

# **Epidemiology Bulletin**

181 Foreign Labor and Disease  
Control in Taiwan  
198 Cases of Notifiable and  
Reportable Diseases,  
Taiwan-Fukien Area

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## **Foreign Labor and Disease Control in Taiwan**

### **1. Introduction**

The Government and the people of the Republic of China have been understandably proud of the economic miracles which they have created in the Taiwan Area in the past several years. Though social needs, environmental protection, cultural development and health care have also received due attention, industry upgrading and economic development are still the major concerns of the Government. Because of labor shortages, and considerable effort to maintain and improve industrial development, the Executive Yuan announced on 27 October 1989 "Measures to meet labor requirements for 14 major construction projects", allowing the agencies of those 14 projects to import foreign labor according to regulations, if and when labor needs could not be supplied domestically. Most of the foreign laborers recruited have come from south-east Asian countries where many communicable diseases are still prevalent. To prevent the importation of such diseases from abroad, foreign laborers have been required to have physical examinations including chest X-ray, serological tests for AIDS and syphilis and serum examination for hepatitis B. Later, on 13 September 1991, when serious labor shortages had continued and, in response to requests from the six major manufacturing projects (construction, textiles, basic metal industry, fabricated metal products, machinery equipment, electrical and electronic equipment), the Executive Yuan further announced "Temporary measures to meet the current labor shortage", allowing 15 industries among the 6 projects to import foreign labor on a case-by-case basis. This meant that the the major construction projects approved by the Executive Yuan under the 6-Year National Development Plan could also import foreign labor, just as the 14 major construction projects could. New items were then added to the required physical examination: blood test for malaria, fecal examination for parasites and a pregnancy test. The Council of Labor Affairs requested the latter in an attempt to avoid further complicated issues in care the foreign laborers deliver their babies in Taiwan needing to care for young children.

Article 43 of Chapter 5 concerning "The Employment and Management of Foreigners", the Employment Law promulgated on 8 May 1992, stipulates the occupations for which foreigners can be employed in the Republic of China. These include laborers specifically required to meet the needs of the major national construction projects and for economic development as mentioned above, as well as supervisors,

housemaids and white-collar workers. The white-collar workers include: 1) professional or technical workers; 2) overseas Chinese or foreigners as executive directors of firms investing in the ROC with the approval of the government; 3) teachers in public or private colleges and graduate schools or in foreign schools; 4) full-time cram-school language teachers; 5) coaches and athletes and 6) persons engaged in religious work; in applied art or the performing arts. Initially, the Department of Health was of the opinion that the physical examination requirements set out in the "Regulations governing the employment permission and management of foreigners" promulgated on 27 July 1992 should apply equally to white- and blue-collar workers, recommending that the Government organizations concerned should include those requirements in their specific regulations. However, those Government organizations were reluctant to comply for reasons of their own, so the recommendation was not accepted. The fact is that most white-collar workers come from developed countries, whereas the blue-collar are imported from developing countries such as Thailand, the Philippines, Malaysia and Indonesia. Considering the impact blue-collar workers' entry might have upon disease control, the Department of Health adopted the principle of "be strict with the blue-collar, lenient with the white-collar workers" insofar as physical examination requirements. That is, while both pre- and post-entry physical examinations were required of blue-collar people, only a pre-entry examination was required of the white-collar. This amendment was presented to the Council of Labor Affairs as a reference for amending the Employment Law and the "Regulations Governing the Employment and Management of Foreigners." The number of foreign laborers in Taiwan is very large. Their impact upon disease control is and can be potentially very serious. This report will focus on that issue for Taiwan.

## 2. Communicable Diseases in Thailand, the Philippines, Malaysia and Indonesia

### a) AIDS and other Sexually-Transmitted Diseases (STD)

From January through May 1981, three hospitals in Los Angeles in the United States (US), through biological testing of the lung, separately reported *Pneumocystis carinii*-induced pneumonia in five homosexuals from 29 to 36 years of age. These patients had shown symptoms of fever, abnormal liver function tests, reduction of lymphocyte counts, infections of cytomegalovirus and candidiasis for a period of two to five months<sup>(1)</sup>. In 1983, both Luc Montagnier of France and Robert C. Gallo of the US found that the disease was caused by what was later named Human Immunodeficiency Virus (HIV). The infection was found in all countries and all races. Estimates from the World Health Organization (WHO) were that, by the end of 1995, there would be 28 million infected persons around the world. Of those, 25.5 million would be adults and 2.4 million, children. This number was increasing by 5,000 to 10,000 new cases each day. The number of AIDS patients was estimated to be around 7.7 million, of whom 5.8 million had died (2.6 million males, 1.9 million females and 1.3 million children). By the year 2000, the number of infections world-wide is expected to be 30-40 million<sup>(2)</sup>. The number of HIV infections in Asia is predicted to increase from 10% of the world population in 1993 to 40% by the year 2000. Asia is currently a dormant AIDS giant, and AIDS is expected to become a serious problem in Asia's

developing countries over the next five years.

