos.

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Veterinary Public Health - The major zoonoses are OK OK
salmonellosis and leptospirosis. Present also are NO
brucellosis and rabies. Since the exact magnitude in OK
distribution is not well known, the Veterinary Public
Health Program is developing the necessary epidemiological
skills to implement the total program. An excellent OK
Veterinary Public Health Laboratory with adequate equipment
can then support the necessary studies. A Division of OK
Environmental Health is being created within the Ministry
of Health to coordinate this program.

2.3 Disease Prevention and Control OK
Diseases Preventable by Vaccination - Since 1982, a major NO OK
initiative was taken to increase coverage at age 1 against
five diseases: polio, diphtheria, pertussis, tetanus, and OK
measles. Tetanus has increased dramatically from less than OK
30% to over 80% in 1983. The Immunization Program is being OK
expanded to include other high risk groups and other
diseases such as rubella and yellow fever.

Other Infectious and Parasitic Diseases of National OK
Significance - In 1984, a diarrheal disease control program OK
was launched. Diarrheal disease accounts for approximately OK
15% of infant mortality and 20% of mortality in 1-4 year
olds. Malaria is a problem in the interior of the country. OK
Operations have been improved in coverage and efficiency PP
by transferring the control activities to the Medical
Mission, a primary health care agency. Aedes aegypti is OK
abundant and several dengue outbreaks have occurred in the
past 5 years. Leprosy has a high incidence and prevalence OK
rate. Complication rates have been coming down, however, PP
over the last years because of early case finding and
treatment through the Dermatological Service.

Salud Pública Veterinaria - Las zoonosis principales son
salmonelosis y leptospirosis. Presente también son
brucelosis y rabia. Ya que la magnitud exacta en
distribución no es bien conocida, el Programa de Salud
Pública Veterinaria está desarrollando las
especializaciones epidemiológicas necesarias para
instrumentar el programa total. Un Laboratorio de Salud
Pública Veterinaria excelente con equipo adecuado entonces
puede apoyar los estudios necesarios. Una División de
Salud Ambiental se está creando dentro del Ministerio de
Salud para coordinar este programa.

2.3 Prevención y Control de Enfermedades

Enfermedades Prevenibles por Vacunación - Desde 1982, una
iniciativa principal se tomó para aumentar cobertura a edad
1 contra cinco enfermedades: el polio, difteria,
pertussis, tétanos, y sarampión. El tétanos ha aumentado
singularmente de menor que un 30% a más de 80% en 1983. El
Programa de Inmunización se está ampliando para incluir a
otros grupos de alto riesgo y otras enfermedades como
rubéola y fiebre amarilla.

Otras Enfermedades Infecciosas y Parasitarias de
Significado Nacional - En 1984, un programa de control de
enfermedad diarreica se lanzó. La enfermedad diarreica
representa aproximadamente 15% de mortalidad infantil y un
20% de mortalidad en 1-4 años de edad. La malaria es un
problema en el interior del país. Las operaciones se han
mejorado en cobertura y eficiencia al trasladar las
actividades de control a la Misión Médica, una agencia de
atención primaria de salud. Aedes aegypti es abundante y
varios brotes de dengue han ocurrido en el pasado 5 años.
La lepra tiene una incidencia y tasa de prevalencia alta.
Las tasas de complicación han estado bajando, sin embargo,
sobre los últimos años por causa de detección de casos y
tratamiento temprano a través del Servicio Dermatológico.

13.6 DIARRHEAL DISEASES OK

Objectives: OK

1. The objectives of the Regional Program for the Control of Diarrheal Diseases (*CDD) are aimed at reducing: SD OK TU NO
morbidity and mortality from acute diarrheal diseases as well as reducing the diarrhea associated with ill effects, particularly malnutrition in infants and young children.

2. The program seeks the promotion of national self-reliance in the delivery of health and the supply of oral rehydration salts (ORS) for the control of diarrheal diseases, through the collaboration with national authorities in charge of *CDD activities. SD PP

Targets: OK

3. Planning and Operations OK

a. by 1987 90% of the countries will have established operational control programs; OK

b. adequate supplies of oral rehydration salts (ORS) will be assured to all countries through the establishment of 15 subregional and national production centers; OK

c. oral rehydration therapy (ORT) will be established in 80% of PHC services in the countries, and access to ORT will be assured for at least 40% of childhood diarrhea cases in all countries; PP

d. *CDD control measures, other than ORT, will be implemented in at least 50% of the countries. SD NO

5. Evaluation OK

It is expected that by 1987: NO

a. 90% of the countries will have included ongoing monitoring and evaluation as integral parts of their country programs; OK

b. 90% of the countries will have had at least a periodic comprehensive review for their national programs. OK

c. 80% will be periodically reporting morbidity and mortality data to assess the impact of *CDD strategies. SD OK

13.6 ENFERMEDADES DIARREICAS

Los objetivos:

1. Los objetivos del Programa Regional para el Control de Enfermedades Diarreicas (CDD) se dirigen a reducir: la morbilidad y mortalidad de enfermedades diarreicas agudas así como reduciendo la diarrea asociada con efectos adversos, particularmente +malnutrición+ en lactantes y niños pequeños.

2. El programa busca la promoción de auto-suficiencia nacional en la entrega de salud y el suministro de sales de rehidratación oral (SRO) para el control de enfermedades diarreicas, a través de la colaboración con autoridades nacionales a cargo de actividades de CDD.

Las metas:

3. Planificación y Operaciones

a. para 1987 un 90% de los países habrán establecido programas de control operativos;

b. los suministros adecuados de sales de rehidratación oral (SRO) se asegurarán a todos los países a través del establecimiento de 15 centros de producción subregionales y nacionales;

c. la terapia de rehidratación oral (TRO) se establecerá en 80% de servicios de APS en los países, y acceso a TRO se asegurará para por lo menos 40% de casos de diarrea de niñez en todos países;

d. Las medidas de control de CDD, con excepción de TRO, se instrumentará en por lo menos 50% de los países.

5. Evaluación

Se espera que para 1987:

a. un 90% de los países habrán incluido monitoría y evaluación continua como partes integrales de sus programas de país;

b. un 90% de los países habrán tenido por lo menos una revisión integral periódica para sus programas nacionales.

c. un 80% estarán informando periódicamente información de morbilidad y de mortalidad para evaluar la repercusión de estrategias de CDD.

Situation Analysis: OK

Research OK

6. It is expected that by 1987 50% of the countries will be conducting operational research projects to help support *CDD activities. SD OK

7. At the end of 1984, the ORT is being actively promoted in all countries, although in seven countries there are not well developed plans of action. OK

The administration training course in Portuguese language was held for the first time in Brazil to train health personnel as a measure to replicate the national program in all the states. OK TU TU

Nine physicians from the African Portuguese-speaking countries participated. OK

A similar course with the same purpose was held in Mexico. OK

The course on supervisory skills was conducted in four countries for the first time; and two countries conducted this course for the second time. OK TU OK TU

Technical training activities on clinical handling of the child with diarrhea are routinely carried out by the national authorities of each country; the Regional Program contributes to these activities by providing technical instructional materials and in some occasions by the participation of an international expert. OK

8. Comprehensive program reviews were conducted in two countries; two countries conducted diarrheal disease morbidity and mortality surveys; and two more countries made plans to carry out a similar survey at the beginning of 1985. OK OK OK

9. In the area of operational research support was provided to nine projects in seven countries. OK

Proposed Program Activities: OK

10. The Regional Program will collaborate with the Member Countries in the areas mentioned below. OK

11. Planning and Operation OK

- Development of country plans of operation within the context of overall country health plans by: OK

a. provision of written guidelines; OK

El análisis de situaciones:

Investigación

6. Se espera que para 1987 un 50% de los países estarán realizando proyectos de investigación operativa para ayudar apoyar actividades de CDD.

7. Al final de 1984, la TRO está siendo activamente promovido en todos los países, aunque en siete países no hay planes bien desarrollados de acción. El curso de capacitación de administración en idioma portugués se llevó a cabo por la primera vez en Brasil para capacitar a personal de salud como una medida para reproducir el programa nacional en todos los estados. Nueve médicos de los países de habla portuguesa africanos participaron. Un curso similar con el mismo fin se sostuvo a México. El curso en especializaciones supervisoras se realizó en cuatro países por la primera vez; y dos países realizaron este curso por la segunda vez. Las actividades de capacitación técnica en manejo clínico del niño con diarrea rutinariamente son llevadas a cabo por las autoridades nacionales de cada país; el Programa Regional contribuye a estas actividades al proporcionar materiales instruccionales técnicos y en algunas ocasiones mediante la participación de un experto internacional.

8. Las revisiones integrales de programa se realizaron en dos países; dos países realizaron estudios diarreicos de enfermedad de morbilidad y de mortalidad; y dos más países hicieron planes para llevar a cabo un estudio similar al comienzo de 1985.

9. En el área de investigación operativa el apoyo se proporcionó a nueve proyectos en siete países.

Las actividades propuestas de Programa:

10. El Programa Regional colaborará con los Países Miembros en las áreas mencionadas abajo.

11. Planificación y Operación

- El desarrollo de planes de país de operación dentro del contexto de salud global de país planifica por:

a. la provisión de normas escritas;

b. provision of consultants. OK

- Development of improved communications support, including promotional and educational materials to support control strategies, especially those directed towards mothers NO

- Improvement in control strategies through development of cost-effectiveness guidelines for both morbidity and mortality reduction OK

- Development of complementary programs with other primary health care (PHC) elements, particularly immunization, nutrition, family healt', and environmental health, within the framework of PHC NO

- Ensuring, on a country, regional, and global basis, adequate supplies of oral rehydration salts (ORS) through: NO

a. identification of country needs and available sources of bilateral or multilateral support; OK

b. support for the development of subregional and national ORS production centers; OK

c. development of alternative methods of preparation of ORS. OK

- Collaboration in the control of epidemics OK

12. Training OK

- Management training: OK

a. a course for national program administrators on determining overall communicable disease priorities, setting objectives and targets, selection of delivery and logistics systems, and evaluation; OK

b. a supervisor's course on community involvement, setting local targets, treatment of diarrhea, training, and monitoring and evaluation. NO

- Technical training: OK

a. strengthening of national training centers; OK

b. providing mechanisms for TCDC, especially in ORS supplies and technical training. PP

b. la provisión de consultores.

