平成３年度

帰国研修員フォローアップチーム報告書

―産業医学公開セミナー―

平成４年３月

国際協力事業団
九州国際センター

序　　文

国際協力事業団は、産業医科大学において実施してきた「産業医学集団研修コース」に対するフォローアップ事業の一環として、インドネシア、タイ、フィリピンの3か国で公開技術セミナーを開催した。

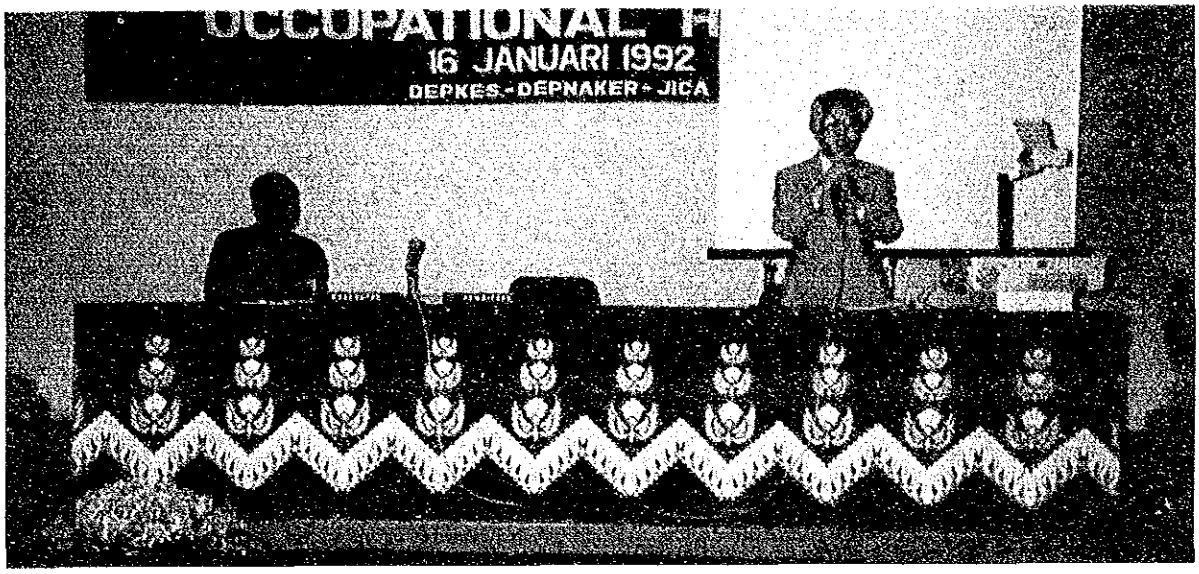
本セミナーでは、対象者を帰国研修員のみならず、医師、科学者などの当該分野の関係者にまで広げ、産業医学の最新の情報及び知識を彼等に提供した。

本報告書はその結果を取纏めたものであり、この報告書が今後の研修コース実施に供しうれば幸いである。

本件の実施に当たっては、関係各位からの多大なるご尽力を頂いた。ここに感謝の意を表する次第である。

平成4年3月

国際協力事業団
九州国際センター
所長　笹野　暉樹

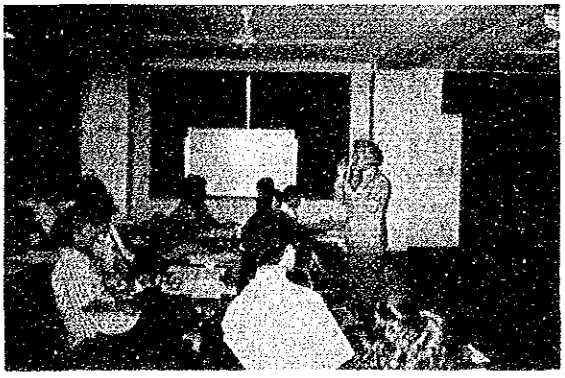


(公開技術セミナー　インドネシア　1月16日)

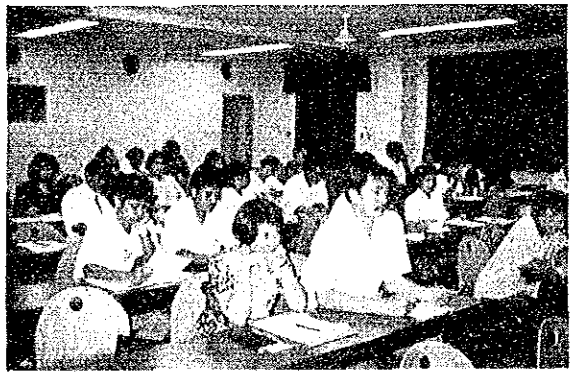
(公開技術セミナー　タイ　1月21日)

(公開技術セミナー　タイ　1月21日)

(公開技術セミナー　フィリピン　1月24日)



(公開技術セミナー　フィリピン　1月24日)



目　　次

Ⅰ．派遣チームの概要

1．派遣目的

本チームは産業医学コース実施中（平成3年度までに7回）、帰国研修員の多いインドネシア、タイ、フィリピンの3か国を訪れ、以下の事項を実施することを目的とする。

(1)帰国研修員の現地活動状況の調査。（わが国で実施した研修の効果を測定）
(2)帰国研修員への技術指導。（本コースで修得した技術の現地でのより効果的な適用を図る）
(3)公開技術セミナーの開催。（帰国研修員および当該分野関係者に産業医学の最新の情報や知識をを提供、また質疑応答を通じ、当該分野の相互理解を深める）
(4)(1)～(3)、本コースに関する要望調査、帰国研修員の所属機関および派遣機関等の関係機関の訪問を通じて、現地の産業医学の現状を把握し、今後の研修プログラムを改善する。

2．団員構成

氏　名	担当業務	所　属　先
吉村健清	団長・臨床疫学	産業医科大学産業生態科学研究所臨床疫学教室
田中勇武	労働衛生工学	産業医科大学産業生態科学研究所労働衛生工学教室
神代雅晴	人間工学	産業医科大学産業生態科学研究所人間工学研究室
福田淳司	業務調整	国際協力事業団九州国際センター研修課

3．調査日程

平成４年１月12日～１月25日（14日間）

日　　程　　表	
12日（日）	福岡発 JL753（10:40） 香港着（13:15） 香港発 GA875（15:30） ジャカルタ着（18:55） 日程等打合せ（プレジデントホテルにて）
13日（月）	Cabinet Secretariat of the Republic of Indonesia 表敬、インドネシア全国安全衛生大会出席
14日（火）	Medical Faculty, University of Indoneasia 訪問、ＪＩＣＡインドネシア事務所訪問、Dr. Soekarno(Director, Occpational Safety and Health, Departement of Manpower)と面談（ホテルインドネシアにて）
15日（水）	Directorate of Community Participation, Ministry of Health表敬、Ministry of Healthで公開セミナーの準備・打合せ、Tebet Community Health Centre 訪問・帰国研修員面談、Faculty of Public Health, University of Indonesia 訪問
16日（木）	公開セミナー開催（Ministry of Health, Ruang Serba Gunaにて）、帰国研修員との会談（ カサブランカレストランにて）
17日（金）	ＪＩＣＡインドネアシ事務所報告、ジャカルタ発 TG414（17:20） バンコック着（21:50）
18日（土）	公開セミナー準備
19日（日）	資料整理
20日（月）	ＪＩＣＡタイ事務所訪問・打合せ、Department of Technical and Economic Cooperation表敬、Ministry of Public Health 主催昼食会、Occupational Health Division, Department of Health, Ministry of Public Health 表敬、National Institute for The Improvement of Working Conditions and Environment and Safety Inspection Division, Department of Labor, Ministry of Interior 表敬
21日（火）	公開セミナー開催（Rajdamnern Room, Princess Hotel にて）ＪＩＣＡ主催レセプション、ＪＩＣＡタイ事務所報告
22日（水）	バンコック発 TG620（10:40） マニラ着（17:10）、ＪＩＣＡフィリピン事務所訪問・打合せ
23日（木）	Special Committee on Scholarships, National Economics and Development Authority 表敬、労働安全衛生センター視察 公開セミナー準備
24日（金）	公開セミナー開催（労働安全衛生センターにて）、ＪＩＣＡ主催レセプション、ＪＩＣＡフィリピン事務所報告
25日（土）	マニラ発 PR300（8:00） 香港着（9:50） 香港発 JL758（14:20） 福岡着（19:40）

4．主要面談者

日時・用件	氏　名（敬称略）	現　　職	面談場所
12日（日） 20:30～22:00 日程等打合せ	梅　井　　勲 木　下　鈞　一 吉　岡　正　弘 半　田　有　通 小　澤　真　一 高　田　裕　彦	中央労働災害防止協会常任理事 労働省産業安全研究所 東レ株式会社環境保安部部長 在インドネシア日本大使館二等書記官 ＪＩＣＡ専門家（労働安全衛生） ＪＩＣＡインドネシア事務所	ﾌﾟﾚｼﾞﾃﾞﾝﾄ ﾎﾃﾙ
13日（月） 10:00～10:40 表敬	D.Buthanudin	Head for Colombo Plan Sub Division, Bureau for Int'l Technical Cooperation, Cabinet Secretariat of the Republic of Indonesia	同　左
14日（火） 12:30～13:10 訪問	Muhamad Djakaria	Professor and Chairman, Department of Radiology, University of Indonesia	同　左
14:00～14:40 訪問・打合せ	高　橋　　昭 山　田　　保 椎　名　のり子 布　施　　淳 高　田　裕　彦	インドネシア事務所所長 〃　　次長 〃　　職員 〃　　職員 〃　　職員	同　左
15:30～16:10 表敬	Dr. Soekarno	Director, Occupational Safety and Health, Department of ManPower	ﾎﾃﾙ ｲﾝﾄﾞﾈｼｱ