AIDS is distinctly different from other communicable diseases in that its incubation period ranges from 6 months to 10 years. Some cases have already been infected for more than 10 years without becoming full-blown. In several weeks or months after infection, symptoms such as lymphadenopathy, sweating, fever, fatigue, skin rash, sore muscle joints, sore throat and splenomegaly may appear and soon disappear. The infection then goes into the incubation period. The immune system is gradually destroyed by the viruses, with the appearance of symptoms such as long-term diarrhea, fever, lymphadenopathy, a 10% loss of body weight and infection by viruses, bacteria, fungi and parasites of all kinds; typical AIDS symptoms such as *Pneumocystis carinii*-induced pneumonia and Kaposi's sarcoma may appear. There is not yet any known cure for the disease, nor are there vaccines to prevent it. Most patients will eventually die. Epidemics of the disease in some south-east Asian countries have already occurred as follows:

1) Thailand: The first AIDS case (a foreigner) was identified in 1984. Now, out of a population of 58 million, some 800,000 persons are infected, and the number of AIDS cases is around 20,000 with 6,000 deaths. By the end of the century, the number of those infected is estimated to have increased to 1 million<sup>(3)</sup>. More drug addicts (33% in 1993) and sex workers (29.8% in 1993) have become infected<sup>(4)</sup>. In a 1990 survey of sex workers in Chingmai, the infection rate was already found to be as high as 16-72%. The route of infection has extended from drug addicts, prostitutes and their patrons to quite innocent women and children.

2) Philippines: In a population of 70 million, the number of HIV infections is estimated to be 12,000<sup>(3)</sup>, a figure almost triple 3 years previously; of those, 200 are AIDS cases and two-thirds of them have died. Sex is the main route of infection. Surveys found that the infection rate of the sex workers in 1992 was 0.1%; that of the homosexuals in 1988, 0.3%<sup>(4)</sup>.

3) Indonesia: In a population of 200 million, the number of AIDS cases reported by 17 April 1995 was only 67<sup>(5)</sup>. However, the estimate of WHO was that there would be 20,000 infections there by 1993.

4) Malaysia: According to the World Health Organization<sup>(5)</sup>, Malaysia reported 200 AIDS cases by January 1995. Infection rates in 1991 of some specific groups were 6.9% for drug addicts and 1.4% for sex workers.

The availability of information on the epidemics of AIDS infections in various countries depends upon the completeness of the reporting system, the accuracy of diagnosis and the availability of surveys of some specific groups in the countries concerned. Conditions vary from country to country, making any direct comparison impossible. However, from the above data, one can note that AIDS is very prevalent in Thailand at an infection rate of 1.4 per 1,000 population. This rate is expected to increase sharply through drug use and sex. The Philippines, Malaysia and Indonesia, though, are still in the early stage of AIDS epidemics, and precautions toward

containment should be taken as early as possible.

STDs other than AIDS such as gonorrhea, syphilis, chancroid, non-gonorrheal urethritis, herpes and condyloma are global problems. STDs can also lead to serious sequelae such as infertility and congenital syphilis, and they can facilitate the invasion of HIV through membranes of the genital organs and skin. HIV, on the other hand, prolongs the progress and delays the cure of STDs.

#### b. Tuberculosis

Tuberculosis, though an ancient communicable disease, is still a world-wide problem. Estimates are that there are around 1.7 billion infections in the world, with 70% of those in the south-east Asia and western Pacific region. Each year, 8 million new cases and 3 million deaths are added<sup>(6,7)</sup>. Along with AIDS epidemics in the last ten years, the number of tuberculosis has increased, not only in the developing countries but also in the developed countries. The problem was attributed to the increase in AIDS epidemics, the number of unemployed and an immigrant population. WHO statistics show that the number of reported tuberculosis cases worldwide had increased by 27.8% between 1984-1986 and 1990-1993; by 37.3% in south-east Asia, and 3.8% in the Americas<sup>(8)</sup>.

In the Philippines, tuberculosis is the third leading cause of death. In Taiwan, tuberculosis has been removed from the list of the 10 leading causes of death since 1985. In Chiang Rai Province in the northern part of Thailand, the incidence of tuberculosis in 1991 was 24.7 per 100,000 population, but had doubled to 49.8 in 1993. The number of tuberculosis patients infected with HIV also went up from 1.5% in 1991 to 45.5% in 1993<sup>(3)</sup>. In Indonesia, the incidence of tuberculosis in 1980 was 62.7 per 100,000; that in Malaysia in 1978 was 3.71; that in the Philippines in 1978 was 59.7; and that in Thailand in 1982 was 14.7.

