XVI SEMINAR on "HEALTH and INDUSTRY in SOUTH-EAST ASIA"

SPONSORED BY

SEAMEO-TROPMED

IN COOPERATION WITH

INSTITUTE OF PUBLIC HEALTH, UNIVERSITY OF THE PHILIPPINES

WORLD HEALTH FOUNDATION OF THE PHILIPPINES

OCCUPATIONAL HEALTH ORGANIZATIONS

Industrial Medical Association of the Philippines
Occupational Health Nurses Association of the Philippines
Philippine Association of Compensation Medicine
Philippine Association of Industrial Dentists
Philippine Association of Occupational Health

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Department of Health
- Occupational Health Division
- Bureau of Dental Health Services

Department of Labor
- Employees Compensation Commission
- Bureau of Labor Standards

Government Service Insurance System
Philippine Medical Care Commission
Social Security System

Coral Ballroom, Manila Hilton, November 23-27, 1976, Manila, Philippines

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- DEPARTMENT OF HEALTH
  - Occupational Health Division
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- DEPARTMENT OF LABOR
  - Employees Compensation Commission
  - Bureau of Labor Standards
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- PHILIPPINE MEDICAL CARE COMMISSION
- SOCIAL SECURITY SYSTEM

Tanggapan ng Pangulo ng Pilipinas

(OFFICE OF THE PRESIDENT OF THE PHILIPPINES)

Message

The 16th SEAMEO-TROPMED Seminar on Health and Industry in Southeast Asia is a welcome event to us in the Philippines.

This Seminar gives the delegates a chance to meet and pool their talents and resources together in the common effort to better the health conditions of their industrial workers.

The representatives of the participating countries face one of the urgent tasks of governments all over the region. The whole of the region is the center for growth and expansion. And it becomes imperative to give its labor force the best working conditions that will protect their health.

We are glad to lend our support to this meeting, and we hope that the Seminar will help foster a new climate of health for all the industrial workers of Asia.

FERDINAND E. MARCOS
President of the Philippines

MALACAÑAN PALACE

MANILA

Message

We extend our greetings to the delegates attending the 16th Seamo-Tropmed Seminar on Health and Industry in Southeast Asia.

You come at a time when our country is engaged in public health programs designed to improve the well-being of our countrymen. We sincerely hope the Philippine experience will deserve the attention of participants to help fight disease as a barrier to progress in Southeast Asia.

We wish the seminar every success.

IMELDA ROMUALDEZ MARCOS
First Lady and Metro Manila Governor

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Message

With great pleasure, I extend my cordial greetings to the organizers and participants of the 16th SEAMEO-TROPMED Seminar on Health and Industry in Southeast Asia to be held on November 23 to 27, 1976, in Manila.

It is now recognized that international cooperation and collaboration in health should go well beyond the scope of communicable diseases' control. In this context, the 16th SEAMEO-TROPMED Seminar, which has addressed itself to occupational health and safety of industrial workers in Southeast Asia is truly relevant. It gains added significance considering that the working population is the most numbered segment of our global society.

I hope that this auspicious event will serve as an appropriate forum for the exchange of ideas that can bring about reciprocal understanding of, and formulation of solutions to, common occupational health problems encountered by participating countries.

In behalf of the Department of Health, I extend best wishes for the success of the seminar. I also cherish the hope that our foreign guests and participants may have a pleasant and memorable sojourn in this country.

CLEMENTE S. GATMAITAN, M.D., M.P.H.
Secretary of Health

REPUBLIKA NG PILIPINAS
KAGAWARAN NG PAGGAWA

Message

Among the major thrusts in this year's conference of the International Labor Organization in Geneva is the protection of the worker's health through improved working environment in the industries.

The sophistication of modern machineries and the harmful effects of some chemicals have always posed grave threats to the worker's life and limb. As such, they make industrial safety and occupational hazards serious problems to cope with.

In this light, there is a great significance of the 16th SEAMEO-TROPMED Seminar on Health and Industry in Southeast Asia which will be held in Manila on November 23-27, 1976.

The seminar will focus the attention of the world's industrial health workers on the various hazards faced by men and women in the industries and on appropriate preventive measures. The occasion will thus promote a major objective of the International Labor Organization.

For this timely SEAMEO-TROPMED seminar, I extend my sincere greetings to all the participants and congratulations to the sponsoring organizations. Indeed, this is a noble concern which deserves everybody's support to insure its success.

BLAS F. OPLE
Secretary

REPUBLIC OF THE PHILIPPINES
DEPARTMENT OF EDUCATION AND CULTURE
MANILA

Message

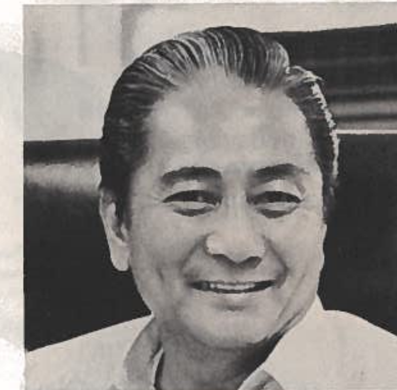
It is with pleasure that I greet all participants in the 16th SEAMEO-TROPMED Seminar on Health and Industry in Southeast Asia being held in Manila this year.