15日（水） 9:00～10:20 表敬・公開セミナー打合せ	Dr. Widyastuti	Head, Directorate of Community Participation, Ministry of Health	同　左
11:00～12:00 訪問・調査	Poppy Trisnawaty Hendrawan ('89研修員)	Medical Doctor, Tebet Community Health Centre	同　左
14:00～14:40 訪問	Sudiyanto Kamso	Associate Dean for General Administration, Faculty of Public Health, University of Indonesia	同　左
16日（木） 19:00～21:30 帰国研修員との会談	R. Suprapto ('85研修員) Petrus Gito Nario ('86研修員) Poppy Trisnawaty Hendrawan ('89研修員) Erna Tresnaningsih Nursalim	Doctor of the Health Centre, National Land Board Chief of Traditional Health Manpower Section, Directorate of Community Participation, Ministry of Health Medical Doctor, Tabet Community Health Centre Directorate of Community Participation, Directorate General of Community Health, Ministry of Health	ｶｻﾌﾞﾗﾝｶ ﾚｽﾄﾗﾝ
20日（月） 9:00～9:40 訪問・打合せ	阿　部　信　司 芦　野　　誠 ｽﾏﾆｰ　ﾒｯﾀﾏﾀﾝ	ＪＩＣＡタイ事務所所長 〃　　職員 〃　　職員	同　左

11:00～12:00 表敬	Apinan Patiyanon Tipsuda Nopmongcol 稲　垣　富　一	Director Division, DivisionⅢ, DTEC Chief, Japan Sub-Division, DTEC タイ国総理府経済技術協力局技術協力調整	同　左
13:30～14:30 表敬	Yuwadee Jomphituck Chaiya Pongpanich	Head of Training and dissemination Section, Occupatinal Health Division, Department of Health, Ministry of Public Health Dr. Occupatinal Health Division, Department of Health, Ministry Public Health	同　左
15:30～16:30 表敬	Chaiyuth Chavalitnitikul Nuttawat Montewan Sumalee Chanachanmongkol ('89研修員) Piyaporn Chautipun ('90研修員)	Director, NICE, Department of Labor, Ministry of Interior Chief, Legal Affairs Section Occupational Safety and Inspection Division, Department of Labor, Ministry of Interior Labor-Safety Inspector, NICE Department of Labor, Ministry of Interior Occupational Safety and Inspection Division, Department of Labor, Ministry of Interior	同　左

22日（水） 17:20～18:00 訪問・打合せ	飯　島　正　孝 大　川　晴　美	ＪＩＣＡフィリピン事務所所長 〃　　職員	同　左
23日（木） 10:00～10:40 表敬	Carmencita Juan Guiyab Lirio Laguilles	Executive Officer, Supecial Committee on Scholarships, NEDA Staff, Supecial Committee on Scholarships, NEDA	同　左
13:00～14:00 視察	大　内　征　紀 圓　尾　忠　義	労働安全衛生センター （チーフアドバイザー） 労働安全衛生センター（業務調整）	同　左

Ⅱ. 公開技術セミナーの概要

1．実施状況

公開技術セミナーの日時、場所、参加者、プログラムについては別記（国別）のとおり。

方法：

プログラムに従い、下記の要領で公開技術セミナーを実施した。

（1）登録の際、英文サマリーを配布。

（2）講演に先立ち、ＪＩＣＡの活動をＶＴＲで紹介する。

（3）講演終了後、参加者との質疑応答を行う。

（4）セミナー終了時、参加者にＣｅｒｔｉｆｉｃａｔｅを授与する。

（5）登録の際、アンケートを配布、講演終了後、回収。

OPEN TECHNICAL SEMINAR

IN THE FIELD OF
OCCUPATIONAL HEALTH
(IN INDONESIA)

Duration : January 16, 1992 (Thursday)

Place : 3rd Floor Blok A "Ruang Rapat Pimpinan"
Ministry of Health
Address : Jl. H.R. Rasuna Said Kav.X 5 No.4-9
Jakarta Selatan
Phone : 5201595, 5201598, 5204395

PROGRAMME

8:00 - 8:30 Registration

8:30 - 8:45
- Greeting and Opening Annauncement by Mr. Akira Takahashi, Resident Representaive of JICA Indonesia office
- Opening remarks by Professor Yoshimura, the Team Leader
- Opening remarks by Mr. Darwanto, Secretary General of Ministry of Manpower
- Opening remarks by Dr. Moch. Harly Soeradi, SKM, Secretary General of Ministry of Health

(Break)

8:45 - 9:15 Out line of JICA and its activities
Lecture by Mr. Atsushi Fukuda, Staff of Training Division, Kyushu International Centre, Japan International Cooperation Agency

9:15 - 9:45 Report on the Current Situation Occupational Health in Indonesia
- Lecture by Dr. Widyastuti Sunata Wibisana, Msc.PH, Head of Directorate of Community Participation, Ministry of Health
- Moderator by Dr. Payaman J. Simanjuntak, Director General of Industrial Relation and Labour Standard, Ministry of Manpower

(Break)

10:00 - 11:40 - Lecture by Professor Yoshimura

- Moderator by Dr. Nyoman Kumara Rai, MOH, DTPH, Directore of Planning Bureau, Ministry of Health

Title: "The Role of Epidemiology in Occupational Health"

- An Epidemiological Approach to Occupational Cancer -

(Lunch Break)

12:40 - 14:20 - Lecture by Professor Tanaka

- Moderator by Dr. Broto Wasisto, MPH, Director General of Medical Care, Ministry of Health

Title: "The Role of Industrial Hygiene in Occupational Health"

- Noise and Noise Control -

(Break)

14:35 - 16:15 - Lecture by Professor Kumashiro

- Moderator by Dr. S.L. Leimena, MPH, Director General of Community Health, Ministry of Health

Title: "The Role of Ergonomics in Occupational Health"

- An Ergonomics Approach to VDT (Visual Disply Terminal) Operation -

16:15 - 16:45 General discussion

16:45 - *Presentation of Certificates to the attendants

Closing address by Professor Yoshimura

(* To the attendants, a certificate of attendance will be anaunced)

This Programme is performed as a part of the technical follow-up service by Kyushu International Centre of Japan International Cooperation Agency (JICA)

OPEN TECHNICAL SEMINAR IN THE FIELD OF OCCUPATIONAL HEALTH
参加者リスト

INDONESIA

No.	Name	Present Post
1	Dr.Soekarno	Director of Occupational Safety and Heatlh, Ministry of Manpower
2	Mr.Tumber Saut Parulian Siahaan	Staff Sub-Directorate Deveopment of Occupational Safety & Health, Directorate of Occupational Safety & Health, Ministry of Manpower
3	Mr.Pungky Widiatmoko	Section of Institutions & Expertises QSH Development, Directorate of Occupational Safety and Health, Ministry of Manpower
4	Mr.Suripto	Staff Directorate of Community Particiipation, Directorate of Community Participation, Ministry of Health
5	Mr.Petrus Gitomario	Chief of Traditional Health Manpower Section, Directorate of Community Participation, Ministry of Health
6	Ms.Ika Hendryaswati	Directorate of Community Participation, Directorate General of Community Health, Ministry of Health
7	Ms.Erna Tresnaningsih Nursalim	Directorate of Community Participation, Directorate General of Community Health, Ministry of Health
8	Ms.Retno Widowati MD Soebaryo	Head do Sub-Department Allergy - Immunology, Department of Dermato - Venerology, Medical Faculty, Indonesia University
9	Mr.Muchtar Armen	Head of Clinical Pharmacology Unit, Dr. Cipto Mangunkusumo Hopital
10	Dr.Basri Abbas	Instalasi Gawat Darurat, RSCM
11	Ms.Rita Wahidi Kemala, SKP	Emergency Department, Dr. Cipto Mangunkusumo Hospital
12	Dr.Djoko Widodo	Interna, Dr. Cipto Mangunkusumo Hospital
13	Dr.Nanang Sukmana	Interna, Dr. Cipto Mangunkusumo Hospital
14	Ms.Poppy T. Hendrawan	Tebet Community Health Center, Ministry of Health
15	Mr.Djuhari Surya Putra	Chief of Section Health Manpower Mobility Health Division, Ministry of Health West Jawa Regional Office

