



WORLD HEALTH ORGANIZATION
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WHO/RABIES/93.209
ORIGINAL: ENGLISH

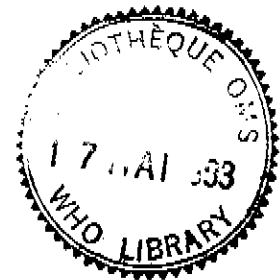
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WORLD SURVEY OF RABIES 27

(for year 1991)

by

Veterinary Public Health Unit
Division of Communicable Diseases
World Health Organization
Geneva, Switzerland



The WORLD SURVEY OF RABIES 27 - 1991 (WHO/RABIES/93.209) is being distributed to Central Public Health Administrators in Ministries of Health and to Directors of Veterinary Services who are asked to ensure that appropriate departments under their administration are informed of its availability.

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CONTENTS

	<u>Page</u>
1. INTRODUCTION	3
2. SUMMARY OF REPLIES	3
2.1 Rabies Trends for 1991	3
2.1.1 Presence/Absence of rabies (by country)	3
2.1.2 Elimination/Introduction of rabies	4
2.1.3 Main rabies epidemiological patterns	4
2.1.4 Geographical distribution and trends in individual countries	6
2.2 Vaccine production and imports	6
2.2.1 Human rabies vaccine production and imports	6
2.2.2 Veterinary vaccine production and imports	6
2.3 Rabies postexposure treatment	7
2.4 Vaccine application in animals	7
2.5 Diagnostic techniques used in human and veterinary laboratories	7
3. TABLES 1-4	7
Table 1	10
Table 2	15
Table 3	20
Table 4	25
Annex 1	30
Annex 2	32
Annex 3	36
Annex 4	37

1. INTRODUCTION

The Twenty-seventh World Survey of Rabies for the year 1991 is based on data returned from 106 countries and 11 territories out of 169 countries receiving the questionnaire. In addition, other official sources¹⁻⁸ have been used, extending the coverage to 120 countries and 11 territories (see note at end of Lists A & B). Priority was given to processing the latest data available to us but it should be noted that the 26th World Survey of Rabies for the year 1990 is in preparation and will be despatched shortly.

The survey reports on five major topics (Tables 1-4): number of human/animal rabies cases; number of persons treated against rabies; production/import of human and animal rabies vaccines. Maps show the geographical distribution of rabies and the area covered by this survey. The main rabies epidemiological pattern, geographical distribution, and trends in individual countries are described in the text. Vaccine application in animals and the usage of diagnostic techniques in human and animal laboratories were also assessed and comments can be found hereafter.

Computerized data processing and editing have facilitated analysing the data and preparing the tables and summaries.

It is planned to publish the 1992 issue of the World Survey of Rabies at the end of 1993. The editors thank all those who contributed (mainly diagnostic institutes at national level and Ministries of Health and/or Agriculture) and count on their continued support for the preparation of WRS issues to come.

Veterinary Public Health
Division of Communicable Diseases

2. SUMMARY OF REPLIES RECEIVED

2.1 Rabies trends for 1991

2.1.1 Presence/Absence of rabies (by country)

Lists A and B give names of countries and territories according to their rabies situation in 1991. Map No. 1 shows where rabies cases were, or were not reported in 1991 and which countries were not included in this survey.

LIST A: COUNTRIES WHERE NO RABIES CASES WERE REPORTED IN 1991

CONTINENT	COUNTRY	CONTINENT	COUNTRY
<u>Africa</u>	Equatorial Guinea	<u>Asia</u>	Bahrain
	Libyan Arab Jamahiriya		Brunei Darussalam
	Mauritius		Japan
<u>Americas</u>	Antigua/Barbados		Malaysia (Island)
	Bahamas		Malaysia (Peninsula)
	British Virgin Islands		Maldives
	Saint Lucia		Qatar
	Uruguay		Singapore
Vanuatu	Tonga		

CONTINENT	COUNTRY	CONTINENT	COUNTRY
<u>Europe</u>	Cyprus	<u>Oceania</u>	Australia
	Denmark		French Polynesia
	Finland		Hong Kong
	Gibraltar (GB)		New Caledonia
	Greece		New Zealand
	Iceland		Niue Island (New Zealand)
	<u>Ireland</u>		Papua New Guinea
	Malta		<u>Republic of Seychelles</u>
	Norway (except Svalbard Islands)		
	Portugal		
	Sweden		
	United Kingdom		

LIST B: COUNTRIES WHERE RABIES WAS REPORTED IN 1993

CONTINENT	COUNTRY	CONTINENT	COUNTRY
<u>Africa</u>	Algeria		Dominican Republic
	Botswana		Ecuador
	Burkina Faso		El Salvador
	Cameroon		<u>Grenada</u>
	Central African Republic		Guatemala
	Côte d'Ivoire		<u>Haiti</u>
	Egypt		Honduras
	Ethiopia		Mexico
	<u>Gambia</u>		<u>Nicaragua</u>
	Ghana		Panama
	Guinea		Paraguay
	Madagascar		<u>Peru</u>
	Malawi		Trinidad and Tobago
	Mauritania		USA
	Morocco		Venezuela
	Mozambique		
	Namibia		
	Niger		
	<u>Nigeria</u>		
	Senegal		
	<u>Sierra Leone</u>		
	South Africa		
	Sudan		
	Tanzania		
Tunisia			
Zaire			
Zimbabwe			
<u>Americas</u>	<u>Argentina</u>	<u>Asia</u>	Bhutan
	Belize		Cambodia
	Bolivia		India (Himachal Pradesh)
	Brazil		India (Kerala)
	Canada		Indonesia (West Java)
	<u>Chile</u>		Iran
	Colombia		Israel
	Costa Rica		Jordan
	<u>Cuba</u>		Mongolia
			Nepal
			Oman
			Pakistan
			<u>Saudi Arabia</u>
			Sri Lanka
	Syria		
	Thailand		
	United Arab Emirates		
	Viet Nam		

CONTINENT	COUNTRY	CONTINENT	COUNTRY
<u>Europe</u>	Austria		Netherlands
	Belgium		Norway (Svalbard Islands)
	<u>Bulgaria</u>		Poland
	Croatia		Romania
	Czechoslovakia		Russia
	France		Slovenia
	Georgia		Spain
	Germany		Switzerland
	Hungary		Turkey
	Italy		Yugoslavia
	Latvia		
	Lithuania		
	Luxembourg		
	Moldova		
			<u>Oceania</u>

Underlined countries show where data was taken from other official sources.

2.1.2 Elimination/Introduction of Rabies

Two countries (Bulgaria and United Arab Emirates) reported the introduction of rabies since 1990. No country reported elimination of the disease in 1990 with no cases in 1991.