- Desarrollo de apoyo mejorado de comunicaciones, incluso materiales promocionales y educativos para apoyar estrategias de control, especialmente aquellos dirigieron hacia madres

- Mejora en estrategias de control a través de desarrollo de normas de eficacia en función de los costos para disminución de morbilidad y de mortalidad

- Desarrollo de programas complementarios con otra atención primaria de salud (APS) elementos, particularmente inmunización, nutrición, salud familiar, y salud ambiental, dentro del marco de APS

- Asegurando, en una base de país, regional y global, suministros adecuados de sales de rehidratación oral (SRO) a través de:

a. la identificación de necesidades de país y fuentes disponibles de apoyo bilateral o multilateral;

b. el apoyo para el desarrollo de centros de producción de SRO subregionales y nacionales;

c. el desarrollo de métodos alternativos de preparación de SRO.

- Colaboración en el control de epidemias

12. Capacitación

- La capacitación gerencial:

a. un curso para administradores nacionales de programa al determinar prioridades globales de enfermedad transmisible, objetivos de ambiente y metas, selección de entrega y sistemas de logística, y evaluación;

b. el curso de un supervisor en participación comunitaria, fijando metas locales, tratamiento de diarrea, capacitación, y monitoría y evaluación.

- La capacitación técnica:

a. el fortalecimiento de centros nacionales de capacitación;

b. proporcionando mecanismos para CTPD, especialmente en suministros de SRO y capacitación técnica.

- Inclusion of *CDD material in curricula of medical and nursing schools, schools of public health and other health worker training institutions	SD OK TU	- Inclusión de material CDD en programas de escuelas de medicina y de enfermería, escuelas de salud pública y otras instituciones de capacitación de trabajadores de salud
- Development of locally appropriate training and health education materials on prevention and treatment strategies	OK	- Desarrollo de capacitación y materiales de educación de salud localmente apropiados en prevención y estrategias de tratamiento
13. Evaluation	OK	13. Evaluación
- Use of ongoing information systems to meet specific country needs for monitoring *CDD program progress:	SD OK TU	- El uso de sistemas de información continua para satisfacer necesidades específicas de país de vigilar progreso de programa de CDD:
a. review and analysis of specific data to be collected on *CDD *morbi/mortality, accessibility and coverage of ORT to determine impact on *CDD strategies at the country level;	SD SD SD NO	a. la revisión y análisis de información específica a recogerse en morbi/mortalidad de CDD, accesibilidad y cobertura de TRO para determinar repercusión en estrategias de CDD al nivel de país;
b. strengthen existing national *DD surveillance systems.	SD OK	b. reforzar sistemas existentes nacionales de vigilancia de DD.
- Improvement and development of regional and global information systems integrated with other priority information needs to measure achievement of targets and objectives	OK	- Mejora y desarrollo de sistemas de información regionales y globales integraron con otras necesidades de información de prioridad para medir logro de metas y objetivos
- Use of comprehensive reviews to provide periodic formal assessment of program accomplishments and constraints	OK	- Uso de revisiones integrales para proporcionar evaluación formal periódica de logros de programa y obstáculos
14. Operational Research	OK	14. Investigación Operativa
- Oral rehydration therapy:	OK	- La terapia de rehidratación oral:
a. study of appropriate methods for its delivery to the community and family within the context of primary health care, including studies on acceptability, effectiveness of various health education methods for teaching ORT, and effectiveness of simple methods to assure the early home treatment of diarrhea.	PP	a. el estudio de métodos apropiados para su entrega a la comunidad y familia dentro del contexto de atención primaria de salud, incluso estudios en aceptabilidad, eficacia de diversos métodos de educación de salud para enseñar TRO, y eficacia de métodos simples para asegurar el tratamiento temprano en el domilicio de diarrea.
- Control measures, other than ORT:	NO	- Las medidas de control, con excepción de TRO:
a. studies of the effect of breast-feeding, personal and domestic hygiene on the incidence and severity of diarrheal diseases, and traditional beliefs and practices concerning these interventions;	OK	a. los estudios del efecto de higiene de lactancia, personal y doméstica en la incidencia y gravedad de enfermedades diarreicas, y creencias tradicionales y prácticas que tratan de estas intervenciones;

b. study of methods of achieving accurate, representative reporting of diarrheal diseases. OK

13 7 ACUTE RESPIRATORY INFECTIONS OK

Objective: OK

1. To reduce the mortality from acute respiratory infections (ARI) in children in developing countries through effective case management at primary health care and referral levels and health education. In the long term, the aim is to prevent severe respiratory infections. PP OK

Targets: OK

2. By 1987, a prototype national program for intervention will have been developed, adapted to national characteristics and applied in 33% of the countries in the Region, as an integrated part of child care within primary health care. NO

Situation Analysis: OK

3. Acute respiratory infections are the first cause of consultation to health facilities in children, and among the first three causes of death in 18 out of 24 countries in the Region. Mortality rates vary between 0.5 x 1000 in USA to over 14.0 in Guatemala in children 1 year of age. The differences are similar in children 1-4, at lower rates. PP NO NO

4. The main risk factors for ARI mortality in children appear to be nutritional status and accessibility to proper health care. Vaccination against diphtheria, whooping cough and measles, promotion of breast-feeding and good weaning practices and reduction of exposure to smoke are essential preventive measures already included in other health programs. OK PP

5. Recognizing the urgency of the problem, a double strategy has been adopted: a research program with emphasis on operational, clinical and etiological studies; OK OK

b. el estudio de métodos de lograr notificación exacta, representativa de enfermedades diarreicas.

13.7 INFECCIONES RESPIRATORIAS AGUDAS

El objetivo:

1. A reducir la mortalidad de infecciones respiratorias agudas (IRA) en niños en países en vías de desarrollo a través de gerencia efectiva de casos a atención primaria de salud y niveles de referencia y educación de salud. A la larga, el objetivo es prevenir infecciones respiratorias graves.

Las metas:

2. Para 1987, un programa nacional de prototipo para intervención se habrá desarrollado, adaptado a características nacionales y aplicado en 33% de los países en la Región, como una parte integrada de atención infantil dentro de atención primaria de salud.

El análisis de situaciones:

3. Las infecciones respiratorias agudas son la primera causa de consulta a establecimientos de salud en niños, y entre las primeras tres causas de muerte en 18 fuera de 24 países en la Región. Las tasas de mortalidad varían entre 0.5 x 1000 en EUA a más de 14.0 en Guatemala en niños 1 año de edad. Las diferencias son similares en niños 1-4, a tasas inferiores.

4. Los factores principales de riesgo para mortalidad de IRA en niños parecen ser estado nutricional y accesibilidad a atención de la salud adecuada. La vacunación contra difteria, tos ferina y sarampión, promoción de lactancia y destete bueno practica y disminución de exposición para fumar son medidas esenciales preventivas ya incluido en otros programas de salud.

5. Reconociendo la urgencia del problema, una estrategia doble se ha adoptado: un programa de investigación con énfasis en estudios operativos, clínicos y etiológicos;

and, at the same time, the gradual implementation of improved case management based on current knowledge and medical practices prevalent in highly qualified pediatric centers. Several countries are carrying out studies, and by 1984, program implementation was initiated in five countries with gradual extension of coverage. PP OK

Proposed Program Activities: OK

6. National Program Development OK

Advice on norms and on organization of program activities will be provided by permanent staff and consultants. Close coordination with other child health programs and with UNICEF will facilitate an integrated approach and rational use of the limited funds for this program. Priorities for implementation are for the countries in continental Middle America and the Andean Region. OK TU OK OK

7. Training and educational materials will be developed and adapted to the needs of each country. OK

8. The implementation of control activities to reduce severe disease and mortality will be accompanied by a system of evaluation of operation and impact, both through regular reporting (mortality, coverage of health services and volume of cases managed) and clinical results by severity, through special operational studies or sentinel health units. PP

Manpower Development OK

9. At the managerial and supervisory levels, national courses will utilize the basic diarr .al disease modules for programming, plus a technical module on ARI. Whenever possible, the training will be combined with other programs of prevention of child mortality. OK OK

10. At peripheral and community health levels, the countries will develop their own training system with emphasis on training auxiliary personnel as well as during their supervision. OK

Technology Transfer OK

y, al mismo tiempo, la instrumentación gradual de gerencia mejorada de casos basado en conocimiento de corriente y prácticas médicas prevalentes en centros pediátricos altamente calificados. Varios países están llevando a cabo estudios, y para 1984, la instrumentación de programas se inició en cinco países con extensión gradual de cobertura.

Las actividades propuestas de Programa:

6. Desarrollo Nacional de Programas

El consejo sobre normas y en organización de actividades de programa será proporcionado por personal permanente y consultores. La coordinación cercana con otros programas de salud infantil y con UNICEF facilitará un enfoque y uso racional integrado de los fondos limitados para este programa. Las prioridades para instrumentación son para los países en Mesoamérica continental y la Región Andina.

7. La capacitación y materiales educativos se desarrollarán y se adaptarán a las necesidades de cada país.

8. La instrumentación de actividades de control para reducir enfermedad grave y mortalidad será acompañado por un sistema de evaluación de operación y repercusión, ambos a través de regular informando (mortalidad, cobertura de servicios de salud y volumen de casos administrados) y resultados clínicos por gravedad, a través de estudios operativos o unidades de salud de centinela especiales.

Desarrollo de Recursos Humanos

9. A los niveles gerenciales y supervisores, cursos nacionales utilizarán los módulos básicos de enfermedad diarreica para programación, más un módulo técnico en IRA. Cuando posible, la capacitación se combinará con otros programas de prevención de mortalidad infantil.

10. A niveles periféricos y de salud comunitaria, los países desarrollarán su propio sistema de capacitación con énfasis en personales de auxiliar de capacitación así como durante su supervisión.

Transferencia de Tecnologías

11. The development and reinforcement of technology for ARI in the laboratories of developing countries will receive special attention. National and subregional courses and seminars and coordination with reference centers in developed countries will be the main strategies.

12. In clinical and management aspects, model research protocols will be prepared to be applied in studies in selected centers of developing countries.