Occupational health and safety of the millions of workers of industry in Southeast Asia should be attended to with the utmost urgency. To give supreme importance to the welfare of the Asian workers is to make the cogwheels of the industrial machinery of the region effectively turn so as to help produce an abundance of wealth for the developing Asian societies.

It is my hope, therefore, that through the exchange of expertise and the formulation of agreements on the solution of problems concerning the mental and physical health of industrial workers, this important activity will be most fruitful.

JUAN L. MANUEL
Secretary

Republic of the Philippines
PHILIPPINE MEDICAL CARE COMMISSION
Quezon City



Message

May I greet the delegates to the 16th Seminar on Health and Industry in Southeast Asia of the Southeast Asia Ministers of Education Organization-Tropical Medicine.

I note with deep interest the focus of your seminar this year which is on industrial medicine and occupational health and safety. I always emphasize aspects of health care in the industrial environment whenever I appear before workers and managers of industries. In addition, I would suggest that health care for the worker should not be confined within his place of work but should be extended to his home and possibly to members of his family.

I hope your seminar will further enrich in our region already existing measures for health promotion, protection, environmental control and rehabilitative or restorative services which our workers now enjoy.

PACIFICO E. MARCOS, M.D.
Chairman

Seameo-Tropmed Seminar on Health & Industry in Southeast Asia

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Dr. Nestor Dumlao

GENERAL SEMINAR PROGRAM

Tuesday, November 23, 1976

1:00 - 2:00 P.M. — Registration
2:00 - 3:00 P.M. — Opening Ceremonies
3:00 - 3:30 P.M. — Coffee Break
3:30 - 5:30 P.M. — First Scientific Session

Wednesday, November 24, 1976

9:30 A.M. - 2:00 P.M. Field Trip (Polo Brewery Plant, San Miguel Corporation) Valenzuela, Bulacan

Thursday, November 25, 1976

8:00 - 11:00 A.M. — Registration (Cont'd) and Second Scientific Session
11:30 A.M. — Luncheon
AFTERNOON — Free Time

Friday, November 26, 1976

8:00 - 9:30 A.M. — Registration (Cont'd)
9:30 - 10:30 A.M. — Third Scientific Session
10:30 - 11:00 A.M. — Coffee Break
11:00 - 12:00 A.M. — Scientific Session (Cont'd)
12:00 Noon — Luncheon
1:30 - 3:00 P.M. — Scientific Session (Cont'd)
3:00 - 3:30 P.M. — Coffee Break
3:30 - 5:00 P.M. — Scientific Session (Cont'd)

Saturday, November 27, 1976

8:00 - 9:00 A.M. — Registration (Cont'd)
9:00 - 10:30 A.M. — Fourth Scientific Session
10:30 - 11:00 A.M. — Coffee Break
11:00 - 12:00 A.M. — Scientific Session (Cont'd)
12:00 Noon — Luncheon
1:30 - 3:00 P.M. — Scientific Session (Cont'd)
3:00 - 3:30 P.M. — Coffee Break
4:00 - 5:00 P.M. — Closing Ceremonies
7:00 P.M. — Dinner (by invitation)

OPENING CEREMONIES

Tuesday, November 23, 1976, 2:00 - 3:00 P.M.

Coral Ballroom, Manila Hilton

1. Philippine National Anthem

2. Invocation

3. Opening Remarks — Prof. Chamlong Harinasuta
   Coordinator, Seameo-Tropmed Project

4. Presentation of Foreign Delegates and Representatives
   — Dr. Fidel M. Guilatco
   Secretary, Exec. Committee

5. Introduction of the Guest of Honor — Dr. Rodolfo Subida
   Member, Executive Committee

6. Address — Hon. JUAN L. MANUEL
   Secretary of Education and Culture

7. Recessional

MASTER OF CEREMONIES
Dr. Rosario G. Dy

FIRST SCIENTIFIC SESSION

Tuesday, Nov. 23, 1976

Presiding Chairman — Dr. Antonio O. Gisbert
Rapporteur — Dr. Zenaida B. Symaco

(Note: Each paper is allowed 15-20 minutes followed by 5-10 minutes discussion)

3:30 - 4:00 P.M. — The Role of the World Health Organization in Occupational Health in the Western Pacific Region
— Dr. G. M. Emery
Regional Adviser in Strenghtening of Health Services (WHO)

4:00 - 4:30 P.M. — Concentration of Cadmium in Hepatoma Among Filipinos
— A. Alejandrino, C. Goze, R. Paradero
Philippine Atomic Energy Commission

4:30 - 5:00 P.M. — Mortality due to Non-Occupational Injuries Among Malaysian Armed Forces Personnel
— Lt. Col. I. Natarajan KMN PJE
Asst. Director, Medical Services
Sungei Besi, Kuala Lumpur, Malaysia

5:00 - 5:30 P.M. — Education and Training for Occupational Health Nursing Practices
Zylma M. Sanchez
Sr. Nurse/Medical Service Assistant
Petrophil Corporation