2.1.3 Main rabies epidemiological patterns

Dog rabies was reported to be first in importance in 63%, wildlife rabies in 28%, and bat rabies in 2% of the countries. The remainder (7 countries - 7%) did not answer the question.

Africa Ninety-three per cent of the countries indicated that canine rabies was the main pattern of the disease. Wildlife rabies was also reported in 44% of those countries and was reported to be the main problem in Botswana.

Americas Wildlife rabies remains first in order of importance in Canada, Cuba, and the USA. In 15 countries (63%), canine rabies was considered to be the major pattern of the disease. In the USA, bat rabies (insectivorous) remained second to wildlife. Bat rabies was the only pattern reported in Panama, and Trinidad and Tobago.

Asia Canine rabies was reported as being the major pattern of the disease in 13 of the 18 countries concerned (72%). Wildlife rabies was second in importance in Bhutan, India, Iran, Israel, Nepal, Pakistan and Sri Lanka. Three neighbouring countries (Oman, Saudi Arabia and United Arab Emirates) reported rabies in wildlife as the main pattern. No information was available about the situation in China. The data from India concerns only two regions (Himachal Pradesh and Kerala).

Europe Eighteen out of 24 countries reported wildlife rabies as the major pattern, eleven of them as the only one (Austria, Belgium, Bulgaria, Croatia, Czechoslovakia, Italy, Luxembourg, Norway (Svalbard Island),

Slovenia, Switzerland, Yugoslavia). Canine rabies came first in order of importance in Georgia, Lithuania, Russia, non-continental Spain and Turkey and was second in Hungary, Latvia, Moldova, Poland and Romania. Rabies in insectivorous bats was the only pattern reported from the Netherlands.

Oceania The Philippines reported canine rabies as the major pattern.

2.1.4 Geographical distribution and trends in individual countries

Annex 1, as well as Maps 1 and 2 provide information on the distribution of the disease in a given country (i.e. rabies present in the entire country or in limited areas or in border areas) and on the trend of the disease (stable; increasing; decreasing). According to the questionnaire, increase or decrease means at least 10% variation against the number of rabies cases reported during the preceding year.

2.2 Vaccine production and imports

Data provided by each country are given in Table 4 entitled "Human and animal rabies vaccines produced domestically and imported in 1991". Data on animal vaccines compiled in this table were processed to prepare Annex 2: Veterinary vaccine application in dogs.

2.2.1 Human rabies vaccines production and imports

In response to the questionnaire, 28 out of 131 countries or territories produced human rabies vaccines in 1991. Twenty-three countries produced only vaccines prepared on brain tissues (for information on the vaccine types used and quantities - see Table 4). Four countries (Japan, France, Netherlands, USA) only produced rabies vaccines on cell culture. About 90% of all human rabies vaccines manufactured in the 28 countries concerned were produced on nerve tissues.

Forty-nine countries reported importing human vaccines (see Table 4 for type and quantity), out of which 75% were of cell culture origin, and 24% of brain tissue origin. Approximately, only 1% of the vaccines imported were manufactured on the basis of embryonated eggs. Human rabies vaccines manufactured on cell culture were imported by 20% of the countries in Africa, 17% in America, 26% in Asia, 56% in Europe and by about half of the countries in Oceania which replied to the questionnaire.

2.2.2 Veterinary vaccine production and imports

Thirty out of 131 countries or territories reported producing animal rabies vaccines. Forty-three per cent produced only vaccines prepared on brain tissues, 13% only on embryonated eggs and 20% only on tissue culture. The remainder countries generated more than one vaccine type. More than 70% of all veterinary rabies vaccines are of cell culture origin, 28% stem from neural tissue and less than 1% were produced on embryonated egg basis.

Forty-nine countries or territories reported importing animal rabies vaccines. More than 93% of these vaccines were prepared on cell culture (see Table 4 for quantities). In Africa, 33% of the countries imported cell culture vaccines for veterinary use, whereas this percentage was 20 in the Americas, 41 in Asia, 35 in Europe, and 44 in Oceania.

2.3 Rabies postexposure treatment

Data on the number of persons treated and the animal species involved are given in Table 3.

2.4 Vaccine application in animals (see also Annex 2)

Regarding the characteristics of dog immunization against rabies, vaccination is compulsory in 50% (15) of the African countries, 37% (11) of those belonging to the Americas, 27% (6) of those located in Asia, 59% (20) of the European countries and 22% (2) of the countries or territories of Oceania. In countries where rabies is only present on islands (e.g. Svalbard Islands of Norway), dog vaccination is forbidden on mainland and compulsory on islands. Some of the rabies-free countries sharing borders with rabies infected countries (e.g. Finland, Greece) may enforce a policy of compulsory vaccination in border areas and optional vaccination in the rest of the territory.

An indication of the number of dogs immunized in 1991 and an estimate of the vaccination coverage (in %) is given in Annex 2. Coverage was rarely above 25% in Africa (average 16.5%) even in those countries with compulsory dog vaccination (e.g. Morocco, Namibia, Tunisia). Average dog vaccination coverage was 44% for the Americas, 50% in Asia (no data for India and China), and 72% for Europe. It is likely that the dog population was underestimated in most cases.

2.5 Diagnostic techniques used in human and veterinary laboratories

Ninety countries reported on the diagnostic techniques used in veterinary laboratories, and 44 countries on those used in human laboratories.

The Fluorescent Antibody Test (FAT) is the technique most widely used to diagnose rabies in humans (36 out of 44 laboratories). Forty-eight per cent laboratories responsible for human rabies diagnosis (21 out of 44), used the Mouse Inoculation Test (MIT), 42% histological techniques, and 14% other techniques. Seven per cent of the countries replied that they were using the MIT and histological techniques only in 1991 for confirming rabies in people. Nine out of all 131 countries and territories (Côte d'Ivoire, Egypt, Ethiopia, Guinea, Niger, Nepal, Syria, Georgia, Viet Nam) diagnosed human rabies on clinical grounds only (618 cases).

FAT is applied in 78 out of 90 veterinary laboratories which informed about the diagnostic techniques applied. About 46% of these laboratories simultaneously carried out the MIT, 35% histological techniques and 7% other techniques. MIT and/or histology for rabies diagnosis were exclusively used only in 8% (7) of the veterinary laboratories in rabies infected countries and in two without rabies cases.

3. TABLES 1-4

Table 1: Number of human cases by source of animal exposure and method of confirmation; 1991

Africa Most of the human cases (72%) were diagnosed on clinical grounds only. Eighty per cent of the cases were reported as having occurred after exposure to dogs suspected of rabies. Involvement of wild animals is negligible. The source of exposure was unknown for about 16% (55) cases.

Americas About 72% of human rabies cases were confirmed by laboratory examination. Dogs were the main exposure (64%). For 33% of the cases the animal species at the origin of exposure was unknown.

Asia Rabies diagnosis was mainly made on clinical grounds alone (96%). Regarding offending animals, the dog was the main species at the origin of exposure.