No.	Name	Present Post
16	Dra.Rosjida	Head of Occupational Health Section, Ministry of Manpower West Jawa Regional Office
17	Ms.Rosa Christiana Ginting	Directorate of Community Participation, Directorate General of Community Health, MOH
18	Mr.Sugiharto Supari	Environmental Health Section, Directorate of Community Participation, Minstry of Health
19	Ms.Louise Ferdinandus	Directorate of Cuommunity Participation, Directorate General of Community Participation, Ministry of Health
20	Ms.Widyastuti Wibisana	Head of Directorate of Community Participation, Ministry of Health
21	Dr.Bedong Mohammad Ali	Head of Section Labour Health Service of the Labour Health Inspector- ate Coordination(DBPNKK) Directorate General BINAWAS, Ministry of Manpower
22	Mr.A. Chalik Jaman	Chief of Section of Industrial Hygiene Working Environment, Ministry of Manpower
23	Mr.Dahlan Permono	Indonesian National Safety and Health Council, Ministry of Public Work
24	Dr.H. Aminuddin	Occupational Health and Industrial Hygiene, Ministry of Manpower
25	Mr.Nasrul Sjarief	Vice Secretary, The Indonesian National Safety and Health Council, Ministry of Manpower
26	Mr.Suprapto MD	Doctor of the Health Centre, National Land Board
27	Mr.Harinto Oetaril	Health Division, State Secretariat of the Repubulic of Indonesia
28	Ms.Sri Sumarti Susworo	Health Division, State Secretariat of the Republic of Indonesia
29	Prof.Dr. Karnen Garna Baratawidjaja	Head of Division of Allergy and Immunology, Department of Medicine, Faculty of Medicine, Indonesia University
30	Dr.Hamdani Zain, M. Eng.	Head of Medical Physics Department, Indonesia University

No.	Name	Present Post
31	Drs.Anwar S. Ibrahim. M. Eng. Sc.	Medical Physics Department, Indonesia University
32	Mr.Gendrowahyuhono Saronodipurbo	Researcher, National Institute of Health Research and Development, Ministry of Health
33	Mr.Bambang Heriyanto	Researcher, National Institute of Health Research and Development, Ministry of Health
34	Mr.M. Edhie Sulaksono	Researcher, National Institute of Health Research and Development, Ministry of Health
35	Dr.Yanti Wijaya	Research Scientist, National Institute of Health Research & Development, Ministry of Health
36	Ms.Magdarina D.A.	Research Scientist, National Institute of Health Research & Develop- ment, Ministry of Health
37	Dra.Mishadiarly Ali Syarif	Researcher, Communicable Deseases Research Centre, National Institute of Health & Development, Ministry of Health
38	Ms.Siti Sundari Yuwono	Researcher, Communicable Deseases Research Centre, National Institute of Health & Development, Ministry of Health
39	Ms.Rabea Pangerti Jekti DVM	Researcher, Communicable Deseases Research Centre, National Institute of Health & Development, Ministry of Health
40	Ms.Sirait Anna Maria, SKM	Researcher, National Institute of Health Research & Development, Ministry of Health
41	Ms.Ratih Oemati, AFM	Researcher, National Institute of Health Research & Development, Ministry of Health
42	Ms.Rustika	Researcher, National Institute of Health Research & Development, Ministry of Health
43	Ms.Ekowati Rahajeng, SKM	Researcher, National Institute of Health Research & Development, Ministry of Health
44	Ms.Toni Murwanto	Researcher, National Institute of Health Research & Development, Ministry of Health
45	Dr.Budiman	Faculty of Medicine, Indonesia University

No.	Name	Present Post
46	Ms.Rusjda Hadjerat	Directorate of Community Participation, Directorate General of Community Participation, Ministry of Health
47	Ms.Supraptini, SKM	Researcher, Healht Ecology Research Centre, Ministry of Health
48	Ms.Djarismawati, SKM	Researcher, Healht Ecology Research Centre, Ministry of Health
49	Dra.Athena Anwar	Researcher, Healht Ecology Research Centre, Ministry of Health
50	Drh.Rita Marleta Dewi	Researcher, Healht Ecology Research Centre, Ministry of Health
51	Ms.Lucia Malem Tarigan	Researcher, Research and Development Institute, Ministry of Health
52	Drs.I Ketut T. Riyasa	Researcher, Puslit P.T.M., Research and Development Institute, Ministry of Health
53	Mr.Satmoko Wisaksono	Head Section of Hazardous Substances, Drug and Food Control
54	Dr.Sukri Sahab	Ministry of Manpower
55	Ms.Rahjati	Student, Occupational Health Department, Faculty of Public Health, Indonesia University
56	Ms.Tiur Riana K. Samosir	Student, Occupational Health Department, Faculty of Public Health, Indonesia University
57	Ms.Wiwiek Kusumastuti	Student, Occupational Health Department, Faculty of Public Health, Indonesia University
58	Ms.Evindiyah Prita Dewi	Student, Public Nutirition Department, Faculty of Public Health, Indonesia University
59	Ms.Elviyanti Martini	Student, Public Nutirition Department, Faculty of Public Health, Indonesia University
60	Ms.Lusi Wachidah Widawati	Student, Public Nutirition Department, Faculty of Public Health, Indonesia University

No.	Name	Present Post
61	Mr.Setyo Tyas Jarwanto	Student, Occupational Health Department, Faculty of Public Health, Indonesia University
62	Mr.Sholikhin Jawadal Furqon	Environmental Health, FKM-UI
63	Ms.Rini Haryati	Student, Occupational Health Department, Faculty of Public Health, Indonesia University
64	Ms.Rita Anggreni	Student, Occupational Health Department, Faculty of Public Health, Indonesia University
65	Mr.Gunawan Sandy	Student, Occupational Health Department, Faculty of Public Health, Indonesia University
66	Mr.Husein Habsy	Student, Occupational Health Department, Faculty of Public Health, Indonesia University
67	Mr.Yusuf Rifai Romli	Student, Environmental Health, FKM UI
68	Mr.Baequni	Student, Occupational Health Department, Faculty of Public Health, Indonesia University
69	Ms.Lusye Suparman	Student, Occupational Health Department, Faculty of Public Health, Indonesia University
70	Mr.Usep Salehudin	Student, Epidemiology, Faculty of Public Health, Indonesia University
71	Mr.Kurniawan Rachmadi	Student, Health Education & Behavioral Science, Faculty of Public Health, Indonesia University
72	Mr.Mangisi Raja Simarmata	Student, Occupational Health Department, Faculty of Public Health, Indonesia University
73	Mr.Rahman Abdul	Student, Occupational Health Department, Faculty of Public Health, Indonesia University
74	Mr.Sahid Kuntoro Srisandono	

OPEN TECHNICAL SEMINAR

IN THE FIELD OF
OCCUPATIONAL HEALTH
(IN THAILAND)

Date: January 21, 1992

Place: Rajdamnern Room, Princess Hotel

PROGRAMME

07.45 - 08.15 Registration

08.15 - 08.30 Greeting and Opening Address by Mr. Nobuji ABE, Resident Representative, JICA Thailand Office and Professor Yoshimura, the Team Leader

08.30 - 09.00 Outline of JICA and its activities by Mr. Atsushi FUKUDA

09.00 - 09.10 Introduction of Thai Distinguished Speaker

09.10 - 09.40 Current Domestic Report in Occupational Health in Thailand by Dr. Chaiyuth Chavalitnitikul, Director of NICE, Department of Labour

09.40 - 10.10 Current Domestic Report in Occupational Health in Thailand by Ms. Yuwadee Jompituck, Head of Training and Disemination Section, Occupational Health Division, Department of Health

10.10 - 10.20 Coffee Break

10.20 - 12.20 Lecture by Professor Yoshimura

Title: The Role of Epidemiology in Occupational Health

- An Epidemiological Approach to Occupational Health

12.20 - 13.10 Lunch

13.10 - 15.10 Lecture by Professor Tanaka

Title: The Role of Industrial Hygiene in Occupational Health

- Noise and Noise Control -

15.10 - 15.30 Coffee Break

15.30 - 17.30 Lecture by Professor Kumashiro

Title: The Role of Ergonomics in Occupational Health

- An Ergonomics Approach to VDT

(Visual Display Terminal) Operation -

17.30 - 17.40 Break

17.40 - 18.30 General Discussion

18.30 - Presentation of Certificates to the attendants, Closing address by Professor Yoshimura, and Friendship Party

OPEN TECHNICAL SEMINAR IN THE FIELD OF OCCUPATIONAL HEALTH
参加者リスト

THAILAND

No.	Name	Present Post
1	Ms.Ladda Thumkarun	Department of Health
2	Ms.Wanpen Patcharatrakul	Department of Health
3	Ms.Preeyanuch Buranasomphob	Department of Health
4	Mr.Siriwan Chancharoen	Department of Health
5	Mr.Piti Pardarwong	Department of Health
6	Ms.Yuwadee Jompitak	Department of Health
7	Ms.Malee Mongkolchaipuk	Department of Health
8	Ms.Saijai Pinijvechakarn	Department of Health
9	Ms.Soisuda Kesornthong	Department of Health
10	Ms.Praphasri Termvidchakorn	Department of Health
11	Ms.Maiporn Pushpakom	Department of Health
12	Ms.Narimon Tandhanskul	Department of Health
13	Mr.Kajonsak Watanamongkonlap	Department of Health
14	Ms.Narintra Limvisist	Department of Health
15	Mr.Somchai Yingsom	Department of Health