13.8 TUBERCULOSIS

Objective:

1. To cooperate with all Member Countries of the Region to reduce suffering, disability and death from tuberculosis (TB), and to eliminate the disease as a public health problem by strengthening diagnostic, treatment and vaccination services.

Targets:

2. By 1987:

- All countries in the Region will have case finding and notification systems with full coverage of health services to evaluate the impact of the program through decreases in incidence.

- At least 60% of the countries with 80% of the population will show a decrease in the estimated risk of infection or incidence in bacillary cases larger than 5% per year.

- An average reduction of over 5% per year will be achieved for TB mortality.

Situation Analysis:

3. All countries have a policy of integration of activities and a national program with a responsible officer at the Ministry of Health.

4. Around 250,000 new cases are notified per year (only 9% in North America).

11. El desarrollo y potencialización de tecnología para IRA en los laboratorios de países en vías de desarrollo recibirán atención especial. Nacionales y cursos y seminarios y coordinación subregional con centros de referencia en países desarrollados serán las estrategias principales.

12. En aspectos clínicos y de gerencia, protocolos de investigación de modelo se prepararán para ser aplicado en estudios en centros seleccionados de países en vías de desarrollo.

13.8 TUBERCULOSIS

El objetivo:

1. A cooperar con todos los Países Miembros de la Región para reducir sufrimiento, incapacidad y muerte de tuberculosis (TBC), y a eliminar la enfermedad como un problema de salud pública al reforzar de diagnóstico, tratamiento y servicios de vacunación.

Las metas:

2. Para 1987:

- Todos los países en la Región tendrán detección de casos y sistemas de aviso con cobertura plena de servicios de salud para evaluar la repercusión del programa a través de descensos en incidencia.

- Por lo menos 60% de los países con 80% de la población mostrarán un descenso en el riesgo estimado de infección o incidencia en casos bacilares más grandes que 5% por año.

- Una disminución media de más de 5% por año se logrará para mortalidad de TBC.

El análisis de situaciones:

3. Todos los países tienen una política de integración de actividades y un programa nacional con un oficial responsable al Ministerio de Salud.

4. Alrededor de 250,000 casos nuevos se notifican por año (sólo 9% en América del Norte).

The problem is being reduced at nearly 5% per year, but the PP
number of cases notified increases yearly because of better
case finding, registration, availability and coverage of
diagnostic facilities and an increase in population in
developing countries.

5. The main problems are low accessibility of the OK
population to free of charge diagnosis and treatment,
reduced funds from the Governments for provision of drugs
and insufficient supervision.

Proposed Program Activities: OK

6. Program planning and implementation: OK

a. Technical advice on norms and procedures and OK TU
cooperation on evaluation of results and epidemiological
impact;

b. Support for training through fellowships and national OK
and international courses on program management and
bacteriology of tuberculosis;

c. Assistance in the procurement of drugs and materials; OK

d. Provision of technical information for program OK
officers;

e. Evaluation of national and regional trends. OK

Research OK

7. Research activities will be promoted and coordinated NO
in cooperation with the WHO Collaborating Centers, with the
following priorities: epidemiological analysis of trends; OK OK
operational results of treatment; quality of bacteriology OK
for case finding; prevalence of bacteriological resistance OK
to drugs; and efficacy of BCG vaccination. OK

El problema se está reduciendo a casi 5% por año, pero el
número de casos notificado aumenta anualmente por causa de
mejor detección de casos, registro, disponibilidad y
cobertura de instalaciones de diagnóstico y un aumento en
población en países en vías de desarrollo.

5. Los problemas principales son accesibilidad baja de la
población a diagnóstico y tratamiento gratuito, fondos
reducidos de los Gobiernos para provisión de drogas y
supervisión insuficiente.

Las actividades propuestas de Programa:

6. La planificación e instrumentación de programas:

a. El consejo técnico sobre normas y procedimientos y
cooperación en evaluación de resultados y repercusión
epidemiológica;

b. El apoyo para capacitación a través de becas y cursos
nacionales e internacionales en gerencia de programas y
bacteriología de tuberculosis;

c. La asistencia en las adquisiciones de drogas y
materiales;

d. La provisión de información técnica para oficiales de
programa;

e. La evaluación de tendencias nacionales y regionales.

Investigación

7. Las actividades de investigación se promoverán y se
coordinarán en cooperación con los Centros Colaboradores
*de la OMS, con las prioridades siguientes: el análisis
epidemiológico de tendencias; los resultados operativos de
tratamiento; la calidad de bacteriología para detección de
casos; la prevalencia de resistencia bacteriológica a
drogas; y la eficacia de vacunación de BCG.

DATA SHEETS ON PESTICIDES

No. 6

*Rev 1 $)$

PARATHION

CLASSIFICATION:

Primary use: Insecticide

Secondary use: Acaricide, avicide

Chemical Group: Organophosphorus compound

Data sheet No. 6 *Rev. 1 (*8/78)

1. GENERAL INFORMATION

1.1 COMMON NAME: Parathion (ISO)

1.1.1 Identity: O,O-diethyl O-*(4-nitrophenyl) phosphorothioate

1.1 2 Synonyms: OMS 19

E 605 - Belgium

*Thiophos $)$ - USSR

*SNP $)$ - France

Local synonyms

1.2 SYNOPSIS - An organophosphorus pesticide of very high mammalian toxicity. It may be absorbed through the skin, by inhalation and via the gastrointestinal tract. It is active upon metabolism.

It must be noted that the issue of a Data Sheet for a particular pesticide does not imply endorsement of the pesticide by WHO or FAO for any particular use, or exclude its use for other purposes not stated. While the information provided is believed to be accurate according to data available at the time when the sheet was compiled, neither WHO nor FAO are responsible for any errors or omissions, or any consequences therefrom.

SELECTED PROPERTIES

1.3.1 Physical characteristics - When pure a colourless almost odourless liquid, m.p. 6.1C, b.p. 157-*162.C at 0.6 *torr. The technical material is a yellow to dark brown liquid with a pungent garlic-like odour.

1.3.2 Solubility - Water at 25C, very slightly soluble (24 mg/l)

OK HOJAS DE INFORMACION CIENTIFICA SOBRE PLAGUICIDAS

OK No. 6

SD Rev.1

OK PARATION

OK CLASIFICACION:

OK OK Uso primario: Insecticida

OK NO Uso secundario: Acaricida, avicida

OK OK Grupo Químico: Organofosforado compuesto

SD SD NO Hoja de información científica No. 6 Rev. 1 (8/78)

OK 1. INFORMACION GENERAL

OK OK 1.1 NOMBRE COMUN: Paratión (ISO)

OK SD NO 1.1.1 Identidad: O,O-DIETIL O- (4-nitrofenil) fosforotioato

OK OK 1.1.2 Sinónimos: OMS 19

OK E 605 - Bélgica

SD OK Thiophos - URSS

SD OK SNP - Francia

OK Sinónimos locales

OK OK 1.2 SINOPSIS - Un plaguicida organofosforado de toxicidad

OK TU mamífera muy alta. Se puede absorber a través de la piel,

OK TU mediante inhalación y por vía del tracto gastrointestinal. Es activo con metabolismo.

OK Se debe notar que el tema de una Hoja de Información Científica para un plaguicida particular no implica aval del plaguicida por *la OMS o FAO para cualquier uso

PP G7 particular, o excluye su uso para otros fines no indicados. Mientras que la información *provisto se cree ser exacto según información disponible al tiempo cuando la hoja se compiló, ninguna *OMS ni FAO son responsables de cualquier errores u omisiones, o cualquier consecuencias de allí.

OK PROPIEDADES SELECCIONADAS

OK SD SD NO 1.3.1 Características físicas - Cuando puro un incoloro casi líquido inoloro, p.f. 6.1C, p.e. 157-162.C a 0.6

NO torr. El material técnico es un amarillo a líquido pardo oscuro con un olor parecido al ajo acre.

OK NO 1.3.2 Solubilidad - Agua a 25C, poco soluble (24 mg/l).

Miscible with most organic solvents, slightly soluble in NO petroleum oils.

1.3.3 Stability - Fairly stable at neutral or slightly OK OK acid pH. At pH 5-6, 1% is hydrolyzed in 62 days at 25C. OK OK Rapidly hydrolyzed in alkali. It isomerizes on heating to SD OK the *O,S-diethyl isomer. It darkens on exposure to OK sunlight

1.3.4 Vapour pressure (volatility) 3.78 x 10-5 *torr at SD NO 20C.

1.4 AGRICULTURE, HORTICULTURE AND FORESTRY OK

1.4.1 Common formulations - Dispersible powders, 150 and OK OK 250 g/kg; dusts, 5, 10, 20, 50 and 100 g/kg; granules 100 OK NO g/kg, emulsifiable concentrates and solutions; aerosols 100 NO g/l. There are FAO specifications for the technical OK product, powders, dusts, concentrates and solutions.

1.4.2 Susceptible pests - Effective against most insects OK OK and mites as contact and stomach poison. Some fumigant OK action. It has been used for the control of nuisance OK G7 birds

1.4.3 Use pattern - Used as pre-harvest soil and foliage OK PP G7 treatment on a wide variety of crops, outdoors and in glasshouses. The pre-harvest interval, depending on crop NO is usually 7-15 days after last application, but twice as long in glasshouses. Uses include tree and berry fruits, PP nuts, cotton, maize, small grains except rye, root and leafy vegetables, legumes, tomatoes, grasses, tobacco, ornamentals. Used as mosquito larvicide on rice fields, OK G7 non-crop areas, pastures, and range lands. Usual OK application rates are 0.2-1 kg/ha.

Not used on stored crops. NO G7

1.4.4 Unintended effects - Not generally phytotoxic, but OK NO can, at high concentrations, injure cucumbers, tomatoes and some ornamentals, and under certain weather conditions, pears and apples.

1.5 PUBLIC HEALTH PROGRAMMES - OK

Miscible con la mayoría de solventes orgánicos, algo soluble en aceites de petróleo.

1.3.3 Estabilidad - Bastante estable a pH neutral o algo ácido. A pH 5-6, 1% se hidroliza en 62 días a 25C. Rápidamente hidrolizado en álcali. Isomeriza al calentar al isómero de O,S-dietilo. Obscurece en exposición a luz solar.