The most contagious period for tuberculosis is 6-12 months after infection. Thereafter one becomes a life-long potential source of the disease. In particular, when one is weak from conditions such as diabetes, long-term use of steroids and HIV infection, tuberculosis may recur. With inadequate drug treatment or poor compliance with a medication regimen, drug-resistance may develop into a serious problem. When AIDS patients develop drug-resistant tuberculosis, the chances of tuberculosis being transmitted through their respiratory tracts to medical care personnel are high.

#### c) Malaria and Intestinal Parasites

1) There are at present around 300-500 million malaria cases world-wide, with 90% of those in Africa. Each year, 1.5 to 3 million people die of the disease<sup>(9)</sup>. In 1990 to 1992 for instance, in Thailand, there were around 170,000-270,000 malaria cases a year with an infection rate of 3.5-5.6 per 1,000 population; in the Philippines, the

number of cases was around 86,000-110,000 each year, with an infection rate of 5.3-8.7 per 1,000; in Malaysia, the number of cases was 36,000-50,000 each year, with the infection rate at 2.0-2.8 per 1,000; in Indonesia, the number of cases was 13,000-18,000 each year, or an infection rate of 0.1 per 1,000<sup>(10)</sup>. In the borderline areas of Thailand, 50% of the patients are resistant to Mefloquine.

In addition to *malaria*, *Giardia lamblia* and *Entamoeba histolytica* are also found in foreign laborers.

## 2) Intestinal Parasites

Sixty-two separate kinds of parasites have been identified in man in the south-east Asia region. The most common intestinal helminths in Thailand, the Philippines, Malaysia and Indonesia are *Ascaris*, hookworm and whipworm. In some villages, the infection rates of these parasites are as high as 92%, 70% and 95%, respectively. The infection rates of some protozoa such as *Entamoeba histolytica*, *Entamoeba coli* and *Giardia lamblia* could be as high as 34%, 38% and 11%. *Capillaria philippinensis* and *Schistosoma japonicum* are most common in the Philippines. Five cases of *Capillaria philippinensis* infections have already been reported in Taiwan. *Schistosoma japonicum* should also be watched out for, as it can infect the snails of Taiwan. *Opisthorchis viverrini* is common in the northern and north-eastern parts of Thailand.

The routes of transmission and life-cycles of some uncommon intestinal parasites in men are summarized as follows:

### (a) Nematelminthes

(1) *Strongyloides stercoralis*: Human infection is acquired by skin penetration of the filariform larvae (infective larvae) from the soil. After penetration of the skin, the larvae are carried via the cutaneous blood vessels to the lungs and eventually to the small intestine. Development usually takes about 2 weeks, after which the females begin egg production. The eggs usually hatch, and the rhabditiform larvae (non-infective larvae) pass out of the intestinal tract in the feces. These larvae are passed out onto the soil in the feces and develop into free-living male and female worms, eventually directly producing infective filariform larvae. Normally, the rhabditiform larvae pass out in the stool develop into the filariform larvae, which are ready to infect the next host through skin penetration. In situation in which autoinfection occurs, some of rhabditiform larvae that are within the intestine develop into the filariform larvae while passing through the bowel.

(2) *Hookworm*: Their life cycle is similar to that of *Strongyloides stercoralis*, though larvae develop into adults only in, and not outside, the human body. Filariform larvae penetrate through the skin or enter via the mouth.

(3) *Trichuris trichiura*: Infection is caused by the intake of food contaminated

by parasite eggs. Eggs are hatched in the small intestine, developing into adults in the large intestine.

(4) *Trichostrongylus orientalis*: Their life-cycle is similar to that of the hookworm. Larvae penetrate through the skin or via the mouth. Adults grow in the duodenum. Eggs are discharged with feces and develop into larvae. Infection induces symptoms such as loss of weight, diarrhea and dry skin.

(5) *Capillaria philippinensis*: Infection is through ingestion of raw sea-water fish. Larvae grow into adults in the small intestine, then lay eggs which are swallowed by sea-water fish and develop into infectious larvae. Clinical symptoms are: abdominal pain, flatulence, diarrhea, weakness, low blood pressure, loss of appetite, loss of body weight and swelling.

#### (b) Platyhelminthes

(1) *Clonorchis sinensis*: First discovered in the Philippines in the dead body of a Chinese carpenter, two intermediate hosts are included in the life-cycle. Infection is through the intake of improperly cooked fresh water fish (carp, silver carp, mouthbreeders) containing the encysted metacercariae; metacercariae develop into adults in the bile ducts. Eggs are discharged with feces and ingested by snails where they hatch in the small intestine or colon. Cercariae are released to encyst in the skin or flesh of freshwater fish. Cases have been reported from Meinung and Chishan of Kaohsiung County, Yuchi of Nantou County and from Miaoli County as well.