No.	Name	Present Post
16	Ms.Saengchan Anantamee	Department of Health
17	Ms.Sasinadda Suwanno	Department of Health
18	Mr.Narong Neatsarika	Department of Health
19	Ms.Varasri Sitalapruek	Department of Health
20	Ms.Somchint Pilouk	Department of Health
21	Ms.Thongpunchung Intaraluks	NICE
22	Mr.Prakob Bunsawang	NICE
23	Ms.Karnchana Karnviroj	NICE
24	Ms.Jiranud Kongsook	NICE
25	Ms.Kanokkarn Dhuvabhark	NICE
26	Mr.Chatchai Pataramongkonrit	NICE
27	Ms.Waraporn Daowerakul	NICE
28	Ms.Vorawan Chaimuang	NICE
29	Ms.Sumalee Chanacharnmongkol	NICE
30	Ms.Sudthida Krungkraiwong	NICE

No.	Name	Present Post
31	Ms.Chotima Sribuaiam	NICE
32	Ms.Ladda Tangjintana	Occupational Safety and Health Inspectorate
33	Ms.Piyaporn Chautipun	Occupational Safety and Health Inspectorate
34	Mr.Arkom Maison	Occupational Safety and Health Inspectorate
35	Mr.Kiattisak Boonsanong	Occupational Safety and Health Inspectorate
36	Mr.Tornchaya Namngern	Occupational Safety and Health Inspectorate
37	Mr.Amnuay Poorahong	Occupational Safety and Health Inspectorate
38	Ms.Jutapanit Glinfuang	Occupational Safety and Health Inspectorate
39	Mr.Narin Boonprom	Occupational Safety and Health Inspectorate
40	Mr.Bunleng Kokkhuntod	Occupational Safety and Health Inspectorate
41	Mr.Somnuek Phakpanich	Occupational Safety and Health Inspectorate
42	Ms.Benjamas Thongkaimook	Seagate
43	Ms.Nolvadee Liangsoontornsids	Seagate
44	Ms.Pattamaporn Chaiprapa	Seagate
45	Ms.Patratipa Kanchanaguha	Department of Labour

No.	Name	Present Post
46	Ms.Ariya Limsuwat	Department of Labour

OPEN TECHNICAL SEMINAR

IN THE FIELD OF
OCCUPATIONAL HEALTH
(IN PHILIPPINES)

Date : January 24, 1992 (Fri)

Place : Address: Occupational Safety and Health Center
North Avenue Cor. Agham Road,
Diliman, Quezon City
Phone: 99-67-27

PROGRAMME

7:45 - 8:15 Registration

8:15 - 8:30 - Greeting and Opening Announcement by the President of JICA Philippines Office Opening remarks by Professor Yoshumura, the Team Leader

8:30 - 9:00 Outline of JICA and its activities

(Break)

9:10 - 10:10 Activity Report from The Occupational Safety and Health Center

(Break)

10:20 - 12:20 Lecture by Professor Yoshimura

Title: 'The Role of Epidemiology in Occupational Health'

- An Epidemiological Approach to Occupational Cancer -

(Lunch Break)

13:10 - 15:10 Lecture by Professor Tanaka

Title: 'The Role of Industrial Hygiene in Occupational Health'

- Noise and Noise Control -

(Break)

15:30 - 17:30 Lecture by Professor Kumashiro

Title: 'The Role of Ergonomics in Occupational Health'

- An Ergonomics Approach to VDT (Visual Display Terminal) Operation -

(Break)

17:40 - 18:30 General discussion

18:30 - *Presentation of Certificates to the attndants

Closing address by Professor Yoshimura

Friendship Party

(* To the attendants, a certificate of attendance will be awarded)

This programme is performed as a part of the technical follow-up service by Kyushu International Centre of Japan International Cooperation Agency (JICA).

OPEN TECHNICAL SEMINAR IN THE FIELD OF OCCUPATIONAL HEALTH
参加者リスト

PHILIPPINES

No.	Name	Present Post
1	Mr.Hellsilasi L. Magaway	Bureau of Working Conditions, Department of Labour and Employment
2	Ms.Agnes A. Ramos	Occupational Safety and Health Center
3	Ms.Ma Carmen Valencok	Bureau of Working Conditions, Department of Labour and Employment
4	Mr.Erick Igual	Burearu of Working Conditions, Department of Labour and Employment
5	Ms.Ma. Lourdes S. Pimentel	Occupational Safety and Health Center
6	Ms.Ma. Condordia B. Cwello	Occupational Safety and Health Center
7	Ms.Ma. Luisa Ramos-Tingo	Institute for Occupational Safety and Health Development
8	Mr.Generoso T. Payongayoung	Occupational Safety and Health Center
9	Ms.Clarissa G. Yu	Occupational Safety and Health Center
10	Mr.Victor Sd.Ortega	Occupational Safety and Health Center
11	Ms.Imelda Meneses	Bureau of Working Conditions, Department of Labour and Employment
12	Ms.Ma. Lourdes B. Buelva	Occupational Safety and Health Center ECD
13	Mr.Ma. Beatrice G. Villanueva	Occupational Safety and Health Center
14	Mr.Ariel Castro	Filipino Labour Advocates on Occupational Safety and Health
15	Mr.Felixberto L. Querijero	Bureau of Working Conditions

No.	Nam	
16	Ms.Elena C. Querijero	Bureau of Working Conditions
17	Ms.Cristina A. Liveta	Bureau of Working Conditions
18	Ms.Ma. Jesusa Gatpandan	Occupational Safety and Health Center
19	Ms.Belinda H. Santibanez	Occupational Safety and Health Center
20	Ms.Elsa Villarente	Occupational Safety and Health Center
21	Mr.Elmer G. Benedictos	Department of Health
22	Mr.Mindo S. Bahia	Department of Health
23	Mr.Reynaldo A. Surdilla	Occupational Safety and Health Center
24	Ms.Susan R. Yu-Sison	Occupational Safety and Health Center
25	Ms.Juliana D. Marasigan	Occupational Safety and Health Center
26	Mr.Rene N. Timbang	NCDCS, Department of Health
27	Ms.Nelia Granaducos	Occupational Safety and Health Center
28	Mr.Francisco Estacio	Employees Compensation Commission
29	Ms.Meditrina B. Vergel	Bureau of Working Conditions
30	Mr. Fleuc'dao J. Castro II	Occupational Safety and Health Center

No.	Nam	
31	Ms.Cecilia R. Pelayo	Philippine College of Occupational Medicine
32	Mr.Manuel Wilson O. Estrada	Bureau of Working Conditions
33	Ms.Sharon S. Regoso	Occupational Safety and Health Center
34	Ms.Ma. Imelda S. Santos	
35	Mr.Dominic Paul T. Piamonte	Health Division-CCS, Ateneu
36	Ms.Redempta V. Aquino	Bureau of Working Conditions
37	Mr.Emiliano I. Mecado	Occupational Safety and Health Center
38	M .Marilon D. Renales	Dept. of Env. and Occupational Health
39	Ms.Rose Unnbao	Occupational Safety and Healt(HCD)
40	Mr.Noel Espinosa	Occupational Safety and Healt(HCD)

2．講義内容及び討議内容

〈臨床疫学　吉村健清〉

【 Summary of the Lecture 】

Lecture was given to participants, stressing to the following points.

1．What is epidemiology?

2．What can be done with epidemiology?

3．Basic approach in epidemiology.

4．Epidemiological approach to occupational cancer.

5．Risk assessment and risk management in occupational health.

Through the lecture, it was stressed that figure is very important to take further action, and that epidemiologic approach can be used to evaluate the fact observed at work site and to interpret the figures or statistics obtained in unbiased way.
Two examples of hepatoangiosarcoma among PVC plant workers and lung cancer among gas workers have been used in the lecture.

Then, it was told that epidemiological methods play on important role to set work environment criteria using 4 step risk assessment approaches.

Finally, it was noted that epidemiological thinking way should be a basic approach to realize the fact and should be used in various professions in occupational health.

【講演終了後の参加者からのコメント】

《Jakarta》

1．一日のみでなく、1～2週間のコースとして実施してほしい。この場合、今回の3分野それぞれ別々のコース設定をすることが希望された。

2．最近の実例をあげて、どのようにアプローチしたかを討論形式でやってほしいとの要望があった。

3．産業医学の最新情報を送ってほしいとの要望があった。ＪＩＣＡの担当者からもし日本から情報が送られてくれば、研修員に送るとの発言があった。

4．産業医学のいろいろな分野のコンサルタントを送ってほしいとの要望があった。

5．3人の講演に対する感想を聞くと、非常に印象的かつ有益だったとのコメントを得た。

《Bangkok》

1．このようなセミナーを毎年かつ、数日にわたって実施してほしい。

2．企業ならびに労働者からなかなか正しい情報が得られないのが現状である。正確な情報を得るためにはどうしたらよいかとの質問があった。正確な情報を得るためには調査者と被調査者の間に信頼関係があるか否かで決まると答えた。

3．懇親会の時にも3人に対し種々講義内容に関する質問があり、タイ国での産業保健への取組みが非常に熱心なことが感じられた。

《Manila》

1．最近話題になった産業保健の問題についてどのように取り組んだかを聞きたかった。

2．一日では不十分で、コースとして毎年実施してほしいとの要望があった。

〈労働衛生工学　田中勇武〉

《インドネシア》

騒音の定義についてまで述べ、騒音に関係する以下の基本事項について述べた。

1．騒音と音の差異
2．音の基本的事項（周波数・速度・振巾・音の大きさ）
3．音の大きさ（音圧レベル・出力レベル）
4．音圧レベルと騒音レベルの差異
5．騒音レベルの測定法
6．複数の騒音源を持つ場合の計算法