(Officer of the Day — Dr. Reynaldo G. Santos)

FIELD VISIT

Wednesday, November 24, 1976

9:30 A.M. - 2:00 P.M. — Visit to Polo Brewery Plant of the San Miguel Corporation
Valenzuela, Bulacan

SECOND SCIENTIFIC SESSION

Thursday, Nov. 25, 1976

Presiding Chairman — Dr. Amar Singh
Rapporteur — Miss Anita S. Santos

8:00 - 8:30 A.M. — Notification of Pneumoconiosis in Hong Kong

— Dr. Thomas K.W. Ng
Sr. Lecturer, Department of Community Medicine
University of Hong Kong

8:30 - 9:00 A.M. — The Human Factor in Industrial Accidents

— Dr. Ricardo Ledesma
Medical Director
General Textile Mills

9:00 - 9:30 A.M. — Byssinosis and Carbon Particles

— Dr. Pricilla J. Tablan
Medical Specialist II
Quezon Institute

9:30 - 10:00 A.M. — Country Report: Occupational Safety & Health in Malaysia

— Abdul Aziz Ahmad, J.S.M.
Dept. of Factory & Machineries
Kuala Lumpur, Malaysia

10:00 - 10:30 A.M. — The Safety Program of the San Miguel Corporation

— Dominador Policarpio, Jr.
Safety Administrator
San Miguel Corporation

10:30 - 11:00 A.M. — Preventive Dental Health Services Delivery in Industry

— Ernesto Viscarra, D.M.D.
Company Dentist
Philippine Refining Company

11:30 A.M. — Luncheon (1571, Manila Hilton)

Afternoon — Free Time

(Officer of the Day — Dr. Hector Tagle)

THIRD SCIENTIFIC SESSION

Friday, Nov. 26, 1976

Presiding Chairman — Dr. Francisco R. Jose
Rapporteur — Dr. Felicidad Casanova

9:30 - 10:00 A.M. — A Study of Manganese Level in Blood and Urine among Dry Cell Battery Makers

— Dr. Somchit Viriyanondha
Chief, Div. of Industrial Medicine and General Practice
Mahidol University
Bangkok, Thailand

10:00 - 10:30 A.M. — Industrial Dermatitis

— Dr. Perpetua Reyes-Javier
Chief Dermatologist
Department of Health

10:30 - 11:00 A.M. — Coffee Break

11:00 - 11:30 A.M. — Chromium Contents in the Organs of a Chromium Worker who Died from Cancer

— Dr. Shosuke Suzuki
Associate Professor, Human Ecology
University of Tokyo

11:30 - 12:00 A.M. — Pneumoconiosis Prevention

— Dr. Soemirat Slamet, M.P.H.
Bandung, Indonesia

12:00 Noon — Lucheon

1:30 - 2:00 P.M. — Ocular foreign Bodies: A Comprehensive Survey of 309 Patients

— Ulysses M. Carbajal, M.D.
Carbajal Clinic

2:00 - 2:30 P.M. — Legal Aspects of the Employees Compensation Program

— Atty. Eleo M. Cayapas
Executive Director
Employees Compensation Commission

2:30 - 3:00 P.M. — Preparing Hongkong for Work in Compressed Air
— Dr. Thomas K.W. Ng
Sr. Lecturer, Dept of Community Medicine
University of Hong Kong

3:00 - 3:30 P.M. — Coffee Break

3:30 - 4:00 P.M. — Growing Industries and Related Health Problems in Tehran
— Dr. M.B. Nouskam
Head, Dept. of Control & Evaluation
Ministry of Health, Tehran, Iran

4:00 - 4:30 P.M. — Pesticide Poisoning Among Farmers
— Arsenio I. Jimenez, M.D., M.P.H.
Bulacan Medical Center

4:30 - 5:00 P.M. — Byssinosis Among Filipino Textile Workers
— Ricardo Ledesma, M.D.
Med. Director, General Textile Mills

(Officer of the Day — Dr. Eugenio S. de Leon)

FOURTH SCIENTIFIC MEETING

Saturday, Nov. 27, 1976

Presiding Chairman — Dr. Rosario G. Dy
Rapporteur — Dr. Natividad S. Chipongian

9:00 - 9:30 A.M. — Lead Poisoning in Thailand
— Prof. Mukda Trishnananda
Chairman, Dept. of Preventive Social Medicine, Siriraj Hospital, Bangkok

9:30 - 10:00 A.M. — Lead Absorption in Battery Workers and Typesetters
— Dr. Somchit Viriyanondha
Chief, Div. of Industrial Medicine and General Practice
Mahidol University, Bangkok

10:00 - 10:30 A.M. — Industrial Accidents and Injuries
— Dr. Benjamin V. Tamesis
Chief, National Orthopedic Hospital

10:30 - 11:00 A.M. — Coffee Break
11:00 - 11:30 A.M. — A Study of Occupational Exposure to Organic Lead in a Battery Factory in Malaysia
— Dr. Wan Kar Chan
Ministry of Health, Malaysia