(2) *Opisthorchis viverrini*: This parasite was first identified in 1986 in the liver of a cat. The life-cycle is similar to that of *Clonorchis sinensis* with two intermediate hosts: the snail and the fresh water fish. Infection is more prevalent in the northern and north-eastern parts of Thailand, Laos and Vietnam.

(3) *Schistosoma japonicum*: First found in Katayama, Japan in 1847, it was named by Katsuda after he had successfully isolated the parasite from cats and dogs. Adults grow in the veins → eggs discharged with feces → hatch in water into miracidium → penetrate into intermediate host (snail) → develop into sporocyst → cercariae leave snail → penetrate man through the skin → grow into adults in the human host.

These parasites will induce fever, loss of appetite, diarrhea, anemia, swelling of spleen, liver disease, liver cirrhosis and even death.

#### d) Hepatitis B

Hepatitis B is endemic in Taiwan and the south-east Asian region. The carrier rate for of the general population is around 10%, and is even as high as 20%. Hepatitis B infection can seriously affect health as it may lead to chronic hepatitis, liver cirrhosis and hepatoma. Thus Taiwan began its national hepatitis B vaccination

program in July 1984 to immunize newborns and, gradually, pre-school age children, primary school children, youths and adults against hepatitis B. In the last ten years, the carrier rate for young children has dropped from 11% to 1.7%. Immunization programs against hepatitis B in Thailand, the Philippines, Malaysia and Indonesia are not as active as in Taiwan, and thus their impact is limited.

#### e) Leprosy

Statistics of the World Health Organization<sup>(11)</sup> show that there are currently around 1.8 million leprosy patients world-wide; 70% of these are in south-east Asia, and 90% of all the world's cases are concentrated in some 19 countries. Countries of high prevalence among the 19 are Brazil (10.2/10,000), Chad (10.2/10,000), India, the Philippines (2.5), Indonesia (2.3), Thailand (0.9), Malaysia (0.95). The DOH announced through the Ministry of Foreign Affairs on 2 May 1995 that examination for leprosy would be required of foreign laborers coming from south-east Asian and south-Asian countries (India, Nepal, Bhutan, Bangladesh, Myanmar and Sri Lanka), from South America and Central Africa.

### 3. Physical Examinations for Foreign Laborers

#### a) Physical examination requirements:

1) Items: more required testing has been added from time to time, per Table 1. Currently, there are 10 items: 1) chest X-ray examination, 2) HIV antibody test, 3) serological test for syphilis, 4) hepatitis B surface antigen, 5) blood test for malaria, 6) fecal examination for intestinal parasites (including plasmodia such as *ameba dysenteriae*), 7) pregnancy test, 8) urine test for morphine, 9) urine test for amphetamines, 10) leprosy screening.

#### 2) Timing:

- (a) within three months prior to entry;
- (b) within seven days after entry;
- (c) within a month of the end of every six months of employment;
- (d) 60 days before renewal of a contract.

b) Authorization and cancellation of designated hospitals/clinics in home countries of laborers:

#### (1) Authorization:

(a) Hospitals or clinics in Thailand, Malaysia, the Philippines and Indonesia must first be recognized and authorized by their respective Ministries of Health and of Labor

to provide responsible physical examinations for their laborers seeking overseas employment. The identity of those potentially authorized is submitted, through local representative offices of the ROC in each country, to the Ministry of Foreign Affairs and the Department of Health for final authorization by Taiwan.

**Table 1. Changes in Physical Examination Procedures  
for Foreign Laborers in Taiwan**

Date	Legal Bases	Applicants	Items of Physical Examination
27 Oct 1989	Measures to meet labor requirement for the 14 major construction projects	Contractors of the 14 major construction projects	1) chest X-ray 2) HIV antibody test 3) serological test for syphilis 4) test for hepatitis B surface antigen
13 Sep 1991	Temporary measures to meet current labor shortage	Contractors of the major construction projects under the 6-year National Development Plan and the 15 industries of 6 professions	1) chest X-ray 2) HIV antibody test 3) serological test for syphilis 4) test for hepatitis B surface antigen 5) blood test for malaria 6) fecal examination for intestinal parasites 7) pregnancy test
27 Jul 1992	Law of Employment -- Regulations governing the employment permission and management of foreign labor	Laborers, caretakers, maids and ship crew	1) chest X-ray 2) HIV antibody test 3) serological test for syphilis 4) test for hepatitis B surface antigen 5) blood test for malaria 6) fecal examination for intestinal parasites (test for amoebic dysentery included beginning 27 January 1995) 7) pregnancy test 8) others: (1) urine test for drug use (since 5 November 1992) (2) leprosy test (since 2 May 1995) (3) mental condition before entry (24 January 1996)



(b) At present, there are 8 hospitals in Thailand, 15 in Malaysia, 9 in the Philippines and 6 in Indonesia authorized for physical examinations of potential foreign laborers hoping to enter Taiwan.