1.3.4 Presión de vapor (volatilidad) 3.78 x 10-5 torr a 20C.

1.4 AGRICULTURA, HORTICULTURA Y SILVICULTURA

1.4.1 Formulaciones comunes - Polvos dispersables, 150 y 250 g/kg; polvos, 5, 10, 20, 50 y 100 g/kg; gránulos 100 g/kg, concentrados emulsionables y soluciones; aerosoles 100 g/l. Hay especificaciones de la FAO para el producto técnico, polvos, polvos, concentrados y soluciones.

1.4.2 Plagas susceptibles - Efectivo contra la mayoría de insectos y gorgojos como contacto y veneno de ingestión. Alguna acción de fumigante. Se ha *usado para el control de aves dañinas.

1.4.3 Modo de empleo - *Usado como suelo y tratamiento de follaje pre-cosecha en una variedad amplia de cultivos, al aire libre y en invernaderos. El intervalo pre-cosecha, dependiendo de cultivo es usualmente 7-15 días después de última aplicación, pero dos veces como largo en invernaderos. Usos incluyen frutas de árbol y de baya, nueces, algodón, maíz, granos pequeños excepto verduras de centeno, de raíz y frondosas, leguminosas, tomates, pastos, tabaco, ornamentales. *Usado como larvicida de mosquito en plantaciones de arroz, áreas no cultivadas, pasturas, y tierras de llanura. Tasas de aplicación usual son 0.2-1 kg/ha.

No *usado en cultivos almacenados.

1.4.4 Efectos no intencionales - No en general fitotóxico, pero puede, a concentraciones altas, lesionar cohombros, tomates y algunos ornamentales, y bajo ciertas condiciones de tiempo, peras y manzanas.

1.5 PROGRAMAS DE SALUD PUBLICA -

Use limited to larvicide against mosquitos in developed countries	OK	Uso limitado a larvicida contra mosquitos en países desarrollados.
1 6 HOUSEHOLD USE - Parathion is too toxic for household use.	OK OK	1.6 USO DOMESTICO - Paratión es demasiado tóxico para uso doméstico.
2 TOXICOLOGY AND RISKS	OK	2 TOXICOLOGIA Y RIESGOS
2 1 TOXICOLOGY - MAMMALS	OK OK	2.1 TOXICOLOGIA - MAMIFEROS
2 1 1 Absorption route - Absorbed by the intact skin as well as by inhalation and from the gastrointestinal tract.	OK OK TU	2.1.1 Vía de absorción - Absorbido por la piel sana así como mediante inhalación y del tracto gastrointestinal.
2 1 2 Mode of action - Cholinesterase inhibition after conversion to the oxygen analogue paraoxon.	OK OK	2.1.2 Modo de acción - Inhibición de colinesterasa después de conversión al análogo de oxígeno paraoxon.
2 1 3 Excretion products - In mammals, parathion is converted into its oxygen analogue, paraoxon which is the active form Parathion and paraoxon are broken down and excreted as p-nitrophenol and ethyl and diethyl esters of phosphoric and/or thiophosphoric acid.	OK NO OK	2.1.3 Productos de excreción - En mamíferos, paratión se convierte en su análogo de oxígeno, paraoxon que es la forma activa. Paratión y paraoxon se descomponen y se excretan como p-nitrofenol y etilo y ésteres de dietilo de ácido fosfórico y/o tiofosfórico.
2.1 4 Toxicity, single dose	NO	2.1.4 Toxicidad, dosis única
Oral: LD50 - rat (M): 13 mg/kg	OK OK OK OK	Oral: DL50 - rata (M): 13 mg/kg
rat (F): 3 6 mg/kg	OK OK	rata (F): 3.6 mg/kg
Dermal LD50 - rat (M): 21 mg/kg	OK OK OK OK	Dérmico: DL50 - rata (M): 21 mg/kg
rat (F): 6 8 mg/kg	OK OK	rata (F): 6.8 mg/kg
Most susceptible species: Dog - lethal dose: 3-5 mg/kg. (An oral dose of 3-5 mg/kg is reported to be usually fatal to man)	OK OK OK OK OK	Especies más susceptibles: Perro - dosis letal: 3-5 mg/kg. (Una dosis oral de 3-5 mg/kg se informa ser usualmente fatal al hombre.)
2 1 5 Toxicity, repeated doses	NO	2.1.5 Toxicidad, dosis repetidas
Oral See dietary studies.	OK OK	Oral: Ver estudios alimenticios.
Dermal: No information.	OK OK	Dérmico: Ninguna información.
Inhalation No information.	OK OK	Inhalación: Ninguna información.
Cumulation of compound: Parathion does not accumulate in body tissue	OK OK	Acumulación de compuesto: Paratión no se acumula en tejido de cuerpo.
Cumulation of effect: Repeated exposure to sub-lethal amounts may reduce cholinesterase activity to hazard levels.	OK OK	Acumulación de efecto: Exposición repetida a cantidades sublietales puede reducir actividad de colinesterasa a niveles de riesgo.
2.1 6 Dietary studies	OK	2.1.6 Estudios alimenticios
Short-term:	OK	A corto plazo:

In rats which were fed 0.05, 0.5 or 5.0 mg/kg diet (0.0025, 0.025 or 0.25 (mg/*kg)/day) of parathion for 12 weeks the no-effect level with respect to inhibition of blood cholinesterases was 0.5 mg/kg (0.025 (mg/*kg)/day). SD SD PP

Long-term In a two-year study, groups of rats were maintained on diets containing 10, 25 and 100 mg/kg (0.5, 1.25, 5 (mg/*kg)/day) of parathion. No morbid anatomical effects were seen at any level There is no information on cholinesterase activity levels in this study. OK SD PP OK OK

2.1.7 Supplementary studies of toxicity OK

Mutagenicity Parathion in the diet of mice at three dosage levels for seven weeks did not induce any dominant lethal effects. No mutagenic tendency was demonstrated in four microbial assay systems. In a three-generation reproduction study on rats, the no-effect level was 10 mg/kg diet (0.5 (mg/*kg)/day) Information on cholinesterase levels is, however, not available. OK OK TU OK SD PP NO

2.1.8 Modifications of toxicity: The acute toxicity of parathion was increased by a factor of 7.6 when rats were fed a low protein diet. OK OK TU

2.2 TOXICOLOGY - MAN OK OK

2.2.1 Absorption - See 2.1.1. Both the oral and dermal routes have been responsible for many instances of poisoning OK OK OK G7

2.2.2 Dangerous doses OK

Single: In a number of fatal cases of human poisoning, the dosage which the victims received orally was exactly 900 mg In another case, death resulted from 120 mg. Children five to six years old have been killed by ingestion of 2 mg of parathion (about 0.1 mg/kg). OK OK OK OK TU

Repeated See "observations on volunteers". OK OK

2.2.3 Observations on occupationally exposed workers - OK

En ratas que se alimentaron 0.05, 0.5 o dieta de 5.0 mg/kg (0.0025, 0.025 ó 0.25 (mg/kg)/día) de paratión por 12 semanas el nivel sin efecto respecto de inhibición de colinesterasas en la sangre fue 0.5 mg/kg (0.025 (mg/kg)/día).

A largo plazo: En un estudio de dos años, grupos de ratas se mantuvieron en dietas que contienen 10, 25 y 100 mg/kg (0.5, 1.25, 5 (mg/kg)/día) de paratión. Ningunos efectos anatómicos morbosos se vieron a cualquier nivel. Hay información sobre niveles de actividad de colinesterasa en este estudio.

2.1.7 Estudios complementarios de toxicidad

Mutagénesis: Paratión en la dieta de ratones a tres niveles de dosificación por siete semanas no indujo cualquier efectos letales dominantes. Ninguna tendencia mutagénica se demostró en cuatro sistemas de prueba microbiana. En un estudio de reproducción de tres generaciones en ratas, el nivel sin efecto fue dieta de 10 mg/kg (0.5 (mg/kg)/día). Información sobre niveles de colinesterasa es, sin embargo, no disponible.

2.1.8 Modificaciones de toxicidad: La toxicidad aguda de paratión fue aumentada por un factor de 7.6 cuando ratas se alimentaron con una dieta baja en proteínas.

2.2 TOXICOLOGIA - El HOMBRE

2.2.1 Absorción - Ver 2.1.1. Las *vías orales y dérmicas han sido responsables de muchos casos de intoxicación.

2.2.2 Dosis peligrosas

Unico: En varios casos fatales de intoxicación humana, la dosificación que las víctimas recibieron oralmente fue exactamente 900 mg. En otro caso, muerte resultó de 120 mg. Niños cinco a seis años de edad han sido matados mediante ingestión de 2 mg de paratión (cerca de 0.1 mg/kg).

Repetido: Ver "observaciones en voluntarios".

2.2.3 Observaciones en trabajadores ocupacionalmente expuestos -

Several operators have died after rather extensive skin contact with diluted agricultural sprays or dusts. OK

2.2.4 Observations on exposure of the general population -OK

Total diet studies in one country have demonstrated a daily intake of 0.001 mg of parathion per person (0.00002 mg/kg) which is well below the no-effect level in animal studies. OK

2.2.5 Observations on volunteers - A daily oral dose of 7.2 mg produced a 33% reduction in whole blood cholinesterase activity in adult volunteers in 42 days. OK OK

Parathion given to groups of five subjects in doses of 6 mg/day for 43 days produced 10-15% reduction in plasma and erythrocyte cholinesterase activity. The inhibition of plasma cholinesterase persisted for two weeks after discontinuation of feeding parathion whereas erythrocyte cholinesterase was inhibited for 43 days. There was no effect from 3 mg and 4.5 mg/day doses given for 28 days. OK TU G7 OK TU TU OK TU TU

In another study, subjects were fed 0.003, 0.010, 0.025 and 0.050 mg/kg of parathion for successive periods, each of three weeks. A significant increase in the plasma cholinesterase activity occurred early in the feeding programme, but the level declined to control values when doses of 0.05 mg/kg were reached. No change in the erythrocyte cholinesterase activity occurred. PP OK OK

2.2.6 Reported mishaps - There are probably more reported cases of poisoning with parathion than with any pesticide currently in frequent use. There have been a number of cases where intoxication and death have resulted from ingestion of foodstuffs that have been grossly contaminated with parathion. The list of outbreaks below is not complete. OK PP OK NO

Varios operadores han muerto después de contacto cutáneo algo exhaustivo con rociados agrícolas o polvos diluidos.