11:30 - 12:00 A.M. — Industrial Accidents in a Flour Mill
— Dr. Nicasio G. Encarnacion
Medical Director, Liberty Flour Mills

12:00 Noon — Luncheon

1:30 - 2:00 P.M. — The Prevalence of Silicosis Among Granite Quarry Workers in Malaysia
— Dr. Amar Singh
Asst. Director, Ministry of Health
Kuala Lumpur, Malaysia

2:00 - 2:30 P.M. — Education and Training Program in Occupational Health & Safety of the joint UP-IPH and World Health Foundation of the Philippines
— Fidel M. Guilatco, M.D., D.I.H.
Executive Director, World Health Foundation of the Philippines

2:30 - 3:00 P.M. — Industrial Accidents and Injuries in Indonesia
— Nerseri Barus, M.D., M.P.H.
University of North Sumatra
Medan, Indonesia

3:00 - 3:30 P.M. — Coffee Break

(Officer of the Day — Dr. Rodolfo Subida)

CLOSING CEREMONIES

Saturday, November 27, 1976, 3:30-5:00 P.M.
Coral Ballroom, Manila Hilton

1. Opening Remarks — Dr. Benito R. Reverente, Jr.
   Chairman, Exec. Committee
2. Presentation of Plaques of Appreciation
   — Dr. Benjamin D. Cabrera
   Overall Chairman
   Organizing Committee
3. Introduction of the Guest of Honor — Dr. Natividad S. Chipongian
   ECC, Chief Medical Officer
4. Address — HON. BLAS F. OPLE
   Secretary of Labor
5. Recessional

MASTER OF CEREMONIES
Dr. Eugenio S. de Leon

DINNER

(by Invitation)

Saturday Nov. 27, 1976

7:00 P.M.

Coral Ballroom, Manila Hilton

1. Philippine National Anthem
2. Opening Remarks — Dr. Benjamin D. Cabrera, Overall Chairman
3. Cutural Show
4. Introduction of the Guest Speaker — Dr. Bienvenido Licad, Member, Executive Committee
5. Address — Hon. Clemente S. Gatmaitan, Secretary of Health
6. Recessional

MASTER OF CEREMONIES
Dr. Fidel M. Guilatco

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FOREIGN PARTICIPANTS

1. Dr. Somchit Viriyanondha - Chief, Division of Industrial Medicine and General Practice
   Bangkok, Thailand
2. Lt. Col. I. Natarajan KMN PJE - Assistant Director, Medical Services
   Kuala Lumpur, Malaysia
3. Dr. Thomas K.W. Ng - Senior Lecturer, Dept. of Community Medicine
   Hongkong
4. Abdul Aziz Ahmad J.S.M. - Dept. of Factory & Machineries
   Malaysia
5. Dr. Shosuke Suzuki - Associate Professor, Human Ecology
   Japan
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7. Dr. M.B. Nouskham - Head, Dept. of Control & Evaluation
   Iran
8. Dr. Wan Kar Chan - Ministry of Health
   Malaysia
9. Dr. Amar Singh - Assistant Director, Ministry of Health
   Malaysia
10. Dr. Nerseri Barus - Faculty, University of North Sumatera
    Indonesia

ABSTRACTS OF SCIENTIFIC PAPERS

The Psychologist and Occupational Health

Professor David Ferguson
School of Public Health and Tropical Medicine
The University of Sydney

The definition of occupational health by the Joint International Labour Organization/World Health Organization Committee in 1950 implied an extensive role for the psychologist in this field. Yet the psychologist has been little invoked since then in promotion of well being and safety in workers. Psychologists appear to be scarcely aware that they have such a role, and to be uninformed about occupational health and safety. The main special fields of psychology involved include educational, occupational and clinical psychology. The psychologist may assist in the health care of the worker at all stages from selection to preparation for retirement. His contribution may be provided in many ways, for example in vocational guidance; job analysis and design and other aspects of ergonomics; placement, training and appraisal of new workers; couselling, health education; preparation of the handicapped for work; rehabilitation, retraining and resettlement of injured and sick workers; investigation of accidents; influence on attitudes to work, interpersonal relations, and organisational climate; counteraction of adverse dietary and drug habits; participation in mental health programs and in social and community health programs in industry; and use of leisure. The place of employment presents a medium for health maintenance in which the psychologist has a place along with health professionals in industry.

The Prevalence of Silicosis Among Granite Quarry Workers in Peninsular Malaysia, in the Government Sector

AMAR SINGH, M.B., B.S., D.P.H., M.Sc. (I.H.)
Asst. Director, Ministry of Health
Kuala Lumpur, Malaysia

This is a report of a cross-sectional survey carried out on all 7 central government granite quarries, in Peninsular Malaysia. Out of a total of 707 employees, 226 were grouped in the high risk category. Of this latter group 56 (24.8 percent) of the workers were diagnosed radiologically to have silicosis and 17 (7.5 percent) suspected silicosis. Also 13 (5.8 percent) workers showed evidence of pulmonary tuberculosis and another 12 (5.3 percent) silico-tuberculosis. 97 percent of the silicosis cases occurred among workers whose duration of exposure was more than 10 years. The prevalence of silicosis appeared to increase with the duration of exposure.