出席者に質問しながら講義を進めた。

《タ　イ》

騒音の定義をまず述べ、音に関する基礎知識について理解を求めた。まず、周波数、波長、音の強さ、音の速度、ついで、音の大きさのレベルについて話す。耳に聞こえる周波数は20～20,000Hz、大きさは1～10^{-12} W/㎡、音の強さのレベルとしては0～120dBである。

ついで騒音レベルと音の大きさのレベルの差異について話す。音の強さのレベルは環境中における音の強さのレベルであり、騒音レベルは耳にきこえた音の強さのレベルである。このため両者の間には違いがみられ、低周波領域で特に大きな差異がみられる。

ついで、音の強さのレベルあるいは騒音レベルの和あるいは差の計算法について述べた。今一台の機械があり、さらに一台新しく加えた時に何dBの増加があるのか具体的に計算方法を示した。

また、騒音の許容基準についても説明し、これを遵守するための方策を示した。

衝撃音に対する質問があったが、これについては講義の時間が足りなくて説明していないが、これについて丁寧に説明するとさらに1時間入用である旨述べ、次の機会にゆずることにした。

《フィリピン》

講義の内容はインドネシア・タイと変わらないが英語圏のためだろうか、講義中の質問が多い。わからないところはキチンと聞くという姿勢だ。ここにはＪＩＣＡからの専門家が多数きているので講義は不用ではないかと思ったが意外に基本的質問が多かった。

講義はstep by stepで１ページづつ理解できたか確認しながら進めたので理解してもらえたと思う。さらに、こちらから問題を与え、解答も得たのでよく理解していることが確認できた。

ここでも間けつ騒音について質問があって、これはどこの国でも重要な問題になっていると感じたし、この種の騒音に対する基本的知識がないことがわかった。その他、騒音ばかりでなく局所排気の講義もしてくれという要望があった。

〈人間工学　神代雅晴〉

1．於　Jakarta,　1月16日（木）

1）講義概要：主に以下の項目について講義した

(1)　人間工学とは何か

(2)　労働安全衛生領域における人間工学の必要性

－産業医学の始祖といわれているRamazzini の考え方と今日の人間工学の考え方との同意点、相違点を比較しつつ、特に今日においてはproductivityという概念を導入しなければならないことを強調

(3)　主題である VDT作業についての概要を述べつつ、オフィス・オートメーション下における労働の人間化について、作業管理、作業環境管理、運用の法則の観点から、“誰が”，“何を”，“どのようにすれば良いか”を述べる。

(4)　VDT 作業に関する労働衛生学的対策を講じる場合、 VDT作業の種類別分類の必要性を述べ、それぞれの仕事の種類について問題解決への糸口が異なることを強調

(5)　データ入力作業者に特有な５つの身体症状の訴えを紹介し、「何故このような訴えが生じるのか？」「どのような対策が考えられるか」等のＱ＆Ａをする。

(6)　VDT 作業時の姿勢について、現場のスライド写真を紹介しながら「悪い作業姿勢とは何か？」「どのような筋骨格系障害が生起されるのか」「腰痛発症への要因は」等々についてＱ＆Ａの方式で進めた。

(7)　作業姿勢改善のための６つのキーポイントを提示しつつ、作業姿勢改善手法について述べる。

(8)　VDT ワーク・ステーション設計の方法について述べる。加えて、照明環境（照度　輝度・グレア対策）についても述べ、改善の方法として“改善経費を充分につぎこんだ場合”，“改善経費をほとんど要しない場合”，“改善経費はないが充分なスペースがある場合”等に分けて具体的対策案を提示した。

2）講義の進め方

あらかじめ準備していた内容は、上記に加えて「テクノストレス」及び「VDT 作業についての総括的調査手法のあり方」であったが、時間不足のためこれらの内容は削除した。講義途中、Ｑ＆Ａで充分な時間をかけたことと、私の講義終了後、ただちに閉会ということもあって質問はなかった。

3）感　想

受講生の中で VDT作業に関する知識水準に大きな差があった。事前にどのような領域の人々が参加するのかを知っておきたかった。講義終了後、数名の参加者からインドネシアにおける人間工学研究及び人間工学的対策の必要性を訴えられ、手始めとして、もっと一般的な人間工学総論を広範囲の人々に聞かせて欲しいとの要望が出された。

色々な話を総合すると、この国においては人間工学領域における一つのトピックスを講義するよりも、この国の人間工学研究を進めていくリーダーの養成が必要な感じである。

2．於　Bangkok.　1月21日（火）

1）講義概要：　Jakartaと同様

2）受講生からの質問

(1)　具体的に VDT作業に関する調査を立案するにあたって、 VDT作業をどのように分類すれば良いのかについての質問があった。

(2)　VDT 装置から発せられる放射線障害についての質問があった。

3）感　想

Jakarta における講義で、時間が足りなく、 VDT作業に関する話が充分出来なかったので、講義開始時に人間工学の概要を講義する必要があるか否かについて受講生にたずねた。その結果、半数以上が人間工学という言葉は知っているものの、人間工学とは何かについて知らないとの回答から、Jakarta と同様の講義手順で進めた。ここでも受講生間のレベルの差が認められた。

しかし、人間工学の知識を吸収したいという意欲は極めて高く、講義中におけるＱ＆Ａも活発であった。総じて、この国における VDT問題への対処は緒についた段階にあると感じられた。

先進国における成功、失敗例を早急に教え、一日も早く労働衛生対策がほどこされるようにガイドライン作成等の援助をする必要があると考えられる。又、NICEから参加した受講生は実際に現在進めている VDT作業調査の手法、及び一部のデータを持参して来ており、懇親会の折り個別指導を申し込まれた。お蔭で、その他多くの受講生と懇談するチャンスが失われた。

さらに、多くの受講生から１週間程度の人間工学セミナーを開催して欲しいとの要望が出された。そこで ASEAN人間工学会があり、インドネシア、シンガポール、タイにも数名の人間工学者がいるので、 ASEAN人間工学の活動を活発にするように助言し、私からも ASEAN人間工学者に手紙を書いておくことを約束した（追記．帰国後、直ちに ASEAN人間工学会事務局長に手紙を出した結果、彼から早急に検討する旨の返信をもらっている）。

3．於　Manila，1月24日（金）

1）講義概要：Jakarta，Bangkok とほぼ同様

2）受講生からの質問

VDT作業に関しては質問がなく、人間工学全般についての質問を受けた。

(1) 人間工学の調査測定技法の中で、調査機器がない場合のヒヤリング手法、観察技法の概要を紹介したことについて具体的、かつ詳細なテクニックをたずねられた。

(2) メンタルワークロードの測定及び評価方法についての生理学的な方法についてたずねられた。

(3) 夜勤、交替制勤務のシフト編成について最も良い編成のあり方を問われた。

3）感　想

ここでもやはり、人間工学セミナーの開催を要望された。特に、人間工学的な安全対策のあり方、重量物搬送に伴う腰痛等をはじめとする筋骨格系障害の防止対策についての人間工学的知識を欲しているようだ。

人間工学に関する関心は極めて高いが、人間工学を指導する人がこの国にはいないようだ。

3．セミナーの評価及び成果（Questionnaire から）

3－1．インドネシア

回収したアンケート（37名）の分析結果は以下のとおり。

a　セミナーのレベル

too basic	just right	too advanced	no answer
11	25	0	1

b　興味のあった講義（複数回答あり）

A	B	C	D
8	7	13	7

A：The Role of Epidemiology in Occupational Health

B：The Role of Industrial Hygiene in Occupational Health

C：The Role of Ergonomics in Occupational Health

D：All

c　現地の産業医学分野で最も重要な問題はなにか（複数回答あり）

産業医学分野の情報、知識等の不足	14
大気汚染などの環境汚染	7
産業医学分野の研修不足	5
職場環境の改善	5
職業病対策	4
その他	17

d　その他

セミナーの期間の延長、当該分野のセミナーの開催の増加をもとめる意見が多い。

3－2．タ　イ

回収したアンケート（31名）の分析結果は以下のとおり。

a　セミナーのレベル

too basic	just right	too advanced	no answer
2	28	1	0

b　興味のあった講義（複数回答あり）

A	B	C	D
4	6	13	15

A：The Role of Epidemiology in Occupational Health

B：The Role of Industrial Hygiene in Occupational Health

C：The Role of Ergonomics in Occupational Health

D：All

c　現地の産業医学分野で最も重要な問題はなにか（複数回答あり）

化学物質・薬品等の使用による病気、その安全対策	13
産業医学分野の情報、知識等の不足	5
騒　音	5
腰痛、背痛	4
事　故	4
その他	12

d　その他

セミナーの期間の延長、当該分野のセミナーの開催の増加、企業・大学の産業保健関係者が参加したセミナー開催を求める意見が多い。

3－3．フィリピン

回収したアンケート（35名）の分析結果は以下のとおり。

a　セミナーのレベル

too basic	just right	too advanced	no answer
0	35	0	0

b　興味のあった講義（複数回答あり）

A	B	C	D
3	9	10	22

A：The Role of Epidemiology in Occupational Health

B：The Role of Industrial Hygiene in Occupational Health

C：The Role of Ergonomics in Occupational Health

D：All

c　現地の産業医学分野で最も重要な問題はなにか（複数回答あり）

産業医学分野の情報、知識等の不足	15
職場環境の改善	5
産業医学分野の研修不足	4
大気汚染などの環境汚染	4
法令化およびその遵守	4
その他	16

d　その他

セミナーの期間の延長、当該分野のセミナーの開催の増加をもとめる意見が多い。

Ⅲ. 当該分野の国別状況

1．帰国研修員へのアンケート分析（産業医学コース意外の帰国研修員を含む）

1－1　インドネシア（11名）

a　研修で得た知識や技術などは、あなたの仕事にどの程度適応されていますか。

All	Most	Some	A Little	No Answer
2	5	1	2	1

b　現在の仕事をおこなう上で、もっとも障害になっていると思われるものは何ですか。
（複数回答あり）

trained personnel	5
equipments	6
fund	5
research facilities	4
up to date academical / technical information	3
technical literature	4
national training institutes	3
others	0