2) Cancellation: Authorization will be cancelled if the hospital is in violation of one of the following:

(a) for hospitals examining more than 100 laborers a month, if the failure rate as indicated by re-examinations conducted by the designated hospitals in Taiwan upon entry exceeds 5%;

(b) for hospitals examining fewer than 100 laborers a month, if the number of failures exceeds 5 persons, as indicated by entry re-examinations conducted by the designated hospitals in Taiwan.

By these regulations, one hospital in the Philippines (a new one added) and one in Indonesia (another one suspended for six months until 30 April 1996) have been declared unacceptable by the ROC.

c) Authorization and cancellation of hospitals/clinics in Taiwan:

1) Authorization: Regional (including provisional regional) and above teaching hospitals accredited jointly by the Ministry of Education and the Department of Health.

2) Cancellation:

(a) Hospitals conducting physical examinations in areas beyond their jurisdiction; hospitals entrusting examinations to laboratories; and hospitals producing a poorer quality of examination which fails to meet the standards set by the Department of Health;

(b) Currently 53 hospitals are authorized by the Department of Health to conduct physical examinations of foreign laborers.

d) Applications for approval:

1) Upon entry: reports of physical examinations must be submitted to the local health authorities for approval within 15 days after entry.

2) Every six months: reports of physical examinations must be submitted to the local health authorities for approval within 30 days after the examination has been completed.

3) Upon renewal of contract: reports of physical examinations must be submitted

to local health authorities for approval 60 days prior to the renewal of contract.

#### 4. Results of Physical Examinations of Foreign Laborers

##### a) By Cumulative Total

Of a cumulative total of 844,450 person-times of physical examinations conducted in the period between January 1992 and June 1995, 573,773 (67.0%) were for laborers from Thailand; 217,185 (25.7%) for those from the Philippines; 31,629 (3.7%) for those from Indonesia; and 21,863 (2.6%) for those from Malaysia. The number of failures at re-examinations was 11,613 cases (1.38%): 2.3% failure rate for Indonesia, 1.51% for Thailand, 1.35% for Malaysia, and 1.08% for the Philippines (Table 2). Most earlier failures, upon re-examination, were found to have been for parasites, with 9,071 cases (78.1%); hepatitis B, with 839 cases (7.2%); pulmonary tuberculosis, with 585 cases (5.0%); syphilis, with 297 cases (2.6%); pregnancy, with 273 cases (2.3%); morphine, with 227 cases (2.0%); HIV positive, with 205 cases (1.8%); amphetamine, with 106 cases (0.9%), and malaria, with 10 cases (0.1%) (Table 3). Leprosy was identified recently in one worker from the Philippines. Intestinal parasites and hepatitis B were the major health problems found in laborers from the four countries supplying a majority of the laborers Taiwan requires. The positive rates for intestinal parasites were: 1.17% for those from Thailand, 1.73% for those from Indonesia, 0.79% for those from the Philippines and 0.52% for those from Malaysia. Of the 9,071 persons who failed the examinations for parasites, 74% came from Thailand and 20.8%, from the Philippines. Some of the most likely causes for not passing the examination are the high rate of parasitic infection in those two countries; or possibly the infection was not found in the home country because of prior medication; then, too, the workers may have been re-infected during return to their home villages; and of course there may be some question about the thoroughness and quality of the home country examinations.

Of the parasites (including malaria) found in the 9,081 cases, more *Opisthorchias viverrini* and hookworm were found in workers from Thailand and the Philippines; and more *Trichuris trichiura* and hookworms in those from Indonesia and Malaysia (Table 4).

##### b) By Time of Examination:

The failure rates of re-examinations at entry, six months after entry, one year after, then one and a half years after were 2.41%, 2.1%, 1.61% and 1.99%, respectively (Table 5). By regulation, foreign laborers who fail the re-examination at entry are deported immediately. Failure rates of any subsequent examinations should, therefore, be much lower; however, the failure rate at the re-examination one and a half years after entry was even higher. Most failed in the re-examination because of parasites. The likely reasons are that agents often ask laborers to take vermicides

**Table 2. No. Examined and Failure Rates (%) at Re-examination upon Entry for Foreign Labor (including Housemaids and Caretakers) (January 1992 - December 1995)**

Item	Thailand	Malaysia	Philippines	Indonesia	Total
No. failed	8,235	296	2,354	728	11,613
No. examined	573,773	21,863	217,185	31,629	844,450
Failure rate	1.51	1.35	1.08	2.30	1.38

**Table 3. No. Positive by Disease at Re-examination upon Entry for Foreign Labor (including Housemaids and Caretakers) (January 1992 - December 1995)**