Country Report: Occupational Safety and Health in Malaysia

By:
ABDUL AZIZ BIN AHMAD, J.S.M.
Dept. of Factory and Machineries
Kuala Lumpur, Malaysia

Occupational safety and health measures in Malaysia are very much dependent on the coverage of the related existing laws and regulations and the extent of their implementation. Review of these laws and regulations indicated that only a proportion of Malaysia's labour force is legally covered. However, workers engaged in considerably dangerous occupations such as manufacturing, mining and quarrying, which comprises a third of the total labour force, are protected. Though the legal provisions provide for penalties, implementation of occupational safety and health has been very much educational in nature in order to create growing awareness of one's safety among all concerned. Minimal number of suspected health injuries have been reported. However, preventive measures are taken against occurrences of those industrial diseases as they are taken established by international bodies such as International Labour Organisation and World Health Organization. These measures are made possible by the existence of interministerial working committees and by ever growing concern among labour and management groups. The increased concern creates immediate shortage of technical resources including finance and manpower. Since more than 90 percent of industrial establishments in Malaysia are small, that is each factory employing less than 50 workers, this certainly poses more burden on government to provide the necessary services. Future prospects will focus on a greater liaison between all related government agencies or notably, better working relations between doctors, engineers and chemists. At present only about 10 per cent of the industrial establishments have formed safety committees. However, it is anticipated that the number of safety committees will grow rapidly to play their essential role. To provide the required manpower, a training centre is proposed to be set up in the ASEAN Region.

A Study on Occupational Exposure to Organic Lead in a Battery Manufacturing Factory in Petaling Jaya, Peninsular, Malaysia

DR. WAN KAR CHAN
Ministry of Health, Malaysia

Twenty four Malaysian urban adult blood donor volunteers were examined as a control group. The study established that in the control group, the blood lead concentration values did not exceed 100 uG/100 ml and urinary delta aminolaevulinic (ALA) acid concentration values did not exceed 100 mg/L.

One hundred and four workers in a lead battery manufacturing factory comprised the subjects. Blood lead urinary ALA concentrations of the subjects were found to be significantly higher than the controls. The blood lead concentration in 76% of the subjects were found to be equal or exceed 120uG/100 ml and urinary ALA concentration in 37.3% were observed to equal or exceed 40 mg/L.

Blood lead concentrations equal to or exceeding 120 uG/100 ml were found in 82.4% of subjects with less than one year occupational exposure and in 69.8% of those employed for one year or more. The urinary ALA concentrations of 40 mg/L or more were observed in 3.9% of subjects employed for less than one year and 15.1% of subjects who had one year or more occupational exposure. The proportion of subjects occupationally exposed for one year or more with urinary ALA concentration of 40 mg/L or more was observed to be significantly higher than those with less than one year occupational exposure.

The high urinary ALA concentrations among workers in the powder milling, pasting and assembly sections were found to be consistent with the high lead in air concentrations in these areas.

The four most commonly observed early symptoms in order of frequency were lassitude, metallic taste in the mouth, fatigue and headache. The four late symptoms complained of by the subjects in order of frequency were abdomenal colic, diminished muscular ability or strength, obstipation and inability to concentrate.

Pallor was observed in 9.6% of subjects and Burton's lead line in 3.9% of subjects.

The study has identified excessive occupational exposure to inorganic lead among the subjects and occupational health remedial measures are proposed.

Pneumoconiosis Prevention

BY:
DR. J. SOEMIRAT SLAMET, M.P.H.
Bandung, Indonesia

Pneumoconiosis is a general term used to describe a group of pulmonary disorders caused by the inhalation of mineral or vegetable dusts resulting in the fibrous hardening of the lungs. The presenting feature may vary with the type of dust, the length of exposure, susceptibility of individuals including habits and behavior. On removal of further dust exposure some may improve, — others remain the same, some may progress depending upon the stage of pathogenesis of the disease at that time.

The disease has long been recognized, it has also been a serious occupational health problem for a long time throughout the world. Pneumoconiosis may cause severe irreversible disability beyond certain stage of pathogenesis. Complications usually occur with Tuberculosis, Pneumonia, Influenza, Cancer, and other respiratory diseases. Economic losses associated with Pneumoconiosis includes high cost of medical and hospital care, impared productivity, financial and emotional deprivation of families. The only prophylaxis is the elimination or suppression of the causative agent: dust.

Dust is defined as small solid particles formed by mechanical processes such as crushing or grinding. However, dust causing Pneumoconiosis are those dusts within the respirable size range, coming from numerous sources in industries. Beside Pneumoconiosis, dust may produce other diseases as well.

While dust is known as the causative agent of Pneumoconiosis, there are other important factors which determine the production of the disease. These determining factors can be classified into two main areas: 1. factors existing within workers, such as the susceptibility, abe, smoking habits, other existing pulmonary disorders. 2. Factors existing within the work environment, including factors within dust itself such as the temperature, humidity, air flow, partical size distribution, concentration, chemical and physical properties of dust itself.