c　ＪＩＣＡのフォローアップ活動などに関しての要望

◎アドバンスコースの開設

◎産業医学分野の情報提供

◎より限定された専門分野の研修参加

◎公開セミナーの現地での定期的開催

◎産業医学分野でインドネシアが直面している問題解決のための討議の機会

1－2　タ　イ（7名）

a　研修で得た知識や技術などは、あなたの仕事にどの程度適応されていますか。

All	Most	Some	A Little	None
0	6	1	0	0

b　現在の仕事をおこなう上で、もっとも障害になっていると思われるものは何ですか。
（複数回答あり）

trained personnel	4
equipments	5
fund	4
research facilities	4
up to date academical / technical information	6
technical literature	4
national training institutes	2
others	1

c　ＪＩＣＡのフォローアップ活動などに関しての要望

◎アドバンスコースの開設

◎産業医学分野の情報提供・意見交換

◎公開セミナーの民間人の参加

◎公開セミナーの現地での定期的開催

1－3　フィリピン（5名）

a　研修で得た知識や技術などは、あなたの仕事にどの程度適応されていますか。

All	Most	Some	A Little	None
1	4	1	0	0

b　現在の仕事をおこなう上で、もっとも障害になっていると思われるものは何ですか。
（複数回答あり）

trained personnel	0
equipments	0
fund	2
research facilities	0
up to date academical / technical information	4
technical literature	5
national training institutes	0
others	1

c　ＪＩＣＡのフォローアップ活動などに関しての要望

◎産業医学分野の情報提供・意見交換

◎公開セミナーの現地での定期的開催

2．帰国研修員名簿

LIST OF PARTICIPANTS OF GROUP TRAINING COURSE IN OCCUPATIONAL HEALTH FROM INDONESIA

No.	Year Participated	Name (Age)	Post	Latest Education	Home Address
1	1985	Mr. R.SUPRAPTO 57(男)	Chif of the Medical Centre in the State Secretariat of the Republic of Indonesia インドネシア国大統領府 附属医療センター所長	Medical Faculty Diponegoro Univercsity (1954-1964)	Jln.Cidodol.51, Jakarta Selatan Indonesia
2	1986	Mr.H.AMINUDDIN 49(男)	Staff of Occupational Health Sub Directorate Department of Manpower 労働省 産業衛生局産業医学専門官	M.D.University of Gadjah Mada (1973)	Jalan Dewi Sartika Gang Haji Ma'i No.28 Rt.003 Rw. 013 Cililitam Kecil,Jakarta Timur, Indonesia
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4	1987	Mr.Djuhari SURYASAPUTRA 52(男)	Chief of Section Laboratory and Installation Serv. West Java Health Department 西ジャワ地区保健局 研究所・設備課課長	Medical Faculty University of Zagreb Yugoslavia (1969)	Jl.Padali No.68 Bandung Indonesia
5	1988	Ms.ROSJIDA 38(女)	Head of Occupational Health Section Region Office,Dep.of Manpower West Java Province 西ジャワ地区人材部 産業医学課主任	Biology at Padjadjaran University (1973-1979)	Jl.Rakata No.21 Bandung,40113 West Java Indonesia
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IN OCCUPATIONAL HEALTH

FROM THAILAND

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2	1986	Mr. Sirisopana NARONGRID	Physician Division of Occupational Health Department of Health Ministry of Public Health 保健省 産業保健部医師	Dipromate at Univ. of London (Venereology) (1984) M.Sc. (Occupational Medicine) National Univ. of Singapore (1986)	1584-86 New Road, Bangrak, Bangkok 10500 Thailand
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6	1990	Ms. Piyaporn CHAUTIPUN 39(女)	Labour Administration Department of Labour Ministry of Interior 内務省労働局労働監理員	M.Sc. at Mahidol Univ.	49/84 Buddhamonthon Sai, 4 Road, Amphoe Sapran, Nakornprathom Provinces
7	1991	Mr. Pisit JODKING 32(男)	Lecturer Faculty of Medicine, Khon Kaen University コンカーン大学医学部講師	M.Sc. at Mahidol Univ. (1988)	123/1103 Ban Soon Paat 5 Khon Kaen University, Khon Kaen, 40002, Thailand

LIST OF PARTICIPANTS OF GROUP TRAINING COURSE IN OCCUPATIONAL HEALTH FROM PHILIPPINES

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2	1985	Mr. Manuel Wilson O. ESTRADA Jr. 38 (男)	Chief Labour Standards Welfare Officer, Bureau of Working Condition, Ministry of Labour and Emploiment 労働雇用省労働基準局 労働基準福祉主幹	Doctor of Medicine University of the East Roman Magsaysay Memorial Medical Center (1974-1978)	2618 Enrique St., Malate, Manila, Philippines
3	1985	Mr. Francisco A. ESTACIO 53 (男)	Medical Officer Employees Compensation Commission 雇用補償委員会医師	Doctor of Medicine Far Eastern University (occupational Health) (1960-1965)	123 A. Luna Project 4, Quezon City, Philippines
4	1986	Ms. Ma. Buelva LOURDES B. 31 (女)	Labour Standards and Welfare Officer, Bureau of Working Conditions Ministry of Labour and Employment 労働雇用省 労働基準局 労働基準監督官	B. Sc. (Chemical Engineering) Pamantasan ng Lungsod ng Malaysia (1982)	118-G J. Basa St., San Juan, Metro Manila, Philippines
5	1987	Ms. Felicidad T. CASTRO II 40 (女)	Sr. Industrial Hygienist Department of Labour and Employment 労働雇用省 上級産業衛生士	Doctor of Medicine Far Eastern University (Internal Medicine, Cardiology, Infectious Disease) (1971-75)	No. 28 Bach St. Ideal, Subdivision Capital, District Quezon City, Pholippines
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Ⅳ. まとめ

〈団長　吉村健清〉

Jakarta, Bangkok, Manilaと３ヶ所３ヶ国で主として集団研修コースの研修員を対象として産業医学のセミナーを実施したが、各国でそれぞれ50名前後の参加者があった。参加者は非常に熱心で、産業化が急速にすすむ中での産業保健の問題に対し、真剣に取り組もうとしている姿勢が感じられた。質問も、日々おこっている問題への対処方法に関することが多かった。一方、田中、神代両教授の講義もそれぞれの分野での重要な点を明解かつわかりやすく、しかも意欲的に話されたのが印象的であった。

どの国でもこのようなセミナーを毎年、しかも一日のみでなく１～２週間の単位で産業保健の諸分野別に実施してほしいとの要望が強かったのには驚いた。また、自分達参加者だけでなくもっと他の関係者、たとえば大学関係者、企業の産業保健関係者にも聞かせたかったとの意見が特にバンコックで述べられた。

研修員の選定に関しては、各国かなり真剣に取り組んでいるが、産業保健が行政機関、企業、大学関係者の緊密な協力がないと成立しないことを考えると、もっと広い範囲から研修員を募ってもよいのではなかろうか。従来本コースへの研修員は、フィリピンでは主として労働雇用省から候補者が出されている。インドネシア、タイでは産業保健に関し、労働省（局）と厚生省が担当しており、それぞれの部局から関係者を選定し候補者を出している。さらに、タイでは労働局、厚生省から候補者に加えて大学省（Ministry of University）からも必ず２名の候補者を出させている点興味深かった。

各国の技術協力部局で討議した感想は、産業医学集団研修コースがどのような人をどのような目的で研修させたいのかとの主旨がほとんど理解されておらず、もっとC.I. Formの主旨を各国に徹底することが必要であることを感じた。もし主旨に沿った研修員が選定され、研修員が同一目的のもとに研修を受けることができれば研修の効果は飛躍的に増大するものと考えられる。

最後に、それぞれの国には研修員をとりまく優秀な人材が数多くいることを知り、またそれらの人々は日本の国際協力を正確にかつ厳しく評価している。これに対応するには、私共が国際的視野をもち、かつUnity in Diversityの意味をもう一度考えつつ国際協力に貢献すべきであろう。そして途上国が自律できるための人材育成へ向けて積極的に努力することが国際協力の真髄ではなかろうか。

〈労働衛生工学　田中勇武〉

帰国研修員を初めその他の関係者を集めて開催した「産業医学セミナー」は成功を収めたと思う。どの会場も熱心にセミナーを聞き、パーティーの時まで「時間が十分でないので又来てほしい。騒音だけでなく、他の多くの労働環境問題があり、指導してくれ。」と微に入り細に入り質問してくる。このため今後もこのようなセミナーを引き続き開催すべきと思う。

最期になったが、吉村団長はよくこのミッションをまとめ、務めてくれた。深く感謝する。

〈人間工学　神代雅晴〉

訪問した3ヶ国、すべてにおいて人間工学に関する関心が非常に高く、当方が驚いた。受講生の多くの反応は産業医学の一環としての人間工学講義でなく、独立した人間工学セミナーを開催して欲しいとの要望が大であった。受講生との対話で感じた点は、労働の人間化を計ることのみを強調した人間工学を早急に導入すると、企業側の拒否反応が出てくる恐れがあるので、導入にあたっては十分に検討する必要があると考えられる。今回の講義でも強調したように、生産性の向上と労働の人間化との両面からアプローチする人間工学の必要性を指導することが大事である。

V. 添付資料

1. 講演のサマリー

THE ROLE OF EPIDEMIOLOGY IN OCCUPATIONAL HEALTH
AN EPIDEMIOLOGICAL APPROACH TO OCCUPATIONAL CANCER

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1. What is an epidemiology?