2.2.4 Observaciones en exposición de la población general - Estudios totales de dieta en un país han demostrado una +ingesta+ diaria de 0.001 mg de paratión por persona (0.00002 mg/kg) que es bien debajo del nivel sin efecto en estudios animales.

2.2.5 Observaciones en voluntarios - Una dosis oral diaria de 7.2 mg produjo una disminución de 33% en actividad de colinesterasa de sangre entera en voluntarios adultos en 42 días.

Paratión *dado a grupos de cinco sujetos en dosis de 6 mg/día por 43 días produjo disminución de 10-15% en plasma y actividad de colinesterasa en los eritrocitos. La inhibición de colinesterasa en el plasma persistió por dos semanas después de descontinuación de alimentar paratión mientras que colinesterasa en los eritrocitos se inhibió por 43 días. No hubo efecto de 3 mg y dosis de 4.5 mg/día administradas por 28 días.

En otro estudio, sujetos se alimentaron 0.003, 0.010, 0.025 y 0.050 mg/kg de paratión por períodos sucesivos, cada uno de tres semanas. Un aumento significativo en la actividad de colinesterasa en el plasma ocurrió temprano en el programa de alimentación, pero el nivel descendió para controlar valores cuando dosis de 0.05 mg/kg se alcanzaron. Ningún cambio en la actividad de colinesterasa en los eritrocitos ocurrió.

2.2.6 Accidentes informados - Hay probablemente casos más informados de intoxicación con paratión que con cualquier plaguicida actualmente en uso frecuente. Ha habido varios casos donde intoxicación y muerte han resultado de ingestión de productos alimenticios que se han contaminado excesivamente con paratión. La lista de brotes debajo de no está completo.

In one Asian country, there were 828 cases of poisoning with 106 deaths due to flour, sugar and other foodstuffs becoming contaminated because parathion was transported in the same ship's hold as the foodstuff. In another Asian country, barley became contaminated with parathion. There were 38 cases of poisoning with nine deaths.

OK TU G7
OK TU
OK G7

En un país asiático, hubo 828 casos de intoxicación con 106 *muertes debido a harina, azúcar y otros productos alimenticios que se contaminan porque paratión se transportó en la bodega del mismo barco como el producto alimenticio. En otro país asiático, cebada se contaminó con paratión. Hubo 38 casos de intoxicación con nueve *muertes.

In a country in the Americas there were 559 cases of poisoning and 16 deaths when sacks of sugar and possibly flour absorbed parathion from the floor of a truck. In another country in the Americas there were 165 known and 445 more suspected cases of poisoning with 63 deaths when parathion from broken containers contaminated sacks of flour during transportation in a truck. In a Caribbean country there were 27 known and 8-13 more suspected cases of poisoning with 21 deaths when foodstuffs were contaminated when placed in paper sacks which had previously been used to package insecticides. Parathion was the predominant pesticide but malathion and a chlorinated hydrocarbon were also involved. In a European country there were 26 cases of poisoning, but no deaths when flour became contaminated because of transportation in a wagon which was previously used for the transportation of parathion. In a Caribbean country an outbreak of poisoning--79 cases including 17 deaths--occurred due to contamination of cotton sacks containing flour. The contamination was believed to have occurred in a European warehouse.

PP G7
OK G7
PP G7 G7
OK
PP G7 G7
OK G7
OK

En un país en las Américas hubo 559 casos de intoxicación y 16 *muertes cuando bolsas de azúcar y posiblemente paratión absorbido de harina del piso de un camión. En otro país en las Américas hubo 165 conocidos y 445 casos más sospechados de intoxicación con 63 *muertes cuando paratión de envases rotos contaminó bolsas de harina durante transporte en un camión. En un país del Caribe hubo 27 conocido y 8-13 casos más sospechados de intoxicación con 21 *muertes cuando productos alimenticios se contaminaron cuando colocado en bolsas de papel que anteriormente se habían *usado a envasar insecticidas. Paratión fue el plaguicida predominante pero malatión y un hidrocarburo clorado fueron también comprendido. En un país europeo hubo 26 casos de intoxicación, pero ningunas *muertes cuando harina se convirtió en contaminado por causa de transporte en un vagón que anteriormente *se usó para el transporte de paratión. En un país del Caribe un brote de intoxicación--79 casos que incluyen 17 *muertes--ocurrió debido a contaminación de bolsas de algodón que contienen harina. La contaminación se creyó haber ocurrido en un depósito europeo.

2.3 TOXICITY TO NON-MAMMALIAN SPECIES

OK

2.3 TOXICIDAD PARA ESPECIES NO - MAMIFERAS

The entries in these sections are intended to draw attention to special risks and to give warnings of any needs for special presentation.

OK G7

Las entradas en estas secciones se conciben para hacer resaltar riesgos especiales y a *dar advertencias de cualquier necesidades de presentación especial.

2.3.1 Fish - Toxic to fish. Toxicity varies fairly widely in different species (LC50 0.05 ppm for *bluegills, 2 ppm for trout).

OK OK SD OK

2.3.1 Peces - Tóxico para peces. Toxicidad varía bastante ampliamente en especies diferentes (CL50 0.05 ppm para bluegills, 2 ppm para trucha).

2.3.2 Birds -

OK

2.3.2 Aves -

Very toxic to birds and has been used, applied to seed bait, for the control of nuisance birds. NO G7

2.3.3 Other species - Toxic to bees. Toxic to wildlife and domestic animals generally. OK OK NO

3 INFORMATION FOR REGULATORY AUTHORITIES - RECOMMENDATIONS ON REGULATION OF COMPOUND OK OK

3.1 RECOMMENDED RESTRICTIONS ON AVAILABILITY OK

(for definition of categories, see introduction) OK

All formulations Category 3, 4 NO

3.2 TRANSPORTATION AND STORAGE OK

All formulations - UN classification 6.1 No. 1668 OK NO

It should be transported or stored in clearly labelled rigid and leakproof containers and away from containers of food and drink. Storage should be under lock and key and secure from access by unauthorized persons and children. NO NO

3.3 HANDLING OK

All formulations - Full protective clothing (see part 4) should be used for all handling of the compound. Adequate washing facilities should be available at all times during handling and should be close to the site of handling. Eating, drinking and smoking should be prohibited during handling and before washing after handling. OK OK G7 OK OK

3.4 DISPOSAL AND/OR DECONTAMINATION OF CONTAINERS OK

All formulations - Containers must either be burned or crushed and buried below topsoil. Care must be taken to avoid subsequent contamination of water sources. Decontamination of containers in order to use them for other purposes should not be permitted. OK OK OK TU OK G7

3.5 SELECTION, TRAINING AND MEDICAL SUPERVISION OF WORKERS OK G7

All formulations - Pre-employment medical examination of workers is necessary. Workers suffering from active hepatic or renal disease should be excluded from contact. OK OK OK

Muy tóxico para aves y se ha *usado, aplicado a cebo de semilla, para el control de aves dañinas.

2.3.3 Otras especies - Tóxico para abejas. Tóxico para animales salvajes y animales domésticos en general.

3 INFORMACION PARA AUTORIDADES REGULADORAS - RECOMENDACIONES SOBRE REGLAMENTACION DE COMPUESTO

3.1 RESTRICCIONES RECOMENDADAS EN DISPONIBILIDAD

(para definición de categorías, ver introducción)

Toda Categoría de formulaciones 3, 4

3.2 TRANSPORTE Y ALMACENAMIENTO

Todas las formulaciones - Clasificación de ONU 6.1 No. 1668

Se debe transportar o almacenarse en envases claramente etiquetados rígidos y a prueba de escapes y lejos de envases de alimentos y bebida. Almacenamiento debe estar bajo llave y protegido de acceso por personas y niños no autorizados.

3.3 MANEJO

Todas las formulaciones - Ropa protectora completa (ver parte 4) se debe *usar para todo el manejo del compuesto. Instalaciones adecuadas de lavado deben estar disponibles en todo momento durante manejo y deben estar cercanas al sitio de manejo. Comer, beber y fumar se deben prohibir durante manejo y antes de lavado después de manejo.

3.4 DESECHO Y/O DESCONTAMINACION DE ENVASES

Todas las formulaciones - Envases se deben quemar o aplastarse y enterrarse debajo de capa superior del suelo. Cuidado se debe tener para evitar contaminación subsiguiente de fuentes de agua. Descontaminación de envases para *usar ellos para otros fines no se debe permitir.

3.5 SELECCION, *ENTRENAMIENTO Y SUPERVISION MEDICA DE TRABAJADORES

Todas las formulaciones - Examen médico previo al empleo de trabajadores es necesario. Trabajadores que sufren de enfermedad activa hepática o renal se deben excluir de contacto.

Pre-employment and periodic cholinesterase test for workers OK
is desirable. A urinary p-nitrophenol test periodically OK G7
may be used as an alternative. Special account should be OK
taken of the workers' mental ability to comprehend and
follow instructions. Training of workers in techniques to OK G7
avoid contact is essential.

3.6 ADDITIONAL REGULATIONS RECOMMENDED IF DISTRIBUTED BY NO
AIRCRAFT

All formulations - Pilots and loaders should have special OK OK G7
training in application methods and early symptoms of
poisoning, and must wear a suitable respirator. Use of OK
flagmen not recommended. Flagmen, if used, should wear NO G7
protective clothing and be located well away from the
dropping zone.

3.7 LABELLING OK

All formulations - "POISON" (skull and crossbones OK OK
insignia)

"Parathion is an organophosphorus compound which inhibits OK
cholinesterase. It is a very toxic substance. Contact OK OK
with the skin, inhalation of dust or spray, or swallowing
may be fatal. Wear protective gloves, clean protective OK
clothing, and a respirator of the organic-vapour type when
handling this material. Bathe immediately after work. OK OK
Ensure that containers are stored under lock and key. NO
Empty containers must be disposed of in such a way as to
prevent all possibility of accidental contact with them. NO
Keep the material out of reach of children and well away
from foodstuffs, animal feed and their containers. In case OK G7
of contact, immediately remove contaminated clothing and
wash the skin thoroughly with soap and water; for eyes, OK TU
flush with water for 15 minutes.