Knowledge of the sources of dust, its production and its particle dynamics are important in the prevention of the disease by suppression and elimination.

There are two kinds of preventive method, namely the medical method and the engineering method.

Prevention by the medical method can start at the selection of candidates for workers in dusty areas, keeping in mind the determining factors existing within man. Physicians working together with other professionals such as engineers, economists, industrial hygienists, etc. can establish standards for working environment in such a way that it will not be hazardous to health but is practicable in the country. Standard for periodic medical examinations should also be laid down. Health education for the workers should also be conducted.

Prevention by engineering method include every method by means of which unwanted dust clouds can be removed from the atmosphere, which again can be divided into two groups. The first contains all those methods by means of which the dust can be eliminated; and the second contains all the methods that can be used to control the dust. The elimination methods should be considered first and the control methods should only be used when it is not possible to suppress dust by elimination techniques.

Elimination of dust by substitution of dusty processes by non dusty ones can only be done by experts in the specific industrial processes, which are mostly engineers. When substitution can not be accomplished, one should think of mechanization or isolation if possible. In case total elimination is impossible, the partial elimination can be considered in such a way that the concentration left in the work area are still within the safe limits according to the existing standard

enforced in the country. Partial elimination can be done by wet method, dilution—ventilation, and at last personal protective equipment can be considered.

The Effect of Duration of Exposure Under Certain Air Concentrations to Blood and Urine Levels of Manganese

DR. CHINOSOTH HUSBUMRER
Director, Division of Occupational Health Thailand

Statistics analysis of manganese levels in blood and urine specimens taken from workers exposed to certain manganese air concentrations with variable durations of exposure was done to determine the so called 'critical duration of exposure' which is defined as the duration of exposure that most levels of manganese in blood and urine exceeded TLV.

The idea of obtaining this 'critical duration of exposure' for the rapid protection of workers from manganese poisoning is probably more interesting than the analytic results which inevitably need more data to be accomplished in the future.

A Study of Manganese Level in Blood and Urine Among Dry Cell Battery Workers

SOMCHIT VIRIYANONDHA, M.D.
Chief, Div. of Industrial Medicine and General Practice, Dept. of Medicine, Faculty of Medicine Ramathibodi Hospital Mahidol University Bangkok, Thailand

Specimens of blood and urine obtained from a non-exposure group of 133 persons (controls) and from 21 workers in a dry battery plant were analyzed by modified dry-ashing and nitric acid technique. The atomic absorption spectrophotometer, Variant Tectron, Model AA-2, was used in this experiment. The average manganese level in urine of controls was 4.38 ug/100 ml.(S.D. = ± 2.43) and in blood was 8.61 ug/100 ml.(S.D. = ± 2.92). The range of the manganese content in urine was 1.10 - 10.40 ug/100 ml whereas in blood was 3.98 - 15.34 ug/100 ml.

For dry cell battery workers, analysis showed that the average manganese content in urine was 8.34 ug/ml (S.D.= ±2.48) whereas in blood it was 21.14 ug/100 ml. (S.D.= ±4.48). The range of the levels of manganese in urine and blood were 4.03 - 13.71 ug/100 ml and 11.65-31.94 ug/100 ml respectively.

We concluded that the concentration of manganese in blood was higher than in urine undoubtedly. The majority of the workers in the dry cell battery plant had high content of manganese in both urine and blood. The content of manganese in the body reached a toxic level which might produce a harmful effect in the workers even though clinical evidence of poisoning is still not pronounced at this moment.

From our survey of working environment and working conditions among industrial workers in this factory, we found that it was very poor. The design of the plant is also poor. The ventilation is inadequate. The workers were exposed to manganese dust without plant supervision. The devices for personal protection were never used for this purpose. There was no safety committee in this plant. The owner of this factory is not interested in the preventive measures whereas the workers have no knowledge about the toxicity of Manganese since it is not an acute poisoning.

In order to prevent the chronic toxicity of Manganese among dry cell battery workers, Department of Labor, Department of Health and Ministry of Industry must emphasize the preventive measures and give the health education to all persons who get involve in the process of dry cell battery to avoid the hazard of manganese and to realize that it is a *"permanent disability"*.

Lead Absorption in Battery Workers and Typesetters

SOMCHIT VIRIYANONDHA, M.D.
Chief, Div. of Industrial Medicine and General Practice Mahidol University Bangkok, Thailand

The specimens of blood and urine were collected from typesetters and battery workers. The analysis of blood lead and urine lead were done by Dithizone Method. The lead content in blood and urine among non-exposure group were performed as a control level. The concentration of lead was shown in the table below.

Specimens From	Lead Content (ug/100 ml.)	
	Blood	Urine
Non-exposure (46 cases)	17.41 ± 4.88	2.09 ± 0.87
Typesetters (95 cases)	21.20 ± 7.47	3.57 ± 1.80
Battery workers	47.30 ± 25.19	10.78 ± 9.30

From this experiment, we found that the level of lead in blood was higher than in urine. The concentration of blood lead and urine lead in typesetters were slightly increased in comparison with non-exposure group. But in battery workers the lead level in blood and urine were extremely higher than non-exposure persons. This indicates that the workers who expose to lead may have a high risk to lead intoxication.