Epidemiology can be defined as the study of the distribution of disease in human population and the study of the factors determine the distribution of the disease".

2. What can we do with epidemiology?

Epidemiology can 1) assess a problem quantitatively, 2) find causative (preventive) factors, and 3) evaluate health problem for disease control.

3. Basic epidemiological approach

1) Description and analysis of disease distribution Prevatence and Incidence SMR, PMR, etc.

2) Hypothesis Generation

3) Hypothesis testing

i) Observational study
- Cross sectional study
- Cohort study
- Case control study within a cohort

ii) Intervention study

4. Epidemiological approach to occupational cancer

1) Establish medical information (surveillance) system for the workers

2) Define the possible occupational cancer

3) Describe epidemiological characteristics for the cancer

i) No. of patients

ii) Time trend, place, persons (age, sex, occupation etc.)

4) Clarify the causative (preventibe) factors and cofactors through suitable epidemiological methods

5) Apply the scientific knowledge existing to realistic situation to prevent occupational cancer by regulation

6) evaluate the control program for occupational cancer through suitable epidemiologic methods

i) assessment of program operation

ii) assessment of outcome of the control program

5. Principle in Prevention of occupational cancer

1) Early recognition of carcinogenic substances in the work environment through short-term test, animal experiment and epidemiologic study

2) Elimination or control of substances known as carcinogen

3) Screening for occupational cancer

6. Development of Long term institutional program (1983 proposed by Cole & Merletti)

1. A list of known and suspected animal carcinogens should be maintained

2. An exposure-based classification shceme for occupations should be developed

3. The national death index should be extended back in time

4. Registries of exposed workers should be established

5. Medical and occupational information should be linked

6. Research on improved epidemiologic methodology should be encouraged

7. Ten criteria to assist in selecting occupational exposures for epidemiologic study (IARC 1986)

    1. Number of workers exposed
    2. Level of exposure to workers
    3. Quality of exposure data
    4. Caercinogenic potential
    5. Evidence of human carcinogenicity
    6. On going exposure to known carcinogens at permissible levels of exposure
    7. Trends in exposure
    8. Control of confounding factors
    9. Cases potentially attributable to exposure
    10. Time since first exposure

Toxicology and Industrial Health, Vol.7, No.516, 1991

THE ROLE OF EPIDEMIOLOGY IN RISK ASSESSMENT

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1. Introduction

In 1981, Brian MacMahod defined that epidemiology is the study of the distribution of disease in human populations, and of the factors that determine that distribution. The predominant, though not exclusive, purpose of epidemiology is the understanding of the etiology of human diseases and identification of preventive measures (MacMahon, 1981). As stated in the definition, epidemiological data are derived only from human population.

The epidemiologic method consists of three major components, which are (1) descriptive epidemiology, (2) analytic epidemiology, and (3) intervention study (Figure 1). In descriptive epidemiology, based on the observation of disease pattern at issue in human population, a working hypothesis is developed, then the working hypothes is generated is tested by analytic epidemiology based on the observation of human population. Finally, the intervention study is designed and conducted to test the working hypothesis in the population. In an intervention study, an exposure factor should be assigned to the study population by the investigator just like an animal experiment. It is, therefore, quite difficult to carry out an intervention study, practically or ethically. Therefore the focus is put on the analytic epidemiology in this field. In analytic epidemiology, there are three major approaches, which are cross-sectional study, cohort study, and case control study. The cros-sectional study is the study to identify the exposure and the health effect at the same time. Therefore, temporal association, which is the most important association to judge the causal association, cannot be obtained. Thus, the cohort study and case control study are more popular to test the hypothesis. The cohort study is a study in which the study groups to be compared are defined in terms of exposure, then the morbidity rate, mortality rate, or other health effects between comparison groups should be measured. On the other hand, a case control study is a study in which the study groups to be compared are defined in terms of outcome of disease status, then the past exposure experience between two groups should be compared, to determine whether exposure experience is higher among study cases than among controls.

In risk assessment, for steps have been proposed by the National Research Council in 1983, these are (1) hazard indentification, (2) exposure assessment (3) dose-response assesment, and (4) risk characterization (NRC, 1983) (Figure 2). In the four steps of risk assessment, how can epidemiology contribute to each step?

2. Epidemiology in Risk Assessment

In the hazard indentification, epidemiologic data have been considered to be the most appreciable and essential because epidemiologic data can give us a direct information from human experience, as seen in the evaluation procedure of carcinogenic risk to human by the International Agency for Research on Cancer (IARC) monograph (IARC, 1987). Epidemiologic approach is, however, not a powerful approach to detect a clue for health hazard. Taking an example for carcinogenic risk to humans, literature review was made to see which approach is major to obtain a clue for carcinogenic substances listed in the IARC monograph on the evaluation of carcinogenic risk to humans - The supplement 4 (Yoshimura, 1987). Approaches were classified into three categories, which were (1) clinical observations, (2) epidemiological studies, and (3) experiments. As shown in Table 1, among 11 chemical carcinogenic substances, evaluated as definite carcinogenic substances to humans, 8 chemical substances are suggested as possible carcinogenic substances by clinical observations. None of them were suggested as carcinogenic by epidemiological studies. Three substances out of 11 were suspected by experiments. However, when industrial processes and occupational exposures were reviewed, three out of seven industrial processes have been suggested by clinical observations, and the rest were suspected by epidemiologic studies (Table 2). All these chemical substances or industrial processes and occupational exposures have been finally concluded to be carcinogenic to humans by proper epidemiological data. These results suggest that the traditional epidemiological approach is not effective to get a clue for carcinogenicity to human for chemical substances, but effective for occupational exposures. Also it shows the traditional epidemiological approach cannot specify the specific substances as carcinogenic because of the poor exposure measurement.

In the dose-response assessment, unless biological measurement is available, the epidemiologic approach is not effective, because traditional epidemiological study usually doesn't give us the detailed exposure measurement. But once detailed exposure measurement is available from humans, various mathematical models are quite useful for dose-response assessment, such as probit model, logit model, Weibull model, one-hit model, or gamma multi-hit model.

In exposure assessment, the exposure measurement is the key issue. In 1968 in Fukuoka, Yusho incidence occurred due to ingestion of rice oil contaminated with polychlorinated biphenyls (PCBs), polychlorinated dibenzofurans (PCDFs), polychlorinated quaterphenyls (PCQs), and even polychlorinated dienzo-dioxins (PCDDs) (Kuratsune 1989).

Estimation of the amount of toxic rice oil ingested by the patient was made through interviewing by myself. At that time, information was obtained only on the amount of toxic oil consumed by a whole family. Therefore, based on the frequency of meals at home and the average oil consumption by sex and age from the Food Constitution Table, the amount of toxic oil consumed by a each individual has been estimated for 146 persons, among 421 Yusho cases in Fukuoka.