Item	Thailand	Malaysia	Philippines	Indonesia	Total (%)
Tuberculosis	350	19	157	59	585( 5.0)
HIV	178	3	17	7	205( 1.8)
Syphilis	174	18	59	46	297( 2.6)
Hepatitis B	479	110	199	51	839( 7.2)
Malaria	7	0	2	1	10( 0.1)
Parasite	6,700	114	1,710	547	9,071( 78.1)
Pregnancy	123	2	137	11	273( 2.3)
Morphine	105	29	27	6	227( 2.0)
Amphetamine	59	1	46	0	106( 0.9)
Total	8,235	296	2,354	728	11,613(100)

prior to entry, and thus parasites may not be found at the time of re-examination in Taiwan; the quality of examination by some hospitals in Taiwan may be questionable; workers can be re-infected after entry because of retaining their own eating raw food and personal hygiene habits.

*Opisthorchis viverrini* and hookworms were the major parasites found at all re-examinations upon entry, six months after entry, one year after and one and a half years after.

**Table 4. Parasitic Infections in Foreign Laborers  
(including Housemaids and Caretakers)  
(January 1992 - December 1995)**

Parasites	Thailand	Malaysia	Philippines	Indonesia	Total(%)
<i>Ascaris lumbricoides</i>	212	12	176	18	148 ( 4.6)
Hookworm	1,446	23	237	85	1,791 ( 19.7)
<i>Trichuris trichiura</i>	237	26	520	256	1,039 ( 11.4)
<i>S. stercoralis</i>	1,116	14	129	53	1,312 ( 14.5)
<i>Trichostrongylus orientalis</i>	47	—	14	2	63 ( 0.7)
Tapeworm	146	2	24	10	182 ( 2.0)
<i>O. viverrini</i>	2,679	17	104	32	2,832 ( 31.2)
<i>Giardia lamblia</i>	342	16	121	45	524 ( 5.8)
<i>Entamoeba histolytica</i>	31	1	27	4	63 ( 0.7)
Others	444	3	358	42	847 ( 9.3)
Malaria	7		2	1	10 ( 0.1)
<b>Total</b>	<b>6,707</b>	<b>114</b>	<b>1,712</b>	<b>548</b>	<b>9,081 (100)</b>

**Table 5. No. Failed and Failure Rates by Year  
(including Housemaids and Caretakers)  
(January 1992 - December 1995)**

Examination at	1992 No. (%)	1993 No. (%)	1994 No. (%)	1995 No. (%)	Total No. (%)
Entry	766 (7.0)	1,110 (1.1)	1,574 (1.5)	5,068 (3.7)	8,491 (2.4)
6 months after		441 (1.5)	1,282 (1.3)	3,243 (3.2)	4,966 (2.1)
1 year after		121 (1.2)	756 (1.0)	1,792 (2.4)	2,699 (1.6)
1.5 years after			359 (1.4)	1,510 (2.2)	1,869 (2.0)

c) Surveillance of Laboratory Testing for Parasites in Taiwan:

To understand the laboratory techniques of those regional and above hospitals conducting physical examinations for foreign laborers in Taiwan, DOH requested the Parasite Association of the Republic of China, with the assistance of eight parasitology

departments of hospitals and research institutes, to sample test fecal specimens of foreign laborers collected from 23 of these hospitals between June 1994 and June 1995. The intestinal parasite positive rates were: 11.94% (1,505/12,604) for laborers from Thailand, 10.12% (733/7,242) for those from the Philippines, 18.08% (181/1,001) for those from Indonesia and 8.46% (45/532) for those from Malaysia. These rates were 10 to 16 times higher than the rates found at regular physical examinations, an indication that the quality of laboratory testing of some hospitals in Taiwan is extremely questionable and the effect of disease control measures, doubtful. This perhaps is one of the reasons why some foreign laborers who actually passed the re-examination upon entry are later found to be parasite-positive. What is notable is that most parasites found were uncommon in Taiwan: 660 cases of *Opisthorchias viverrini*, for instance, and even 24 carriers of *Entamoeba histolytica*, a notifiable disease on this Island.

## 5. Problems with Physical Examinations for Foreign Laborers

### a) Importation of Communicable Diseases:

1) Cases of such notifiable diseases as plague and rabies have not been reported in Taiwan since 1948 and 1958, respectively. In other parts of Asia, there still are 400-500 cases of plague reported each year, but mainly in Vietnam, mainland China and Mongolia, though not in the Philippines, Thailand, Malaysia and Indonesia. It is said that labor will perhaps soon be brought in from Vietnam. Because these countries had communicable diseases that had been eradicated for sometime in Taiwan, precautions should be taken. For example, between August and October 1995, the whole world was shocked by an outbreak of primary pneumonic plague in India, with 639 confirmed cases and 56 deaths<sup>(12)</sup>. In south-east Asia, there is still rabies in Thailand, the Philippines, Indonesia and Malaysia. These acute communicable diseases can hardly be detected early, and this is very likely in hospitals in Taiwan where the clinicians have not encountered these disease for several decades. Epidemiological information of other countries - particularly from the parent countries of imported workers - should be collected constantly and disease surveillance, strengthened.