All of these workers have no clinical manifestation of lead poisoning. In a group of typesetters, the mean concentration of lead in blood and urine are in a normal level as described by Kehoe. But in a group of battery workers, the mean concentration of blood lead and urinary lead are in an abnormal level but safe. Some of them have high blood lead level (above 70 ug/100 ml.) and high urinary lead content (above 20 ug/100 ml.) but they do not show signs symptoms of lead intoxication at that moment.

From our experience in clinical point of view, we found that only a few patients who exhibit lead poisoning in the alimentary form (abdominal pain), the blood lead level and urinary lead content were in a normal limit as described by Kehoe. The patients with signs and symptoms in the neuro-muscular type (wrist drop) had the amount of lead in blood and in urine in an abnormal but safe as described by Kehoe.

Recently, we found a patient with acute manifestation of lead encephalopathy (unconsciousness and convulsion). His blood lead level was 80 ug/100 ml and urinary lead content was 20 ug/100 ml. The enzyme ALA-Dehydratase was only 7 units (normal = 21-44 units). After treatment with 1.5 gm/day of EDTA for 10 days his clinical findings were dramatically improved.

The problem we are facing now is the unsafe limit of blood lead level and urinary lead content among Thai workers. We can not conclude which level may cause lead intoxication even a large number of the workers from our survey showed high level of blood lead and urinary lead. These workers have never exhibited the signs and symptoms of lead poisoning at all. For our opinion, we thought we should have other parameters, for instance: urine ALA-ALA-Dehydratase, urine coproporphyrin, blood lead and urinary lead as a tool to help us to decide which one is in the critical stage of lead intoxication. Only one or two parameters can not give us the correct interpretation if the clinical manifestation of poisoning is not still developed.

Preparing Hong Kong for Work in Compressed Air

DR. THOMAS K.W. NG
Senior Lecturer Dept. of Community Medicine University of Hong Kong

With the decision to construct the mass transit railway, it is expected that work in compressed air will be carried out in extensive scale in Hong Kong. We have practically no experience in this aspect of occupational health practice. This paper described how we have tried to draft our law to govern work in compress air, based chiefly on the Code of Practice produced in the United Kingdom in 1973 (CIRIA REPORT 44). It seeks to explain the main features in the Hong Kong Factories and Industrial Undertakings (Work in

Compressed Air) Regulations 1975, particularly on the modifications made to suit the Hong Kong conditions. This an important event in the history of occupational health practice in Hong Kong because for the first time we demand employment of full-time occupational health physicians in the construction among the local workers.

Notification of Pneumoconiosis in Hong Kong

BY:
DR. THOMAS K.W. NG
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In 1956, Hong Kong began to have a system for notifying silicosis on a voluntary basis. Up to the end of 1975, a total of 539 cases have been recorded. This paper describes how this system actually functions and discusses to what extend it has contributed towards the understanding of pneumoconiosis in Hongkong since it was originally intended for the notification of silicosis only. From that, it proceeds to examine the problems of control and compensation, particularly on the failure to add pneumoconiosis to the list of occupational diseases in the Hong Kong Workmen's Compensation Ordinance. Finally, recommendation is made to establish a Pneumoconiosis Board in Hong Kong for the purpose of epidemiology study, environmental control and workmen's compensation.

Chromium Content in the Organs of a Chromate Worker Died from Cancer.

DR. SHOSUKI SUZUKI
Associate Professor, Human Ecology
University of Tokyo
KEISUKE HYODO, NOBUHIKO FURUYA
AND KEISUKE MESHIZUKA,
Japan

Chromium, zinc and copper content in the organs of a chromate worker died from cancer were determined.

The worker had been working in a chromate manufacturing factory in Tokyo for about 30 years. On the seventh year of his retirement he suffered from an upper pharyngeal tumor, which was resected. After two years a lung cancer was found, and died in 1975 at the age of 65 years old. As controls, autopsied organs of five old subjects died from cancer were examined. Mean concentration of chromium of five lung samples of the case was about 3.6ppm (wet wt.) which was about 15 times as high that of controls. Kidney, aorta and suprarenal gland also had more than ten times higher concentration of chromium. The other several organs analysed had several times higher concentration of chromium than the controls. Concentrations of zinc and copper were almost same level as controls.

The high organ chromium of the case should come from the work environment, which was speculated extremely contaminated by chromate during his young age.

The Concentration of Cadmium in Hepatoma Among Filipinos

A.L. ALEJANDRINO, M.S. Biochem;
C.B. GOZE, B.S. Chem.
and R.R. PARADERO, B.S. Chem.
Philippine Atomic Energy Commission

The concentration of cadmium in liver hepatoma and normal liver in Filipinos was determined by atomic absorption spectrophotemetry. Using NBS Bovine Liver (SRM 1577) as reference material, a value of 0.28 + 0.025 ug/g dry weight was obtained for cadmium which is close to the certified NBS value of 0.27+0.04 ug/g. The mean percentage recovery for cadmium determination by AAS was 98.38%. A mean value of 2.14+1.58 ug/g Cd/g dry weight was observed for the 12 cases of liver hepatoma analyzed, showing decreased cadmium levels in the cancerous liver compared to the mean value of 12.62 ug Cd/g dry weight observed for apparently normal liver obtained from 10 cases of accidental deaths.