Europe Ten out of 41 human cases were clinically confirmed in 1991. Fifty-six and 12% of these cases were due to exposure to dogs and cats, respectively. Almost a quarter of all human cases followed exposure to foxes, the main reservoir species in that part of the world.

Oceania No information was available about the number of human cases and source of exposure from the Philippines, the only country in that region reporting rabies.

Table 2: Number of animal rabies cases by species and method of confirmation: 1991

Africa Three quarters of the total number of reported animal cases were confirmed in the laboratory in the following species or groups of species: dogs (59%), other domestic animals (30%), and wildlife (11%).

Americas A total of 24 219 animal cases were diagnosed (64% in the laboratory). This figure represents about half of all animal rabies cases reported in this survey. A third (34%) of all laboratory confirmed cases were diagnosed in dogs. Rabies was almost exclusively reported in wildlife in Canada and the USA.

Asia Most animal cases were diagnosed on clinical grounds only (91%). The dog was the main species involved (88%). Cases in livestock accounted for 4% of the total number of cases confirmed in the laboratory.

Europe The overwhelming majority of cases (96%) were confirmed by laboratory techniques. About 9 200 cases were diagnosed in foxes (67%). Livestock were the victims of the disease in 12% of the cases and dogs accounted for less than 7% of the total, followed by cats (5%).

Table 3: Number of persons treated against rabies by source of animal exposure and type of treatment: 1991*

Dogs were the origin of exposure in 93% of the human post-exposure treatments administered in Africa, 94% in the Americas, 92% in Asia, and 79% in Europe. In the latter continent, exposure to wildlife species accounted for 5% of the treatments.

In Viet Nam alone, 135 010 persons received treatment for exposure to dogs, which represents 35% of all treatments following exposure to dogs, reported in this survey.

* Possible numeric differences between number of treatments for exposure (domestic and wild animals) and number of particular treatment schemes (vaccine/vaccine + serum/serum) are due to the data sources.

Rabies postexposure treatment mainly consisted in the application of vaccine alone (99% in Africa, 87% in the Americas, 95% in Asia, 95% in Europe). In Burkino Faso, Canada, Bahrain, Indonesia, Iran, Israel, Syria, Belgium, Denmark, Lithuania, Switzerland, UK, and Yugoslavia, serum and vaccine were systematically administered together in more than 30% of the treatments.

Other official sources used

1. Report of the First Seminar on the Control of Rabies in English-speaking West-African Countries, Kaduna State, Nigeria, 28-30 April 1992 (WHO document: WHO/Rab.Res/93.39)
2. Epidemiological Surveillance of Rabies for the Americas 1991. PAHO, Veterinary Public Health Program, Pan American Zoonoses Center, Vol. 13, No. 1-12, published 30 June 1992.
3. First Consultation on Wildlife Rabies in the Arabian Peninsula, Al-Ain, United Arab Emirates, 18-19 October 1992 (document being prepared by the WHO Regional Office for the Eastern Mediterranean)
4. Informations sanitaires, OIE, 24 janvier 1992, Vol. 5, No. 3
5. Rabies Bulletin Europe, Volume 15/No. 4/1991
6. WHO Regional Office for the Western Pacific, memo - 5 June 1992.
7. Ministry of Health, Mauritania, telex to OIE, 27 October 1992
8. Written communication, 10 February 1993, Ministry of Agriculture, Republic of Seychelles

TABLE 1. NUMBER OF HUMAN RABIES CASES BY SOURCE OF ANIMAL EXPOSURE AND METHOD OF CONFIRMATION, 1991

Continent Africa	Method of Diagnosis			Reported exposure to Domestic Animals						Reported Exposure to Wild Animals					
	Country	Laboratory	Clinical	Total	Dog	Cat	Other	Fox	Skunk	Raccoon	Mongoose	Bat	Other	Unknown	
	Algeria		20	20	9								3	8	
	Botswana	2	0	2	1								1		
	Burkina Faso														
	Cameroon														
	Central African Republic														
	Côte d'Ivoire	0	2	2	2										
	Egypt		104	104	104										
	Equatorial Guinea	0	0	0											
	Ethiopia	0	31	31	30	1									
	Gambia														
	Ghana	3	8	11	8									3	
	Guinea														
	Libyan Arab Jamahiriya														
	Madagascar	2	3	5	5										
	Malawi	15	29	44	44										
	Mauritania														
	Mauritius	0	0	0											
	Morocco	6	16	22	17	2							3		
	Mozambique	18		18										18	
	Namibia														
	Niger		10	10										10	
	Nigeria														
	Senegal	4	4	8	8										
	Sierra Leone														
	South Africa	21		21	21										
	Sudan	3	10	13	3									10	
	Tanzania	8		8	8										
	Tunisia	11		11	6	2								3	
	Zaire														
	Zimbabwe	2	3	5	2									3	
	Total for Africa	95	240	335	268	5	3	0	0	0	0	0	4	55	

TABLE 1. NUMBER OF HUMAN RABIES CASES BY SOURCE OF ANIMAL EXPOSURE AND METHOD OF CONFIRMATION, 1991

Continent: Americas	Method of Diagnosis		Reported exposure to Domestic Animals					Reported Exposure to Wild Animals					Unknown	
	Laboratory	Clinical	Total	Dog	Cat	Other	Fox	Skunk	Raccoon	Mongoose	Bat	Other		
Country														
Antigua/Barbados														
Argentina	0		0											
Bahamas														
Belize														
Bolivia	6	11	17	11										6
Brazil														
British Virgin Islands														
Canada	0	0	0											
Chile	0		0											
Colombia	5	0	5	5										
Costa Rica														
Cuba	1		1											1
Dominican Republic	1		1	1										
Ecuador	13	7	20	20										2
El Salvador	1	6	7	5										
Grenada	0		0											
Guatemala	1		1	1										
Haiti	3		3											3
Honduras	0	0	0											
Mexico	30	18	48	45	1			1						
Nicaragua	0		0											
Panama														
Paraguay	5		5	5										
Peru	35		35											35
Saint Lucia														
Trinidad and Tobago														
Uruguay	0		0											
USA	3	0	3											2
Vanuatu														
Venezuela	2	0	2	1	1									
Total for Americas	106	42	148	94	2	0	0	1	0	0	2	0	0	49