2) Since the official declaration in 1965 by the World Health Organization that Taiwan was free of malaria, with the exception of a few minor outbreaks in Santzu, Tamshui and Shihmen in the northern part of Taiwan in 1972 and brought in by American soldiers serving in the Vietnam War, and for a few recurrences or induced infections (nosocomial infection at the Taipei Veterans' General Hospital in October 1995 through the injection of developers, for instance), the reported cases each year are imported. Statistics of the National Institute of Preventive Medicine of the Department of Health show that there had been 298 imported malaria cases in the period between 1988 and December 1995: 194 (65.10%) from Asia, 86 (28.86%) from Africa, 5 (1.68%) from America, 13 (4.36%) from Oceania. In Asian countries, 40 of these imported infections (13.42%) took place in Myanmar, 33 each (11.07%) in Thailand, Indonesia and mainland China, 26 (8.72%) in India, 10 (3.35%) in the Philippines, and 6 (2.01%) in Malaysia. The four countries from which most foreign laborers come

are the areas where more infections of malaria take place. In the 844,450 person-times of physical examinations for foreign laborers, only 10 cases of malaria were found. Though the number is small, chances of importation are still there. In particular, in 22 townships of 5 counties in Taiwan, *Anopheles minimus*, the vector for malaria, is still found. Any *malaria plasmodium*-carrying foreign laborer working in one of these areas has a good chance of spreading the disease. Malaria can also be transmitted through blood transfusion. The six nosocomial infections noted above were induced through use of a developer injector contaminated with an infected patient's blood are simply a case in point.

3) In addition to the control of malaria, other parasites which at one time were major causes of local parasitic infection in Taiwan, such as *Wuchereria bancrofti*, *lung flukes*, *Fasciolopsis buski* and *Clonorchis sinensis* have been brought under good control. The infection rate of intestinal parasites in school children is lower than 1% in general, 3-4% for pinworms and 7.72% for school children of the mountain areas and on the off-shore islands. South-east Asian countries are in tropical and sub-tropical zones of high temperature and humidity, and tend to practice relatively poor personal hygiene and environmental sanitation; there the parasite infection rate can be as high as 90%. A Filipino physician pointed out ironically that an individual without parasites would not be a Filipino. The high rates of parasite infections – particularly *Opisthorchis viverrini*, *unknown in Taiwan* – found at by physical examination of for foreign laborers are most alarming. The National Institute of Preventive Medicine of the Department of Health, in a survey of 1,529 foreign laborers entering Taiwan in March and April 1993, found 194 cases (12.7%) of antibody positive to *Schistosoma japonicum*<sup>(13)</sup>; that is, those workers had been infected at one time. Though no parasites were isolated from their fecal specimens, findings of serological testing were worth noticing. *Schistosoma japonicum*, which is not found in Taiwan, can also be brought in.

4) A total of 205 HIV infections have thus far been detected. By the regulations governing the employment and management of foreign labor, families are not permitted to join the laborers, most of whom are young, sexually-active males who are likely to engage in active sex during their stay, thus spreading the disease. Antibodies, developing only 6 to 12 weeks after infection, cannot be detected by any serological methods during this window period. Chances of foreign laborers from high infection areas such as Thailand bringing in AIDS are high. By the end of last year, the number of HIV infections in Taiwan had exceeded 1,000 cases, though the actual number of infections could be 10 times as many. With the importation of foreign labor, Taiwan confronts a new situation in the prevention and control of AIDS. People should be ongoingly, and strongly, urged to develop both the concept and actual behavior of safe sex.

5) Though both the mortality and infection rate of tuberculosis in the Taiwan Area have declined significantly in past years, and tuberculosis has been removed from the list of the 10 leading causes of death since 1985, still there are 15,000 cases reported each year. Both incidence and mortality from tuberculosis in the mountain areas are still three to four times higher than in the plains. In comparison with developed countries,

tuberculosis is still a serious public health problem in Taiwan. The situations in the Philippines, Thailand, Malaysia and Indonesia are worse. Tuberculosis is an air-borne, communicable disease. With its drug-resistance, it can have a serious impact on the health of the people. Five hundred and eight-five cases of tuberculosis have been detected during foreign laborers' physical examinations.

6) All communicable diseases have their own incubation periods, and usually cannot be detected in their very early stages by routine laboratory methods. Some infections may not develop into illness nor display typical symptoms. Physicians may sometimes fail to diagnose correctly. Diseases can, therefore, spread without anyone's knowledge. In 1991, a Kaohsiung City resident returning from Indonesia, had atypical symptoms of dengue fever, symptoms which were in fact diagnosed as flu. His illness prompted an outbreak of dengue in Kaohsiung City.