If poisoning occurs, call a physician. Atropine and OK OK
pralidoxime are specific antidotes and repeated doses may
be necessary. Artificial respiration may be needed." OK

Prueba de colinesterasa previa al empleo y periódica para
trabajadores es deseable. Una prueba urinaria p-nitrofenol
periódicamente se puede *usar como una alternativa. Cuenta
especial se debe tomar de la capacidad mental de los
trabajadores para comprender y seguir instrucciones.
*Entrenamiento de trabajadores en técnicas para evitar
contacto es esencial.

3.6 REGLAMENTACIONES ADICIONALES RECOMENDADAS SI
DISTRIBUIDO POR AERONAVE

Todas las formulaciones - Pilotos y cargadores deben
tener *entrenamiento especial en métodos de aplicación y
primeros síntomas de intoxicación, y deben usar un
respirador apropiado. Uso de señalizadores no
recomendados. Señalizadores, si *usado, debe usar ropa
protectora y estar ubicado bien lejos de la zona de
aplicación.

3.7 ETIQUETADO

Todas las formulaciones - "VENENO" (insignia de calavera y
dos huesos cruzados)

"Paratión es un compuesto organofosforado que inhibe
colinesterasa. Es una sustancia muy tóxica. Contacto con
la piel, inhalación de polvo o rociado, o ingestión puede
ser fatal. Usar guantes protectores, ropa protectora
limpia, y un respirador del tipo de vapor orgánico al
manejar este material. Bañar inmediatamente después de
trabajo. Asegurar que envases se almacenan bajo llave.
Envases vacíos se deben eliminar de tal modo en cuanto a
prevenir toda posibilidad de contacto accidental con ellos.
Mantener fuera el material de alcance de niños y bien
lejos de productos alimenticios, forraje animal y sus
envases. En caso de contacto, inmediatamente *quitar ropa
contaminada y lavar la piel completamente con jabón y agua;
para ojos, enjuagar con agua por 15 minutos.

Si intoxicación ocurre, llamar a un médico. Atropina y
pralidoxima son antídotos específicos y dosis repetidas
pueden ser necesarias. Respiración artificial se puede
necesitar."

3.8 RESIDUES IN FOOD	OK	3.8 RESIDUOS EN ALIMENTOS
3.8.1 Maximum residue levels - The Joint FAO/WHO Meeting on Pesticide Residues has recommended maximum residue levels.	OK OK	3.8.1 Niveles de residuos máximos - La Reunión Conjunta FAO/OMS en Residuos de Plaguicida ha recomendado niveles de residuos máximos.
4 PREVENTION OF POISONING IN MAN AND EMERGENCY AID	OK	4 PREVENCION DE INTOXICACION EN EL HOMBRE Y PRIMEROS AUXILIOS
4.1 PRECAUTIONS IN USE	OK	4.1 PRECAUCIONES EN USO
4.1.1 General - Parathion is a highly toxic	OK OK	4.1.1 General - Paratión es un plaguicida organofosforado
organophosphorus pesticide. It penetrates the intact skin	OK TU	altamente tóxico. Penetra la piel sana y también es
and is also absorbed by inhalation and via the gastrointestinal tract. Most formulations should be	OK	absorbido mediante inhalación y por vía del tracto gastrointestinal. La mayoría de formulaciones se deben
handled by trained personnel wearing protective clothing.		manejar por personal capacitado que usa ropa protectora.
4.1.2 Manufacture and formulation	OK	4.1.2 Fabricación y formulación
*T.L.V. $)$: 0.1 mg/m_3_ (*ACGIH); 0.05 mg/m_3_ (USSR).	SD SD OK OK	T.L.V.: 0.1 mg/m_3_ (ACGIH); 0.05 mg/m_3_ (URSS).
Closed systems and forced ventilation may be required to	OK	Sistemas y ventilación forzada cerrada se pueden requerir
reduce as much as possible the exposure of workers to the chemical. Formulation should not be attempted without	OK	reducir al máximo la exposición de trabajadores al producto químico. Formulación no se debe intentar sin consejo del
advice from the manufacturer.		fabricante.
4.1.3 Mixers and applicators - When opening the container	OK NO	4.1.3 Mezcladores y aplicadores - Al abrir el envase y al
and when mixing, protective impermeable boots, clean overalls, gloves and respirator should be worn. Beware of	OK	mezclar, botas impermeables protectoras, overoles limpios, guantes y respirador se debe usar. Tener cuidado de
possible positive pressure build-up especially with liquid formulations in metal containers with inverted pour spout.		acumulación posible de presión positiva especialmente con formulaciones líquidas en envases metálicos con pico
Mixing, if not mechanical, should always be carried out	NO	invertido. Mezcla, si no mecánico, siempre se debe llevar
with a paddle of appropriate length. When spraying tall	NO	a cabo con una espátula de longitud apropiada. Cuando
crops or during aerial application a respirator should be worn as well as an impermeable hood, clothing boots and		rociar cultivos altos o durante aplicación aérea un respirador se debe usar así como una capucha impermeable,
gloves. The applicator should avoid working in spray mist	OK	botas de ropa y guantes. El aplicador debe evitar
and avoid contact with the mouth.		trabajando en nebulización de rociado y evitar contacto con la boca.
Particular care is needed when equipment is being washed	OK	Atención particular se necesita cuando equipo se está
after use. All protective clothing should be washed	OK	lavando después de uso. Toda la ropa protectora se debe
immediately after use: including the insides of the	OK	lavar inmediatamente después de uso: incluyendo los
gloves. Splashes must be washed immediately from the skin	OK	interiores de los guantes. Salpicaduras se deben lavar
or eyes with large quantities of water. Before eating,	OK	inmediatamente de la piel u ojos con cantidades grandes de
drinking or smoking, hands and other exposed skin should be washed.		agua. Antes de comer, beber o fumar, manos y otra piel expuesta se deben lavar.

4.1.4 Other associated workers (including flagmen in aerial operations) - Persons exposed to parathion and associated with its application should wear protective clothing and observe the precautions described above in 4.1.3 under "mixers and applicators". OK OK

4.1.5 Other populations likely to be affected - With good agricultural practices subject to 4.2 below, other populations should not be exposed to hazardous amounts of parathion. NO NO

4.2 ENTRY OF PERSONS INTO TREATED AREAS - There have been reports of workers having been poisoned because they entered fields too soon after they had been treated with parathion. Unprotected persons should be kept out of treated areas for considerable periods: a minimum of 14 days has been suggested and 21 days after the spraying of peaches, nectarines and grapes. OK OK OK TU NO

4.3 SAFE DISPOSAL OF CONTAINERS AND SPILLAGE - Residues in containers should be emptied in a diluted form into a deep pit, taking care to avoid contamination of ground waters. Decontamination of containers in order to use them for other purposes must not be permitted. Spillage of parathion and its formulations should be removed by washing with 5% sodium hydroxide solution and then rinsing with large quantities of water. OK OK OK G7 OK G7

4.4 EMERGENCY AID OK

4.4.1 Early symptoms of poisoning - Early symptoms of poisoning may include excessive sweating, headache, weakness, giddiness, nausea, vomiting, stomach pains, blurred vision, slurred speech, and muscle twitching. Later there may be convulsions, coma, loss of reflexes and loss of sphincter control. OK OK OK

4.4.2 Treatment before person is seen by a physician, if these symptoms appear following exposure - OK TU

4.1.4 Otros trabajadores asociados (incluso señalizadores en operaciones aéreas) - Personas expuestas a paratión y asociado con su aplicación deben usar ropa protectora y observar las precauciones descritas arriba en 4.1.3 bajo "mezcladores y aplicadores".

4.1.5 Otras poblaciones probables a afectarse - Con prácticas buenas agrícolas sujetas a 4.2 abajo, otras poblaciones no se deben exponer a cantidades peligrosas de paratión.

4.2 ENTRADA DE PERSONAS EN AREAS TRATADAS - Ha habido informes de trabajadores habiendo sido envenenado porque entraron campos demasiado pronto después que se habían tratado con paratión. Personas desprotegidas se deben mantener fuera de áreas tratadas por períodos considerables: un mínimo de 14 días se ha sugerido y 21 días después de la rociada de duraznos, melocotones y uvas.

4.3 DESECHO SEGURO DE ENVASES Y DERRAME - Residuos en envases deben estar vaciados en una forma diluida en una fosa profunda, teniendo cuidado evitar contaminación de aguas subterráneas. Descontaminación de envases para *usar ellos para otros fines no se debe permitir. Derrame de paratión y sus formulaciones se debe *quitar al lavarse con solución de hidróxido de sodio de 5% y entonces enjuagando con cantidades grandes de agua.

4.4 PRIMEROS AUXILIOS

4.4.1 Primeros síntomas de intoxicación - Primeros síntomas de intoxicación pueden incluir sudoración, cefalea, debilidad, mareo, náusea, vómitos, dolores de estómago, visión borrosa, dificultad para hablar, y contracción muscular. Posteriormente puede haber convulsiones, coma, pérdida de reflejos y pérdida de control de esfínteres.

4.4.2 Tratamiento antes de persona es visto por un médico, si estos síntomas aparecen después de exposición -

The person should stop work immediately, remove PP G7
contaminated clothing and wash the affected skin with water
and soap, if available, and flush the area with large
quantities of water. If swallowed, vomiting should be OK
induced if the person is conscious. In the event of NO G7 G7
collapse, artificial respiration should be given, bearing
in mind that if mouth-to-mouth resuscitation is used the
vomit may contain toxic amounts of parathion.

5 INFORMATION FOR MEDICAL AND LABORATORY PERSONNEL OK

5.1 MEDICAL DIAGNOSIS AND TREATMENT OF CASES OF POISONING OK

5.1.1 General information - An organophosphorus pesticide OK OK TU
of very high acute toxicity which is easily absorbed
through the intact skin as well as by inhalation and via
the gastrointestinal tract. It is converted in vivo to the OK TU
oxygen analogue paraoxon which then inhibits acetyl
cholinesterase. Continued exposure to low amounts may OK
inhibit blood cholinesterase to dangerous levels.