TABLE 1. NUMBER OF HUMAN RABIES CASES BY SOURCE OF ANIMAL EXPOSURE AND METHOD OF CONFIRMATION, 1991

Continent: Europe	Method of Diagnosis			Reported exposure to Domestic Animals					Reported Exposure to Wild Animals												
	Country	Laboratory	Clinical	Total	Domestic Animals					Wild Animals											
					Dog	Cat	Other	Fox	Skunk	Raccoon	Mongoose	Bat	Other	Unknown							
Austria																					
Belgium		0	0	0																	
Bulgaria		0	0	0																	
Croatia		0	0	0																	
Cyprus		0	0	0																	
Czechoslovakia		0	0	0																	
Denmark		0	0	0																	
Finland		0	0	0																	
France		1	0	1				1													
Georgia		0	5	5				5													
Germany		0	0	0																	
Gibraltar, (GB)		0	0	0																	
Greece		1	0	1																	
Hungary																					
Iceland																					
Ireland																					
Italy																					
Latvia																					
Lithuania																					
Luxembourg		0	0	0																	
Malta		0	0	0																	
Moldova																					
Netherlands																					
Norway		0	0	0																	
Poland																					
Portugal		8	0	8																	
Romania		16	0	16																	
Russia		0	0	0																	
Slovenia																					
Spain		0	0	0																	
Sweden		0	0	0																	
Switzerland		4	5	9																	
Turkey		0	0	0																	
United Kingdom																					
Yugoslavia																					
Total for Europe		31	10	41	18	5	0	23	9	0	0	0	0	0	0	0	0	0	3	5	8

TABLE 1. NUMBER OF HUMAN RABIES CASES BY SOURCE OF ANIMAL EXPOSURE AND METHOD OF CONFIRMATION, 1991

Continent	Country	Method of Diagnosis			Total	Reported exposure to Domestic Animals				Reported Exposure to Wild Animals				Unknown		
		Laboratory	Clinical			Dog	Cat	Other	Fox	Skunk	Raccoon	Mongoose	Bat		Other	
Australia																
French Polynesia		0	0	0	0											
Hong Kong		0	0	0	0											
New Caledonia																
New Zealand																
Niue Island (New Zealand)		0	0	0	0											
Papua New Guinea																
Philippines																
Total for Oceania		0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total World		261	1965	1326	1152	26	4	11	1	0	2	2	12	116		

TABLE 2. NUMBER OF ANIMAL RABIES CASES BY SPECIES AND METHOD OF CONFIRMATION: 1991

Continent: Americas	Method of Diagnosis		Laboratory Confirmed Cases in Domestic Animals							Laboratory Confirmed Cases in Wild Animals				
	Laboratory	Clinical	Total	Dog	Cat	Ruminant	Equine	Other	Fox	Skunk	Raccoon	Mongoose	Bat	Other
Antigua/Barbados														1
Argentina	101		101	34	66									
Bahamas														
Belize	2		2	0	0	0	0		2					
Bolivia	170	957	1127	170					9			24		2
Brazil	1856	1405	3261	863	87	903	64	4						
British Virgin Islands														
Canada	1580	97	1677	111	72	269	15	6	455	515	25	65		47
Chile	3		3	3					7					
Colombia	278		278	207	9	45	10							0
Costa Rica	3		3	0		3								
Cuba	118		118	19	12	8					76	1		
Dominican Republic	31	31	62	16	1	4	1	1			8			
Ecuador	488		488	418	18	25	1	6						0
El Salvador	113		113	84	2	15	2	0						0
Grenada	9		9	5		5								
Guatemala	106		106	75	2	26	3							
Haiti	41		41	40	1									
Honduras	50	256	306	45	0	5		0						0
Mexico	2554	5979	8533	2362	82			107					3	
Nicaragua	7		7	5	1	1								
Panama	4	42	46	0	0	4	0	0						0
Paraguay	285		285	212	3	63	3	4						0
Peru	476		476	425	21	18		7						5
Saint Lucia														
Trinidad and Tobago														
Uruguay														
USA	6972		6972	155	189	237	44	3	318	2073	3079	54	690	140
Venezuela														
	120		120	77	5	35	3							0
Total for Americas	15447	8772	24219	5328	574	1856	146	142	791	2566	3104	140	763	195

TABLE 2. NUMBER OF ANIMAL RABIES CASES BY SPECIES AND METHOD OF CONFIRMATION, 1991

Continent: Asia	Method of Diagnosis			Laboratory Confirmed Cases in Domestic Animals							Laboratory Confirmed Cases in Wild Animals				
	Laboratory	Clinical	Total	Dog	Cat	Ruminant	Equine	Other	Fox	Skunk	Raccoon	Mongoose	Bat	Other	
Bahrain															
Bhutan	36	15	51	19	3	12	0	2							
Brunei Darussalam															
Cambodia															
India (Himachal Pradesh)	196	76	234	115	6	18	1	0				10		6	
India (Kerala)	1		1	1	0										
Indonesia	79	32	111	78	0			1						35	
Iran	285		285	109	4	113	17	2	5	0		0	0	0	
Israel	45		45	30	0	3	3	0	9			0	0	0	
Japan															
Jordan	6		6	6	0	0		0	0					0	
Malaysia (Island)															
Malaysia (Peninsula)															
Maldives															
Mongolia															
Nepal	17	531	548	8		1								2	
Oman	126		126	2		21	1		101			1			
Pakistan	19	25	44	11	1	5	2								
Qatar															
Saudi Arabia	33		33	5	7			2	16					3	
Singapore				0										0	
Sri Lanka	819		819	758	39	10						5		7	
Syria	17		17	15		2									
Thailand	5260		5260	4972	206	55	1	8	0			1	1	14	
Tonga															
United Arab Emirates															
Viet Nam	28		28			25			3						
Total for Asia	6929	861	7810	6129	266	285	25	15	134	0	0	25	1	87	

TABLE 2. NUMBER OF ANIMAL RABIES CASES BY SPECIES AND METHOD OF CONFIRMATION, 1981

Continent: Europe	Method of Diagnosis			Laboratory Confirmed Cases in Domestic Animals										Laboratory Confirmed Cases in Wild Animals				
	Country	Laboratory	Clinical	Total	Dog	Cat	Ruminant	Equine	Other	Fox	Skunk	Raccoon	Mongoose	Bat	Other			
	Austria	2'465		2'465	8	26	81	3	0	1'967					370			
	Belgium	30		30	0	1	6	3	0	19					1			
	Bulgaria																	
	Croatia	404		404	12	1	9		2	376					4			
	Cyprus																	
	Czechoslovakia	1'359		1'359	23	48	16		5	1'207				0	60			
	Denmark				0	0	0			0				0	0			
	Finland				0	0	0			0				0	0			
	France	2'165		2'165	38	83	243	25		1'683				0	83			
	Georgia	21	4	25	16	0	5		0	0				0	0			
	Germany	3'594		3'594	153	184	258	22	2	2'686	1			3	305			
	Gibraltar, (GB)																	
	Greece	943		943	0	0	0		0	0					0			
	Hungary				56	96	48	3	0	728	0	2			9			
	Iceland																	
	Ireland																	
	Italy	5		5						5								
	Latvia	283		283	42	34	35	0	1	113					59			
	Lithuania	62		62	18	5	29		1	4			5		0			
	Luxembourg	16		16	0	0	7	1		8					0			
	Malta																	
	Moldova	13		13	0	1	7	0		4					1			
	Netherlands	12		12	0	0	0			0				12	0			
	Norway				0	0	0			0				0	0			
	Poland				0	0	0											
	Portugal				0	0	0											
	Romania	61		61	6	12	18	3	2	13					4			
	Russia	1'285	222	1'517	197	130	669	15	11						273			
	Slovenia	289		289	2	13	2	0		280					12			
	Spain	8		8	8	0	0	0	0	0					0			
	Sweden				0	0	0			0					0			
	Switzerland	105		105	0	1	1	0	0	95				0	6			
	Turkey	473	532	1'005	300	42	83	31	17	0				0	0			
	United Kingdom				0	0	0			0				0	0			
	Yugoslavia	85		85	5	4	9	1		60					8			
	Total for Europe	13'688	758	14'446	686	681	1'837	107	41	8'209	0	8	0	15	1'204			