7) Foreign laborers work together with domestic laborers; foreign housemaids and caretakers work in homes to cook and care for the elderly and young children. They could, through contamination of water and food or through the air, infect members of the family.

8) The murder last year of an elderly person by a caretaker from abroad prompted concern about the issue of the mental and emotional health of foreign laborers. The Department of Health has now made examinations for mental health stability a new item for foreign hospitals to report on. In Taiwan, because of language and communication problems, this item is not mandatory. Employers, however, are urged to be alert. The Council of Labor Affairs will also strengthen the day-to-day supervision of foreign laborers.

9) Drug abuse is a serious problem in Asia. The Golden Tri-angle is the source of drug smuggling; HIV infections along with drug abuse in this area are also a well-known problem. Heroin use in Thailand has increased, particularly among young people in the 26-30 age groups, and to 4% among females: 65% of drug abuse in the northern part of Thailand, 16% in the central part, 16% in the north-eastern part, 1.6% in Bangkok, and 0.3% in the southern part have been noted<sup>(14)</sup>. In urine tests for foreign laborers, 170 cases positive to morphine and 81 cases positive for amphetamine have been detected. In Taiwan, though there is more amphetamine use, the use of morphine is increasing significantly, with the mode of use also changed from inhaling to injection. With the sharing of a common syringe and needle, the infection of blood-transmitted diseases such as viral hepatitis, HIV and other blood infectious diseases are likely to increase.

#### b) Problems Related to Physical Examination Procedures:

1) Examinations by hospitals in home countries are not always carefully and accurately done. Some foreign laborers who passed the examinations in their home countries failed the re-examinations conducted in Taiwan. They are required to be deported, but some of them may even simply "disappear". The other possible reasons

for this failure in the re-examinations are that the diseases were not detected in their incubation periods; workers were negative at the time of examination but were later re-infected; different laboratory methods were employed, with those used in Taiwan more sensitive.

2) Though Taiwan hospital laboratory techniques for identifying parasites are better than those of other countries, sample testings conducted by the appropriate department of medical schools revealed that local hospital laboratory detection rates and ability to identify parasites still require improvement. The Parasite Association of the Republic of China has been asked to organize training workshops and to conduct surveillance of laboratory techniques.

3) Foreign laborers have to go through tedious procedures to reach Taiwan. For fear of having their clients fail re-examination, some agents are rumored to substitute healthy fecal specimens for specimens of foreign laborers suspected of infection. The Department of Health has, therefore, issued orders to the hospitals concerned to exercise greater care in the handling of specimens, and to conduct physical examinations only in hospitals and not on factory premises. Regulations concerning the cancellation of hospitals authorized to do physical examinations of foreign laborers have been formulated, and the Council of Labor Affairs has been requested to include in the regulations governing the employment and management of foreign laborers provisions for the punishment of agents to avoid similar incidents in the future.

4) Foreign laborers must accept re-examination and then submit reports to local health authorities for approval in due time. The time required set initially was too strict for those concerned to follow: three days after entry for re-examination and seven days thereafter to submit reports, for instance. This requirement was later amended to 7 days after entry then 15 days thereafter to report. Under certain unusual circumstances, reports can be submitted within 30 days if the re-examination has been conducted on schedule. These regulations are practicable, taking into consideration all likely difficulties. Yet some employers still fail to comply for reasons such as not comprehending the regulations, entrusting the matter to an agent for handling, then finding that such agents have terminated their business, *et cetera*. More efforts, therefore, should be taken to strengthen control of agents, to improve employers' knowledge of the regulations concerned and to organize pre-entry orientation workshops for potential foreign laborers.

5) Some are of the opinion that while it is costly and time-consuming to the foreign laborers themselves and to others concerned to finally enter Taiwan, it is against their interests to deport them for diseases such as parasitic infections which are curable. The policy is to bring in healthy labor. If this policy is relaxed, hospitals in their home countries may also relax their physical examinations, and employers and the National Health Insurance Program of Taiwan will have to spend more for the medical care of foreign laborers. For re-examination six months later, a grace period of one month for the treatment of parasites is now granted.

6) Illegal foreign laborers, either those brought in legally who then ran away, or individuals working illegally but holding only a visitor's visa, cannot be identified



for physical examination and they can be a problem in disease control. The social problems they create can also be serious. It is only through the reports of the public and effective police inspection that the number of illegal foreign laborers can be minimized.

## 6. Conclusion

The importation of foreign laborers, caretakers and housemaids from Thailand, the Philippines, Malaysia and Indonesia can potentially also import communicable diseases to Taiwan. To effectively control communicable diseases, physical examinations of foreign laborers, surveillance of diseases, as well as education of employers, agents and the laborers themselves should be strengthened, with better understanding of the reasons for such concern made an important focus of the total program.

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