5.1.2 Symptoms and signs - Initial symptoms of poisoning OK OK
may include excessive sweating, headache, weakness,
giddiness, nausea, vomiting, stomach pains, blurred vision,
slurred speech and muscle twitching. More advanced OK
symptoms of poisoning may be convulsions, coma, loss of
reflexes and loss of sphincter control.

5.1.3 Laboratory - The most important laboratory finding OK OK
is reduction in activity of blood cholinesterases. Other OK
findings are raised urinary levels of p-nitrophenol.

5.1.4 Treatment - If the pesticide has been ingested, OK PP G7
unless the patient is vomiting, rapid gastric lavage should
be performed using 5% sodium bicarbonate, if available. OK
For skin contact, the skin should be washed with soap and
water. If the compound has entered the eyes, they should OK
be washed with isotonic saline.

La persona se debe detener trabajo inmediatamente, *quitar ropa contaminada y lavarse la piel afectada con agua y jabón, si disponible, y enjuagar el área con cantidades grandes de agua. Si ingerido, vómitos se debe inducir si la persona está consciente. En caso de colapso, respiración artificial se debe *dar, recordarse que si resuscitación de boca-a-boca *se usa el vómito puede contener cantidades tóxicas de paratión.

5 INFORMACION PARA PERSONAL MEDICO Y DE LABORATORIO

5.1 DIAGNOSTICO MEDICO Y TRATAMIENTO DE CASOS DE INTOXICACION

5.1.1 Información general - Un plaguicida organofosforado de toxicidad aguda muy alta que fácilmente se absorbe a través de la piel sana así como mediante inhalación y por vía del tracto gastrointestinal. Se convierte in vivo en el análogo de oxígeno paraoxon que entonces inhibe acetilcolinesterasa. Exposición continua a cantidades bajas puede inhibir colinesterasa en la sangre a niveles peligrosos.

5.1.2 Síntomas y signos - Síntomas iniciales de intoxicación pueden incluir sudoración, cefalea, debilidad, mareo, náusea, vómitos, dolores de estómago, visión borrosa, dificultad para hablar y contracción muscular. Síntomas más avanzados de intoxicación pueden ser convulsiones, coma, pérdida de reflejos y pérdida de control de esfínteres.

5.1.3 Laboratorio - El resultado de laboratorio más importante es disminución en actividad de colinesterasas en la sangre. Otros resultados son niveles subidos urinarios de p-nitrofenol.

5.1.4 Tratamiento - Si el plaguicida se ha ingerido, a menos que el paciente está vomitando, lavado gástrico rápido se debe realizar *usando bicarbonato de sodio de 5%, si disponible. Para contacto cutáneo, la piel se debe lavar con jabón y agua. Si el compuesto ha entrado los ojos, se deben lavar con solución salina isotónica.

Persons without signs of respiratory inefficiency but PP
with manifest peripheral symptoms should be treated with 2-
4 mg of atropine sulfate and additionally with 1000-2000 mg
of pralidoxime chloride or 250 mg of toxogonin (adult dose)
by slow intravenous injection. More atropine may be given OK G7
as needed. Persons with severe intoxication with OK G7
respiratory difficulties, convulsions and unconsciousness
should immediately be given atropine and a reactivator. In OK G7
such severe cases 4-8 mg of atropine sulfate should be
given initially followed by repeated doses of 2 mg at 5-10
minute intervals. The patient's condition, including NO
respiration, blood pressure, pulse frequency, salivation
and convulsions should be carefully observed as a guide to
further administration of atropine. If the patient is OK G7
cyanotic, artificial respiration should be given at the
same time as atropine.

The airways should be kept free, and artificial NO
respiration should be applied, if required, preferably by
mechanical means. If necessary, intubation should be OK
performed.

Contraindications are morphine, barbiturates, OK
phenothiazine tranquillizers and central stimulants of all
kinds.

5.1.5 Prognosis - If the acute toxic effect is survived, OK OK G7
and adequate artificial respiration has been given if
needed, the chances of complete recovery are good. NO
However, in very severe cases, particularly if artificial
respiration has been inadequate, prolonged hypoxia may give
rise to permanent brain damage.

5.1.6 References of previously reported cases - Case OK OK G7
histories and general methods for treatment are given in:

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Hayes, W. J., jr, Clinical handbook on economic poisons,
United States Public Health Service, No. 476, revised 1963.

Personas sin signos de ineficiencia respiratoria pero con síntomas periféricos manifiestos se deben tratar con 2-4 mg de sulfato de atropina y además con 1000-2000 mg de cloruro de pralidoxima o 250 mg de toxogonina (dosis adulta) por inyección lenta intravenosa. Más atropina se puede *dar según necesitado. Personas con intoxicación grave con dificultades respiratorias, convulsiones e inconsciencia inmediatamente se deben *dar atropina y un reactivador. En dichos casos graves 4-8 mg de sulfato de atropina se deben *dar inicialmente seguido por dosis repetidas de 2 mg a intervalos de 5-10 minutos. La condición del paciente, incluso respiración, presión sanguínea, frecuencia de pulso, salivación y convulsiones se deben observar cuidadosamente como una guía a administración adicional de atropina. Si el paciente es cianótico, respiración artificial se debe *dar al mismo tiempo como atropina.

Las vías respiratorias se deben mantener libre, y respiración artificial se debe aplicar, si requerido, preferentemente por medios mecánicos. Si necesario, intubación se debe realizar.

Contraindicaciones son morfina, barbitúricos, tranquilizantes de fenotiazina y estimulantes centrales de todas las clases.

5.1.5 Pronóstico - Si el efecto tóxico agudo se sobrevive, y respiración adecuada artificial se ha *dado si necesitado, las probabilidades de recuperación completa son buenas. Sin embargo, en casos muy graves, particularmente si respiración artificial ha sido hipoxia inadecuada, prolongada puede suscitar daño de cerebro permanente.

5.1.6 Referencias de casos anteriormente informados - Historias de caso y métodos generales para tratamiento *se dan en:

Hayes, W. J., jr, Clinical handbook on economic poisons,
United States Public Health Service, No. 476, revised 1963.

See also "Safe use of pesticides in public health" (1967) Wld Hlth Org. techn. Rep. Ser., No. 356, pp. 58-59.		See also "Safe use of pesticides in public health" (1967) Wld Hlth Org. techn. Rep. Ser., No. 356, pp. 58-59.
$)$		
For reports of individual cases of poisoning see:	OK	Para informes de casos individuales de intoxicación ve:
$($		
Namba, T. & Hiraki, K. (1968) J. Amer. med. Ass., 166, 1834 and Kanagartnam, K., Boon, W. H. & Hoh, J. K. (1960) Lancet, 1, 538-542.		Namba, T. & Hiraki, K. (1968) J. Amer. med. Ass., 166, 1834 and Kanagartnam, K., Boon, W. H. & Hoh, J. K. (1960) Lancet, 1, 538-542.
$)$		
A recent outbreak of poisoning is described by	NO	Un brote reciente de intoxicación es descrito por
$($		
Diggory, H. J. P. et al., Amer. J. Epidemiol., 106(2), 145-153 (1977).		Diggory, H. J. P. et al., Amer. J. Epidemiol., 106(2), 145-153 (1977).
$)$		
5.2 SURVEILLANCE TESTS	OK	5.2 PRUEBAS DE VIGILANCIA
Test	OK	Prueba
Normal level	OK	Nivel normal
Action level	OK	Nivel de acción
Symptomatic level	OK	Nivel sintomático
Plasma cholinesterase - 100% * - 50% - variable	OK NO OK OK	Colinesterasa en el plasma - 100% * - 50% - variable
Erythrocyte cholinesterase - 100% - 70% - usually #40%	OK OK OK OK	Colinesterasa en los eritrocitos - 100% - 70% - usualmente #40%
It has been reported that absorption of parathion is tolerated without illness and with little or no reduction in cholinesterase activity so long as the concentration of the metabolite p-nitrophenol in the urine does not rise much above 2.0 mg/l. Both determination of the activities of blood cholinesterase and p-nitrophenol in the urine (see 5.3.2 below) should be used in cases of suspected poisoning.	PP OK G7	Se ha informado que absorción de paratión se tolera sin enfermedad y con poco o ninguna disminución en actividad de colinesterasa siempre que la concentración del metabolito p-nitrofenol en la orina no asciende mucho encima de 2.0 mg/l. Determinación de las actividades de colinesterasa en la sangre y p-nitrofenol en la orina (ver 5.3.2 abajo) se deben *usar en casos de intoxicación sospechada.
5.3 LABORATORY METHODS	OK	5.3 METODOS DE LABORATORIO
(References are given only; photocopies of papers may be obtained from Vector Biology and Control, World Health Organization, 1211 Geneva 27.)	OK G7 NO G7	(Referencias *se dan solamente; fotocopias de *papeles se pueden obtener de Biología de los Vectores y Lucha Antivectorial, Organización Mundial de la Salud, 1211 Ginebra 27.)
5.3.1 Detection and assay of compound -	OK	5.3.1 Detección y prueba de compuesto -

It is unlikely that unchanged parathion will be detectable OK
in human tissue after exposure. Determination of levels of OK G7
blood cholinesterase and urinary p-nitrophenol (see 5.3.2
below) should be used in cases of suspected poisoning.

Es improbable que paratión no cambiado será detectable en tejido humano después de exposición. Determinación de niveles de colinesterasa en la sangre y urinario p-nitrofenol (ver 5.3.2 abajo) se debe *usar en casos de intoxicación sospechada.

Parathion and other p-nitrophenyl esters such as SD SD SD SD
parathion methyl and EPN can be determined in foodstuffs by OK
the colorimetric method of *Averell & *Norris (1948) or a
later modification (*Sutherland & *Miskus, 1964).

Paratión y otros ésteres p-nitrofenil como metilo de paratión y EPN se pueden determinar en productos alimenticios por el método colorimétrico de Averell & Norris (1948) o una modificación posterior (Sutherland & Miskus, 1964).