TABLE 2. NUMBER OF ANIMAL RABIES CASES BY SPECIES AND METHOD OF CONFIRMATION, 1981

Continent: Oceania	Method of Diagnosis		Laboratory Confirmed Cases in Domestic Animals							Laboratory Confirmed Cases in Wild Animals				
	Laboratory	Clinical	Total	Dog	Cat	Ruminant	Equine	Other	Fox	Skunk	Raccoon	Mongoose	Bat	Other
Australia			0	0	0	0	0	0	0					0
French Polynesia			0	0	0	0	0	0						
Hong Kong														
New Caledonia														
New Zealand														
Niue Island (New Zealand)														
Papua New Guinea	804		804	602	2				0					
Philippines	804	0	804	602	2	0	0	0	0	0	0	0	0	0
Total for Oceania	32080	11237	50507	14702	1810	4179	204	201	10189	2206	3112	146	704	1770

TABLE 3. NUMBER OF PERSONS TREATED AGAINST RABIES BY SOURCE OF ANIMAL EXPOSURE AND TYPE OF TREATMENT, 1991*

Continent: Africa	Persons Treated for Exposure to Domestic Animals				Persons Treated for Exposure to Wild Animals				Persons Receiving			
	Dog	Cat	Others	Total	Fox	Rodent	Bat	Others	Total	Vaccine Alone	Vaccine & serum	Serum
Algeria										545	727	182
Botswana										1'136	52	0
Burkina Faso	1'097	38	7	1'142		2	1	23	26	481	0	0
Cameroon										4'623	88	1
Central African Republic	4'628	72	8	4'709						220'748		
Cote d'Ivoire												
Egypt												
Equatorial Guinea	2'228	98	131	2'457		1		12	13	2'263	203	4
Ethiopia												
Gambia												
Ghana												
Guinea												
Libyan Arab Jamahiriya												
Madagascar	1'573	59	4	1'636		34		16	50	1'608	78	
Malawi									0	124		
Mauritania												
Mauritius												
Morocco												
Mozambique										350		
Namibia												
Niger												
Nigeria										261		
Senegal												
Sierra Leone										1'843		
South Africa												
Sudan	29'000	800	200	30'000						30'000		
Tanzania												
Tunisia	25'245	1'863	1'700	28'808		239		77	316	30'255	155	
Zaire												
Zimbabwe										2'858	12	
Total for Africa	63'772	29'330	2'050	68'752	0	276	1	128	405	297'095	1'315	187

* Possible numeric differences between number of treatments for exposure (domestic and wild animals) and number of particular treatment schemes (vaccine/vaccine + serum/serum) are due to the data sources.

TABLE 3. NUMBER OF PERSONS TREATED AGAINST RABIES BY SOURCE OF ANIMAL EXPOSURE AND TYPE OF TREATMENT, 1991*

Continent: Americas	Persons Treated for Exposure to Domestic Animals				Persons treated for Exposure to Wild Animals				Persons Receiving			
	Dog	Cat	Others	Total	Fox	Rodent	Bat	Others	Total	Vaccine Alone	Vaccine & serum	Serum
Antigua/Barbados												
Argentina												
Bahamas												
Belize												
Bolivia	3	1		4	1		1		2	6	0	0
Brazil	2671			2671						2'684	20	
British Virgin Islands												
Canada												
Chile												
Colombia												
Costa Rica	3'938	492	25	4'455		468			468	4'062	881	0
Cuba												
Dominican Republic												
Ecuador	7'024	387		7'411						882	87	
El Salvador										9'566	612	
Grenada												
Guatemala												
Haiti												
Honduras	806	10		816						616		
Mexico	28'257	846	1'118	30'221						27'069	3'158	
Nicaragua												
Panama												
Paraguay										3'500	20	
Peru												
Saint Lucia												
Trinidad and Tobago												
Uruguay	158	21		179						0	0	0
USA										183		
Vanuatu												
Venezuela												
Total for Americas	42'656	1757	1'143	45'556	1	468	1	0	470	61'506	8'800	601

* Possible numeric differences between number of treatments for exposure (domestic and wild animals) and number of particular treatment schemes (vaccine/vaccine + serum/serum) are due to the data sources.

TABLE 3. NUMBER OF PERSONS TREATED AGAINST RABIES BY SOURCE OF ANIMAL EXPOSURE AND TYPE OF TREATMENT, 1981*

Continent: Asia	Persons Treated for Exposure to Domestic Animals				Persons Treated for Exposure to Wild Animals				Persons Receiving			
	Dog	Cat	Others	Total	Fox	Rodent	Bat	Others	Total	Vaccine Alone	Vaccine & serum	Serum
Bahrain	2			2						1		
Bhutan	2'000		333	2'333						2'333		
Brunei Darussalam												
Cambodia	4'430	118	5	4'553			2	34	36	3'416	1'188	0
India (Himachal Pradesh)	2'212	103	7	2'322			1	3	4	1'916	408	
India (Kerala)	272	72	28	373						253	106	
Indonesia	28'176	1'507	4'019	33'702	118		4	1'896	2'014	26'819	8'880	17
Iran	1'883	232	46	2'161	81	20		12	117	1'362	812	4
Israel								2	2	0	0	0
Japan								1	1	692	128	
Jordan	608	38	45	693								
Malaysia (Island)												
Malaysia (Peninsula)												
Maldives												
Mongolia												
Nepal	16'091	131	1'999	18'221		235		569	804	18'988	27	
Oman	310	154	83	527	208	21		29	256			
Pakistan												
Qatar	42	48	30	120		37			37	157		
Saudi Arabia												
Singapore												
Sri Lanka												
Syria												
Thailand												
Tonga												
United Arab Emirates												
Viet Nam	136'010	8'682		144'692						142'591	2'101	0
Total for Asia	192'037	11'086	6'576	209'699	405	314	132	2'546	3'397	320'573	17'015	21

* Possible numeric differences between number of treatments for exposure (domestic and wild animals) and number of particular treatment schemes (vaccine/vaccine + serum/serum) are due to the data sources.