Ocular Foreign Bodies: A Comprehensive Survey of 309 Patients

ULYSSES M. CARBAJAL, M.D.
Carbajal Clinic
Manila, Philippines

This study is based on 309 patients by the author in his 15 years practice in Greater Manila Area and surrounding areas. The patients were mostly Filipinos, male, female and in the ages of 16 to 45, diagnosed and treated in a medical clinic, admitting into the hospital only the cases with severe corneal complications or with intraocular or intraorbital foreign bodies.

The various factors influencing the visual outcome are enumerated and briefly discussed in the light of this material and recommendations made in the management of patients with intraocular foreign bodies.

Mortality and Morbidity Due to Non-Operational Injuries in Malaysian Armed Forces Personnel For The Period 1946 — 1975

LT. COL. (DR.) I. NATARAJAN KMN, PJK
Asst. Director of Medical Services
Headquarters 2nd Malaysian
Infantry Division
Sungai Besi
Kuala Lumpur, Malaysia

The mortality pattern of the Armed Forces of any country would depend on several factors. A subject country under the British Colonial rule until 1957, Malaysia developed the three services of her armed forces in leaps and bounds after attaining full independence. In the wake of its rapid expansion to meet the demands of the nation and the people in defense and national development, the armed forces had lost several men in direct incidents with the enemy, the communist terrorists.

While many had met with such heroic deaths there were twice as many who had lost their lives due to non-operational causes such as motor vehicle accidents, drowning, suicide etc, which are considered generally preventable.

In this presentation the mortality statistics of Malaysian armed forces personnel due to non-operational injuries for the period 1946 — 1975 are analysed, also touching on the permanent physical disabilities of those who had escaped death.

The recorded deaths for the period 1946 1975 are 1177. One third of these deaths only were due to natural causes and two thirds to injuries. Of the deaths due to injuries enemy action accounted for 28% and non-operational injuries accounted for 72%. Motor vehicle accidents constituted the single largest cause followed by Accidental drowning, accidental falls and suicide.

The age distribution of the Malaysian Armed Forces personnel ranges between 20 and 45 yrs. Mortality in this age group among males in the general population of Peninsular Malaysia due to several types of injuries is also analysed and discussed in relation to those of the armed forces personnel. Deaths due to motor vehicle accidents are markedly very high in the armed forces population. Mortality due to suicides in this age group among civil population of Peninsular Malaysia appears to be much more than expected in relation to the armed forces population. No statistics are available separately for drowning in civil population.

Permanent physical disabilities due to non-operational injuries are also discussed in respect of statistics, management and the rehabilitation services in Malaysian Armed Forces.

Lead Poisoning in Thailand

MUKDA TRISHNANANDA, M.D., M.P.H.
Department of Preventive and
Social Medicine
Faculty of Medicine Siriraj Hospital

Ecological aspects of Lead poisoning in Thailand will be presented. There is a considerable population of workers, in a variety of occupations exposed to the inhalation of lead fumes. Gastro-intestinal symptoms are the major clinical manifestations of lead poisoning, lead encephalopathy usually found in children. Elevated urinary Corprophyrin III is probably the simple method as screening test for case finding.

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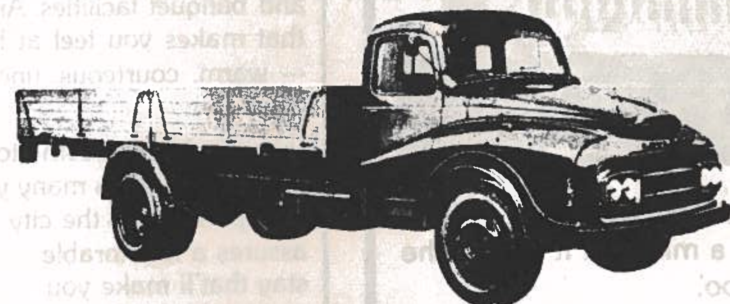

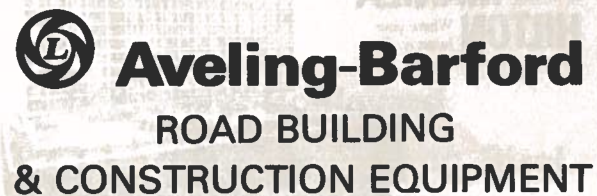

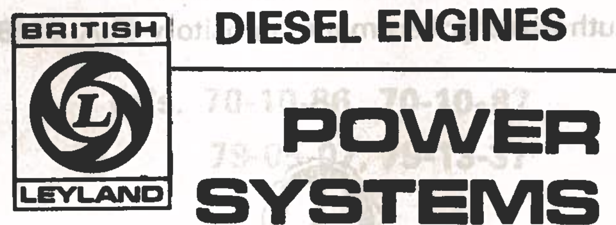

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