Parathion can be determined separately by gas SD OK
chromatography, e.g. *Abbott et al. (1970) and *Storherr SD NO
et al. (1971). Identity can be confirmed by thin-layer NO SD SD SD
chromatography (*Abbott et *al., 1965 and *Gardner, 1971). OK

Paratión se puede determinar separadamente por cromatografía de gases, por ejemplo Abbott et al. (1970) y Storherr et al. (1971). Identidad puede ser confirmada por cromatografía de capas delgadas (Abbott et al., 1965 y Gardner, 1971).

5.3.2 Other tests in cases of poisoning OK
Levels of cholinesterase in the blood, particularly NO G7
plasma provide the most useful diagnosis of poisoning, see:

5.3.2 Otras pruebas en casos de intoxicación
Niveles de colinesterasa en la sangre, particularmente plasma *provee el diagnóstico más útil de intoxicación, ver:

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Michel, N. O. (1949) J. Lab. Clin. Med., 34, 1564-1568
and Ellman, G. L., Courtney, K. D., Andres, V., jr &
Featherstone, R. M. (1961) Biochem. Pharmacol., 7, 88-95.

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Michel, N. O. (1949) J. Lab. Clin. Med., 34, 1564-1568
and Ellman, G. L., Courtney, K. D., Andres, V., jr &
Featherstone, R. M. (1961) Biochem. Pharmacol., 7, 88-95.

Urinary levels of p-nitrophenol or diethyl phosphate and OK
phosphorothioate are also indexes of poisoning: p- SD SD SD SD
nitrophenol may be determined colorimetrically (*Elliott et SD SD PP
*al. 1960) or gas-chromatographically (*Cranmer, 1970), and
diethyl phosphate by the method of *Shafik & *Enos (1969)
as modified by *Shafik et al. (1970). NO
* Percentage of pre-exposure activity by any test. OK

Niveles urinarios de p-nitrofenol o fosfato de dietilo y fosforotioato son también índices de intoxicación: p-nitrofenol se puede determinar por colorimetría (Elliott et al. 1960) o por cromatografía de gases (Cranmer, 1970), y fosfato de dietilo por el método de Shafik & Enos (1969) tan modificado por Shafik et al. (1970).
* Porcentaje de actividad pre-exposición por cualquier prueba.

3-*Nitraniline-4-sulfonic acid. Dissolve 10 g of the SD NO OK
technically pure reagent in 1000 ml of hot distilled water.
Add activated charcoal, stir, filter, and cool the OK
filtrate in ice. Filter off the crystalline acid, wash OK
with water and dry at 50C.

Buffer solution Dissolve 106 g of anhydrous sodium OK PP
carbonate in distilled water and make up to 1000 ml
(solution 1). Dissolve 50 g of sodium bicarbonate in PP
distilled water and make up to 1000 ml (solution 2). Mix OK
350 ml of solution 1 with 130 ml of solution 2. The pH of OK
the mixture should be in the range 10.3-10.4 at 20C.

Diazo solution. Dissolve 0.35 g of 3-*nitraniline-4- NO SD NO
sulfonic acid in 5 ml of 1 mol/l sodium hydroxide, and add
about 350 ml of a mixture of ice and water, followed by 5
ml of concentrated hydrochloric acid. Diazotize at 0.5C OK
with 0.1 mol/l sodium nitrite (about 16.5 ml will be
required). Determine the end-point of the diazotization by OK
the spot test on starch-potassium iodide paper. Dilute the OK G7
solution to 500 ml in a volumetric flask and use it
immediately.

2.1.4 Procedure OK

Weigh accurately 1 g of temephos into a beaker and PP
transfer it to the chromatographic column packed with about
2 cm of glass wool. Elute the sample with 200 ml of OK
methylene chloride, collecting the eluate in a 500 ml
flask. Evaporate the methylene chloride eluate to near OK G7
dryness in a vacuum rotary evaporator, using a water-bath
at 40C. Remove the flask and quantitatively transfer the OK G7
residue to a 50 ml volumetric flask and dilute it to volume
with methylene chloride.

Carefully streak 1.0 ml of this solution with a OK
volumetric pipette across a TLC plate about 3 cm from the
bottom edge, allowing the solution to touch the edge of the
silica gel coating; continue the streaking motion across OK
the plate until delivery is complete.

Acido 3-nitraniline-4-sulfónico. Disolver 10 g del reactivo técnicamente puro en 1000 ml de agua destilada caliente. Agregar carbón activado, mover, filtrar, y enfriar el filtrado en hielo. Filtrar el ácido cristalino, lavarse con agua y secar a 50C.

Solución amortiguadora. Disolver 106 g de carbonato de sodio anhidro en agua destilada y conformar a 1000 ml (solución 1). Disolver 50 g de bicarbonato de sodio en agua destilada y conformar a 1000 ml (solución 2). Mezclar 350 ml de solución 1 con 130 ml de solución 2. El pH de la mezcla debe estar en el rango 10.3-10.4 a 20C.

Diazo solución. Disolver 0.35 g de ácido 3-nitraniline-4-sulfónico en 5 ml de hidróxido de sodio de 1 mol/l, y agregar cerca de 350 ml de una mezcla de hielo y agua, seguido por 5 ml de ácido concentrado clorhídrico. Diazoar a 0.5C con nitrito de sodio de 0.1 mol/l (cerca de 16.5 ml se requerirá). Determinar el punto final de la diazoación por la prueba de mancha en papel impregnado con almidón y yoduro de potasio. Diluir la solución a 500 ml en un frasco volumétrico y *usar lo inmediatamente.

2.1.4 Procedimiento

Pesar con precisión 1 g de temefós en un bocal y transferencia lo a la columna cromatográfica empacó con cerca de 2 cm de lana de vidrio. Eluir la muestra con 200 ml de cloruro de metileno, recogiendo el eluado en un frasco de 500 ml. Evaporar el eluado de cloruro de metileno a sequedad cercana en un evaporador rotatorio por vacío, *usando un baño maría a 40C. *Quitar el frasco y cuantitativamente trasladar los residuos a un frasco volumétrico de 50 ml y diluir lo a volumen con cloruro de metileno.

Cuidadosamente rayar 1.0 ml de esta solución con una pipeta volumétrica a través de una placa TLC acerca de 3 cm del borde de fondo, permitiendo la solución para tocar el borde del revestimiento de sílice gelatinoso; continuar el movimiento describiendo líneas a través de la placa hasta que entrega está completa.

Allow the plate to dry and then place it in a TLC tank OK
containing a mixture of 60 ml anhydrous diethyl ether, 140
ml n-hexane and 1 ml methanol. Develop the plate until the OK
solvent is 4 cm from the top. Remove, dry and then OK G7
redevelop the plate in the same tank. A blank plate should OK TU
also be run through this and the following steps to
determine any background.

View the plate under ultraviolet light and lightly OK
outline the temephos band. Hold the plate in a slanted PP
position over a large piece of glassine weighing paper and
score the pencil marks with a sharpened spatula. Remove OK G7 G7
the band with a spatula and rubber policeman, allowing the
silica to fall to the paper. Transfer the powder to a 100 OK
ml glass-stoppered bottle and add exactly 50 ml of methanol
by pipette. Stopper and shake the bottle for 15-20 OK TU
minutes.
Centrifuge a portion of this solution in a stoppered OK TU
centrifuge tube for about five minutes at maximum spin. OK
Pipette 5 ml from the centrifuge tube into a 50 ml
volumetric flask and bring it to mark with methanol. Then OK
measure the absorbance of the solution as described above.

2.3 Apparent density OK
Place approximately 75 ml of the sample in a 250 ml OK
beaker. Pour the material into a second beaker, holding OK
the spout of the first approximately 2 cm above the rim of
the second. Transfer the material in a similar manner two OK
additional times. Transfer approximately 50 ml of this OK
sample to a 100 ml graduated cylinder, slowly pouring the
material down the side of the tilted cylinder. Drop the OK TU
cylinder through a distance of 2.5 cm to a hardwood
surface. Note the volume of the sample and weigh the OK
cylinder and sample to the nearest 0.1 g. Subtract the OK
weight of the cylinder to determine the weight of the
sample.

Permitir la placa para secar y entonces colocar lo en un tanque de TLC que contiene una mezcla de 60 ml éter dietílico anhidro, 140 ml n-hexano y 1 ml de metanol. Desarrollar la placa hasta que el solvente es 4 cm de la parte superior. *Quitar, secar y entonces redesarrollar la placa en el mismo tanque. Una placa en blanco también se debe conducir a través de este y los pasos siguientes para determinar cualquier antecedentes.

Mirar la placa bajo luz ultravioleta y livianamente esbozar la franja de temefós. Sostener la placa en una posición sesgada sobre un pedazo grande de papel glaseado para pesar y puntaje las marcas de lápiz con una espátula afilada. *Quitar la franja con una espátula y varilla de punta recubierta de goma, permitiendo el sílice para caer al *papel. Trasladar el polvo a una botella con tapón de vidrio de 100 ml y agregar exactamente 50 ml de metanol por pipeta. Tapar y agitar la botella por 15-20 minutos.

Centrifugar una porción de esta solución en un tubo tapado de centrifugador por cerca de cinco minutos a rotación máxima. Pipetear 5 ml del tubo de centrifugador en un frasco volumétrico de 50 ml y traer lo a marca con metanol. Entonces medir la absorción de la solución tan descrito arriba.

2.3 Densidad aparente

Colocar aproximadamente 75 ml de la muestra en un bocal de 250 ml. Verter el material en un segundo bocal, sosteniendo el vertedor de los primeros aproximadamente 2 cm encima del borde del segundo. Trasladar el material en una manera similar dos veces adicionales. Trasladar aproximadamente 50 ml de esta muestra a un cilindro graduado de 100 ml, lentamente vertiendo el material abajo el lado del cilindro ladeado. Dejar caer el cilindro a través de una distancia de 2.5 cm a una superficie de madera dura. Notar el volumen de la muestra y pesar el cilindro y muestra a los más cerca 0.1 g. Substraer el peso del cilindro para determinar el peso de la muestra.

The apparent density is calculated by dividing the weight (g) of sample taken by the volume (ml) of sample in the cylinder	OK	La densidad aparente se calcula al dividir el peso (g) de muestra tomada por el volumen (ml) de muestra en el cilindro.

EOJ MTSTEST4

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