TABLE 3. NUMBER OF PERSONS TREATED AGAINST RABIES BY SOURCE OF ANIMAL EXPOSURE AND TYPE OF TREATMENT, 1891*

Continent: Europe	Country	Persons Treated for Exposure to Domestic Animals					Persons treated for Exposure to Wild Animals					Persons Receiving	
		Dog	Cat	Others	Total	Fox	Rodent	Bat	Others	Total	Vaccine Alone	Vaccine & serum	Serum
	Austria	533	373	228	1'132	122	88	1	186	347	1'364	115	
	Belgium	48	34	35	115	16	18	2	3	40	82	81	
	Bulgaria												
	Croatia	1'130	138	65	1'333	128	53		16	197	1'409	121	0
	Cyprus										0	0	0
	Czechoslovakia	1'248	580	283	2'122	310	12		185	477	2'039	552	8
	Denmark	15		15	15	3		10	5	18	10	21	
	Finland	25	10	3	38			10	8	16	50	5	
	France	5'023	2'501	884	8'418	552	363	23	172	1'100	9'014	615	24
	Georgia	8'637	190	8'827	8'827	20			3	23	8'850		
	Germany												
	Gibraltar, (GB)	2			2							2	
	Greece	4'700			4'700						4'100	135	
	Hungary	1'151	531	236	1'918	285	21	1	1'881	2'178	4'086	0	0
	Iceland												
	Ireland												
	Italy												
	Latvia												
	Lithuania	1'898	242	148	2'288	27	25		48	100	4'901	1'175	
	Luxembourg	39	24	27	90	8			10	16	108	10'680	
	Malta										0	0	0
	Moldova	2'345	28		2'371	320		21	1	320	2'691	455	
	Netherlands	3			3	1				23		1	
	Norway	1			1								
	Poland	2'385	712	388	3'465	548	183	3	428	1'158	4'588	24	0
	Portugal	63	2		65						65	0	0
	Romania										10'087	9	
	Russia												
	Slovenia	488	141	28	668	38	25			63	731	45	8
	Spain	672	35	16	723	2	10	2	4	18	393	45	0
	Sweden										200	45	0
	Switzerland	8	14		22				1	3		16	0
	Turkey	61'948	14'570	19'17	78'435						88'372	1'553	
	United Kingdom	275	85	6	346	1	4	7	65	77	285	148	0
	Yugoslavia	1'144	180	19	1'323	42			3	45	1'111	732	28
	Total for Europe	81'768	20'348	4'302	116'418	2'401	793	80	2'945	6'219	143'870	6'930	64

* Possible numeric differences between number of treatments for exposure (domestic and wild animals) and number of particular treatment schemes (vaccine/vaccine + serum/serum) are due to the data sources.

TABLE 3. NUMBER OF PERSONS TREATED AGAINST RABIES BY SOURCE OF ANIMAL EXPOSURE AND TYPE OF TREATMENT, 1991*

Continent/Oceania	Persons Treated for Exposure to Domestic Animals					Persons treated for Exposure to Wild Animals					Persons Receiving		
	Country	Dog	Cat	Others	Total	Fox	Rodent	Bat	Others	Total	Vaccine Alone	Vaccine & serum	Serum
Australia	1				1						1	0	0
French Polynesia	2564	268	32	2864		389	3	102	494	3312	48	0	
Hong Kong											0	0	
New Caledonia											0	0	
New Zealand											0	0	
Niue Island (New Zealand)											0	0	
Papua New Guinea													
Philippines													
Total for Oceania	2565	268	32	2865	0	389	3	102	494	3313	48	0	
Total Hong	552706	36365	147103	643770	7007	27240	217	8773	107665	1267357	247104	873	

* Possible numeric differences between number of treatments for exposure (domestic and wild animals) and number of particular treatment schemes (vaccine/vaccine + serum/serum) are due to the data sources.

TABLE 4. HUMAN AND ANIMAL RABIES VACCINES PRODUCED DOMESTICALLY AND IMPORTED, 1991

Continent: Africa	Animal rabies vaccines (in doses)						Human rabies vaccines (in doses)					
	produced			imported			produced			imported		
	NTD	TCO	EEO	NTD	TCO	EEO	NTD	TCO	EEO	NTD	TCO	EEO
Country												
Algeria										8400		
Botswana												
Burkina Faso					8850							
Cameroon												
Central African Republic												
Côte d'Ivoire												2408
Egypt						26795						
Equatorial Guinea												
Ethiopia												
Gambia				13160								
Ghana												
Guinea												
Libyan Arab Jamahiriya												
Madagascar												
Malawi												
Mauritania												
Mauritius												
Morocco												
Mozambique												
Namibia												
Niger												
Nigeria												
Senegal												
Sierra Leone												
South Africa												
Sudan												
Tanzania												
Tunisia												
Zaire				184020								
Zimbabwe												
Total for Africa	197180	17800	91795	0	2214271	0	0	4868328	0	28400	86062	0

TABLE 4. HUMAN AND ANIMAL RABIES VACCINES PRODUCED DOMESTICALLY AND IMPORTED, 1991

Continent: Americas	Animal rabies vaccines (in doses)				Human rabies vaccines (in doses)				
	produced		imported		produced		imported		
	NTO	EEO	NTO	EEO	NTO	EEO	NTO	EEO	
Country									
Antigua/Barbados									
Argentina									
Bahamas									
Belize									
Bolivia	170'000		60'000	15'000	40'000				
Brazil									
British Virgin Islands									
Canada				225					
Chile									
Colombia	250'000	3'200'000	30'000		42'000				
Costa Rica									
Cuba									100
Dominican Republic	543'450								
Ecuador	300'000			500'000	64'176				
El Salvador				140'000	280'000			100'000	
Grenada									
Guatemala	440'000			300'000	240'000				
Haiti									
Honduras	500'000								
Mexico	756'900	7'000'000			10'000				5'390
Nicaragua					428'960				
Panama									
Paraguay									
Peru			150'000	15'000			30'000		150
Saint Lucia									
Trinidad and Tobago									
Uruguay	20'000								
USA		36'561'527			3'000				500
Vanuatu									
Venezuela	1'000'000				200'000				
Total for Americas	3'860'350	48'761'527	240'000	970'225	1'306'136	1'460	130'000	141'340	0

ANNEX 1

RABIES TRENDS BY COUNTRY AND CONTINENT*

Continent	Country	Geographical distribution	Trend
<u>Africa</u>	Botswana	most parts	stable
	Burkina Faso	most parts	stable
	Cameroon	most parts	no information
	Central African Republic	most parts	increase
	Côte d'Ivoire	most parts	increase
	Egypt	limited areas	stable
	Ethiopia	most parts	stable
	Gambia	most parts	no information
	Ghana	most parts	increase
	Guinea	most parts	increase
	Madagascar	most parts	increase
	Malawi	most parts	no information
	Mauritania	no information	no information
	Morocco	most parts	stable
	Mozambique	most parts	increase
	Namibia	most parts	stable
	Niger	most parts	stable
	Nigeria	no information	no information
	Senegal	most parts	increase
	Sierra Leone	most parts	no information
	South Africa	most parts	increase
	Sudan	most parts	increase
	Tanzania	most parts	increase
	Tunisia	most parts	increase
Zaire	most parts	increase	
Zimbabwe	most parts	increase	
<u>Americas</u>	Argentina	no information	no information
	Belize	border areas	decrease
	Bolivia	most parts	increase
	Brazil	most parts	stable
	Canada	most parts	increase
	Chile	no information	no information
	Colombia	limited areas	decrease
	Costa Rica	no information	no information
	Cuba	no information	no information
	Dominican Republic	most parts	increase
	Ecuador	most parts	increase
	El Salvador	most parts	increase
	Grenada	no information	no information
	Guatemala	most parts	decrease
	Haiti	no information	no information
	Honduras	limited areas	decrease
	Mexico	limited areas	decrease
	Nicaragua	no information	no information
Panama	most parts	decrease	
Paraguay	most parts	increase	
Peru	no information	no information	

* Data on trends received from 93 out of 131 countries and territories

ANNEX 1

RABIES TRENDS BY COUNTRY AND CONTINENT

Continent	Country	Geographical distribution	Trend
<u>Americas</u> (Cont'd)	Trinidad and Tobago	most parts	stable
	USA	most parts	increase
	Venezuela	no information	decrease
<u>Asia</u>	Bhutan	most parts	stable
	Cambodia	no information	no information
	India	most parts	stable
	India (South)	most parts	stable
	Indonesia	most parts	decrease
	Iran	most parts	increase
	Israel	most parts	stable
	Jordan	most parts	stable
	Mongolia	most parts	decrease
	Nepal	most parts	increase
	Oman	most parts	increase
	Pakistan	most parts	increase
	Saudi Arabia	most parts	no information
	Sri Lanka	most parts	increase
	Syria	most parts	increase
	Thailand	most parts	decrease
United Arab Emirates	limited areas	no information	
<u>Europe</u>	Austria	most parts	stable
	Belgium	border areas	decrease
	Bulgaria	limited areas	no information
	Croatia	most parts	decrease
	Czechoslovakia	most parts	no information
	France	limited areas	decrease
	Georgia	limited areas	increase
	Germany	most parts	stable
	Hungary	most parts	decrease
	Italy	border areas	stable
	Latvia	limited areas	stable
	Lithuania	most parts	decrease
	Luxembourg	limited areas	decrease
	Moldova	limited areas	increase
	Netherlands	most parts	stable
	Norway	limited areas	no information
	Poland	most parts	increase
	Romania	limited areas	stable
	Russia	limited areas	stable
	Slovenia	most parts	decrease
Spain	most parts	decrease	
Switzerland	border areas	increase	
Turkey	most parts	increase	
Yugoslavia	limited areas	no information	
<u>Oceania</u>	Philippines	most parts	stable

ANNEX 2

VETERINARY VACCINE APPLICATION TO DOGS

Continent	Country	Status*	Number of dogs immunized	Coverage (in %)	% vaccinated priv. public	
<u>Africa</u>	Algeria					
	Botswana	comp.	414700			
	Burkina Faso	comp.	5625			
	Cameroon					
	Central African Republic	comp.				
	Côte d'Ivoire	comp./opt.	12062	25	21	79
	Egypt	opt.	16920	5		100
	Equatorial Guinea	comp.	20			
	Ethiopia	opt.	13000	1		
	Gambia					
	Ghana	comp.	9320737	2	98	
	Guinea	opt.	3134			
	Libyan Arab Jamahiriya	comp.				
	Madagascar	comp.				
	Malawi	opt.	36070	5	100	
	Mauritania					
	Mauritius	forbidden				
	Morocco	comp.	3527	40		100
	Mozambique	comp.	29211	5		
	Namibia	comp.	17684	23	12	88
	Niger	opt.	515	1		100
	Nigeria					
	Senegal	comp.	1920		66	33
	Sierra Leone					
	South Africa	comp./opt.	580366	20	80	
	Sudan	opt.	3331	1		100
	Tanzania	opt.	15524	2		100
Tunisia	comp.	144591	16	4	96	
Zaire						
Zimbabwe	comp.	637951	35	14	80	
	Total		2029358	16.5		
<u>Americas</u>	Antigua/Barbados	forbidden	37			
	Argentina					
	Bahamas	opt.			100	
	Belize	opt.	6391	80	2	98
	Bolivia	comp.	271970	54		100
	Brazil	opt.				
	British Virgin Islands		180	55	100	
	Canada	opt.			100	
	Chile					
	Colombia	comp.	3100000	76	1	76
	Costa Rica	opt.	30000	10	50	50

* Status - compt. - compulsory, and opt. - optional

ANNEX 2 (Continued)

VETERINARY VACCINE APPLICATION TO DOGS

Continent	Country	Status*	Number of dogs immunized	Coverage (in %)	% vaccinated priv. public	
<u>Americas</u> (Cont'd)	Cuba					
	Dominican Republic	comp./opt.	7436			
	Ecuador	comp.	558430	37		99
	El Salvador	opt.	168000	22	1	21
	Grenada					
	Guatemala	comp.	309380	31	1	30
	Haiti					
	Honduras	comp.	342722	72		56
	Mexico	opt.	7479407	67		100
	Nicaragua					
	Panama	comp./opt.	10174	5		100
	Paraguay	comp.	80201	20		20
	Peru					
	Saint Lucia					
	Trinidad and Tobago	comp.	163		1	
	Uruguay	opt.	8987		10	90
	USA	comp./opt.				
	Vanuatu	forbidden				
	Venezuela	comp.	600000		15	65
		Total		12973441	44.1	
<u>Asia</u>	Bahrain	opt.	1045	60	40	60
	Bhutan	comp./opt.	10000	90		75
	Brunei Darussalam					
	Cambodia					
	India (Himachal Pradesh)	opt.				
	India (Kerala)					
	Indonesia	comp.				
	Iran	opt.		5	2	3
	Israel		133169	60	60	40
	Japan	comp.	3888926	99	100	
	Jordan	comp.	288	10	80	20
	Malaysia (Island)	forbidden				
	Malaysia (Peninsula)	comp.	4626			
	Maldives					
	Mongolia					
	Nepal	comp./opt.	25860	1	6	94
	Oman	opt.	1612	1	10	
	Pakistan	opt.	2577	10		
	Qatar		262	32		100
	Saudi Arabia					
Singapore	forbidden					

* Status - comp. - compulsory, and opt. - optional

ANNEX 2 (Continued)

VETERINARY VACCINE APPLICATION TO DOGS

Continent	Country	Status*	Number of dogs immunized	Coverage (in %)	% vaccinated priv. public	
<u>Asia</u> (Cont'd)	Sri Lanka	opt.	336053	18	9	91
	Syria					
	Thailand	opt.	1435116	20	35	65
	Tonga	opt.				
	United Arab Emirates	opt.				
	Viet Nam					
	Total		5839534	50.1		
<u>Europe</u>	Austria	opt.	100844		100	
	Belgium	comp./opt.				
	Bulgaria					
	Croatia					
	Cyprus	opt.	100		100	
	Czechoslovakia	comp.	920683	85		100
	Denmark	opt.	33748	7	100	
	Finland	comp./opt.	104560	40	100	
	France	comp./opt.	2600000	30	100	
	Georgia	comp./opt.	257290	85		85
	Germany					
	Gibraltar, (GB)	comp.	1800	99	100	
	Greece	comp./opt.	70000	15	70	30
	Hungary	comp.	1651556	99		100
	Iceland	forbidden				
	Ireland					
	Italy	comp./opt.				
	Latvia	comp.	123400	70	100	
	Lithuania		150000	72	10	90
	Luxembourg	comp.	19600	80	100	
	Malta					
	Moldova	comp.	588617	92		100
	Netherlands	opt.				100
	Norway	comp./forbidden	418		50	50
	Poland					
	Portugal	comp.	629066		6	94
	Roumania	comp.	1449700	92		100
	Russia	comp.	2159000			100
	Slovenia	comp.	121348	95		100
Spain	comp.	834876	77	59	41	
Sweden	forbidden					
Switzerland	comp.	450000	95	100		
Turkey	comp.	303431				
United Kingdom	forbidden				100	
Yugoslavia	comp.	552947	85		100	
	Total		13122984	71.6		

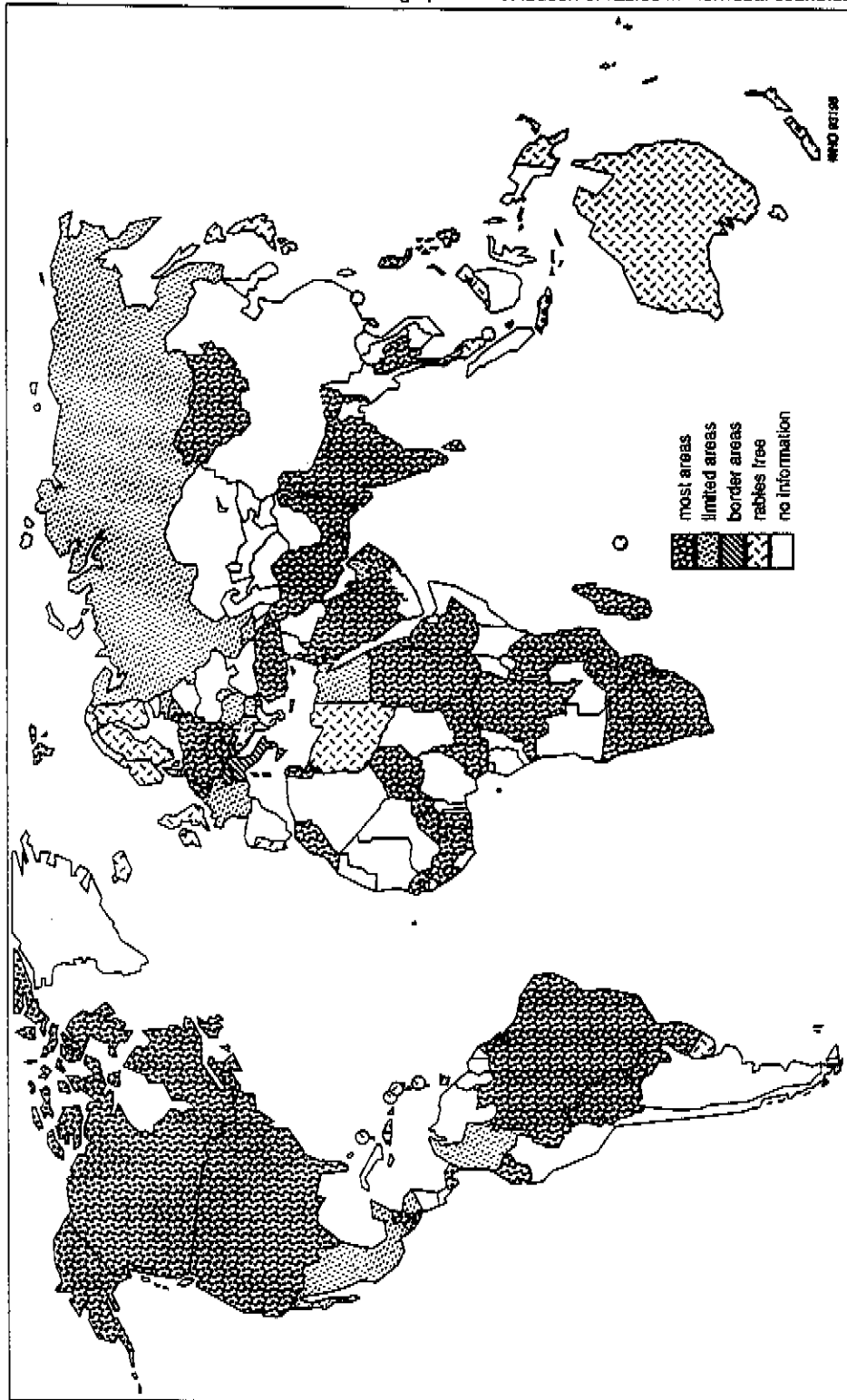
* Status - comp. = compulsory, and opt. = optional

ANNEX 2 (Continued)
VETERINARY VACCINE APPLICATION TO DOGS

Continent	Country	Status*	Number of dogs immunized	Coverage (in %)	% vaccinated priv. public	
<u>Oceania</u>	Australia	forbidden				
	French Polynesia	comp./opt.			100	
	Hong Kong	comp.	36966	60	30	70
	New Caledonia	opt.		100		
	New Zealand					
	Niue Island (New Zealand)					
	Papua New Guinea	forbidden				
	Philippines	opt.				50
	Total			36966	80	

* Status - compt. = compulsory, and opt. = optional

Annex 3
Geographical distribution of rabies in individual countries



The distributions indicated and the presentation of countries in this map do not imply the acceptance of any position whatsoever on the part of the World Health Organization concerning the legal status of any country, territory, city or area or its boundaries, or concerning the delimitation of its borders or boundaries. Countries are represented approximately. Boundaries shown for which there may not yet be final agreement.