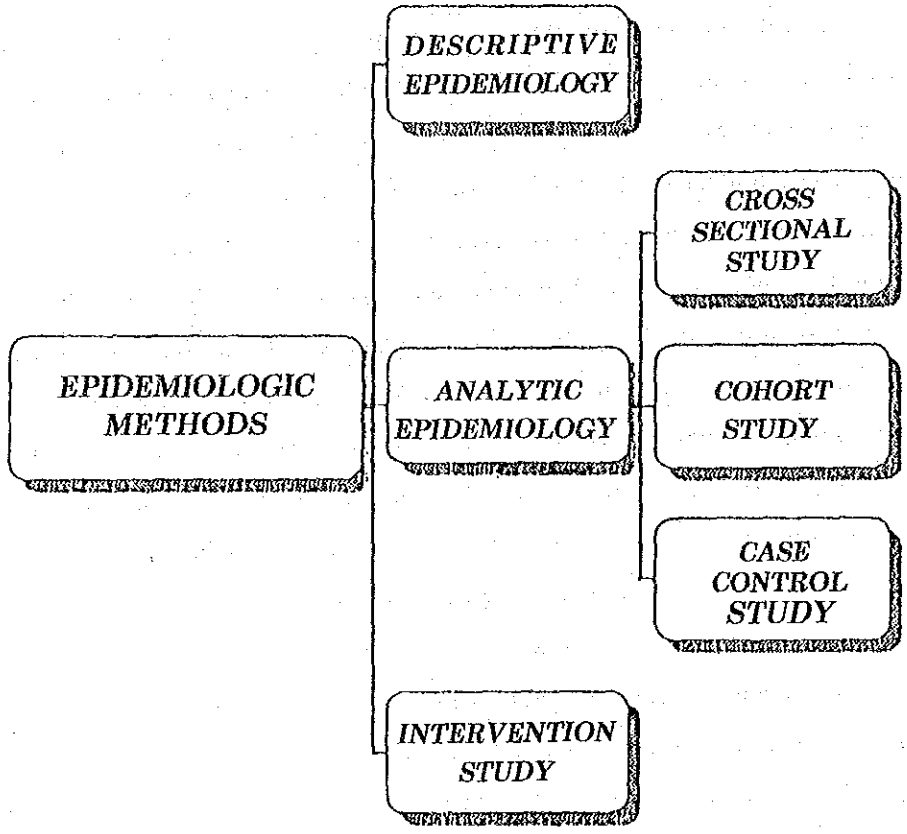

Fig.1 Epidemiologic methods

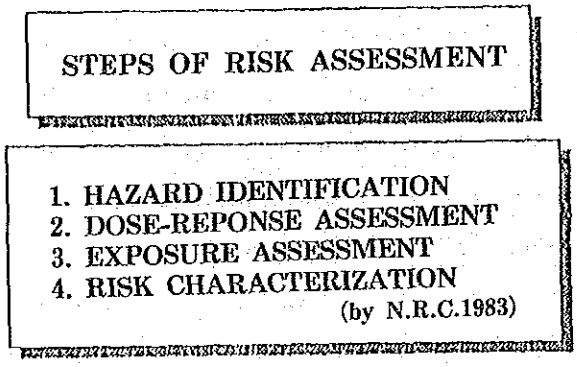

Fig.2 Steps of Risk Assessment

Table 1

CLUE OF CARCINOGNICITY

INDUSTRIAL PROCESSES AND OCCUPATIONAL EXPOSURES	CLINICAL OBSERVATION	EPIDEMIOLOGIC STUDY	EXPERIMENTAL STUDY
4 - AMINOBIPHENYL			○
ARSENIC AND ARSENIC COMPOUND	○		
ASBESTOS	○		
BENZENE	○		
BWNZIDINE	○		
BCME			○
CHROMIUM AND CERTAIN CHROMIUM COMPOUNDS	○		
MUSTARD GAS			○
Z - NAPHTHYLAMINE	○		
SOOTS, TARS AND OILS	○		
VINYL CHLORIDE	○		

Then from the limited data from only 141 patients, the tolal amounts of PCBs and PCDFs consumed by a patient were obtained. The total amounts of PCBs, PCDFs and PCQs taken by patients were, on average, 633, 3 to 4, and 596 mg, respectively, whereas the amounts taken per kilogram per day were, on average, 157, 0 to 9, and 148 μg/kg/day, respectively. The amounts of PCBs, PCDFs and PCQs taken during the latent period were calculated to be, on average, 466, 2 to 5, and 439 mg, respectively. The smallest intake, 121 mL of oil, should have contained 111 mg PCBs, 0 to 6 mg PCDFs, and 105 mg PCQs (Hayabuchi et al., 1979). The allowable daily dose of PCB in Japan was established based on this information obtained from the epidemiological work.

In risk characterization, the numetical risk indices should be obtained. In epidemiological studies, several indices of risk exist, such as absolute risk, relative risk, and attributable risk (Figure 3). Estimation of relative risk can be made from an odds ratio. The standardized mortality ratio or standardizes morbidity ratio (SMR) can be explained as being the same as the relative risk. The proportional mortality ratio (PMR) is also usually obtained through the date from the industry. Among the attributable risk indices, attributable risk percent and population attributable risk percent are useful indices for risk characterization. The population attributable risk percent shows that among the cases in the population, what percentage of the cases is due to the exposure. Therefore, the population attributable risk percent can tell us if the exposure can be eliminated

from the population, or what percentage of cases can be avoided. Population attributable risk percent depends not only on the relative risk, which is main concern in the epidemiological study, but also on the proportion of exposed in the population at issue. Taking an example of the population attributable risk percent for smoking to cancer, Doll and Peto estimated that smoking has 30% of population attributable risk percent for the US population (Doll and Peto, 1981). In Japan in 1987, Tominaga estimated 18% of the population attributable risk percent for smoking (Tominaga, 1987). This result suggests that the impact of smoking is quite different between in the USA and Japan. The population attributable risk percent could tell us the priority of the exposure control.

Although epidemiological study is inevitable for risk assessment, a lot of difficulties to explain the data from human beings exist in epidemiological studies. Confounding factor control and bias control (observation bias/information bias and selection bias) are major issues in epidemiological studies.

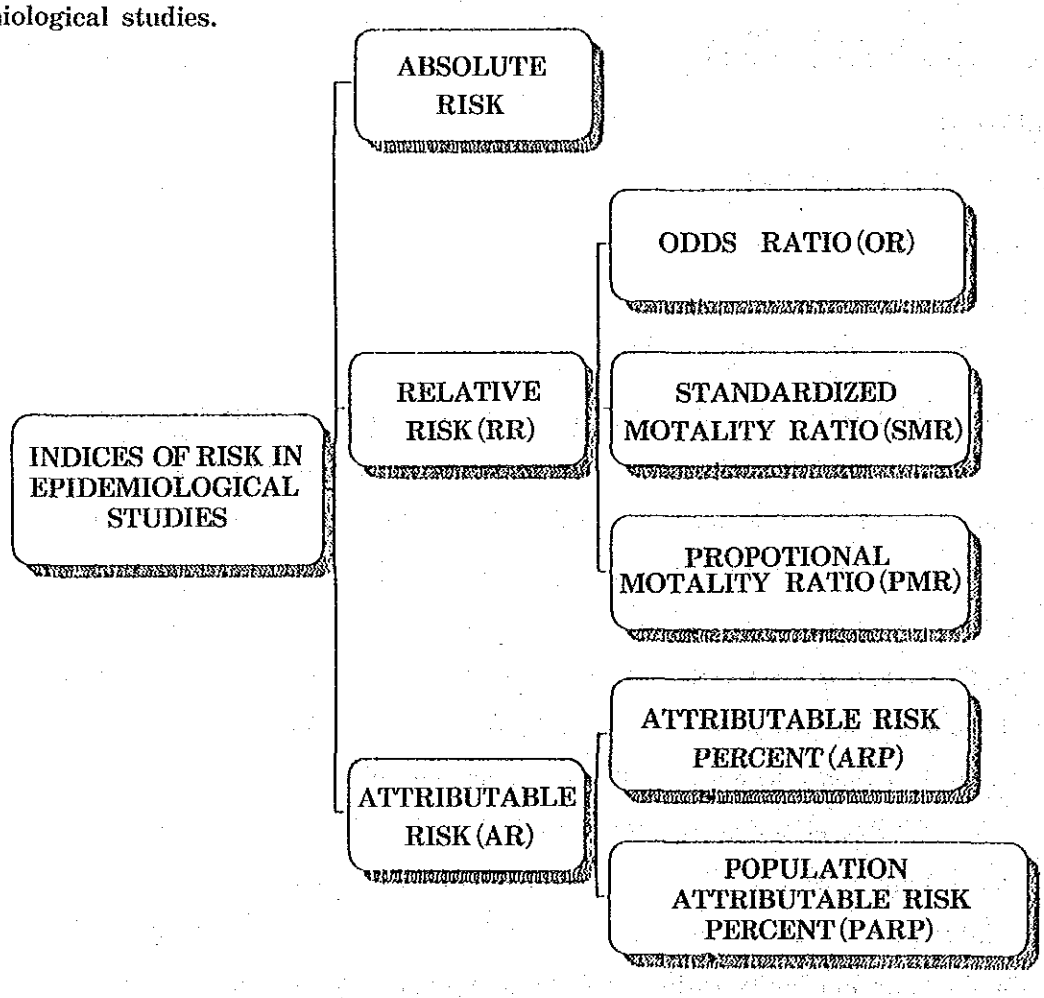

Fig. 3 Indices of Risk in Epidemiological Studies

3. Future Epidemiological Approaches in Risk Assessment

For risk assessment, a large-scale population-based cohort study and an occupation-based cohort study in industry should be set up (Table 3, 4). Recently, a lot of exposure data for

Table 2

CLUE OF CARCINOGNICITY

INDUSTRIAL PROCESSES AND OCCUPATIONAL EXPOSURES	CLINICAL OBSERVATION	EPIDEMIOLOGIC STUDY	EXPERIMENTAL STUDY
AURAMINE MANUFACTURE		○	
BOOT AND SHOE MANUFACTURE AND REPAIR		○	
FURNITURE AND CABINET MAKING	○		
ISOPROPYL ALCOHOL MANUFACTURE, STRONG ACID PROCESS	○		
NICKEL AND NICKEL COMPOUNDS		○	
THE RUBBER INDUSTRY		○	
HAEMATITE MINING, UNDERGROUND, WITH EXPOSURE TO RADON	○		

Table 3

POPULATION BASED COHORT STUDY

EXPOSURE : ENVIRONMENTAL FACTORS IN A COMMUNITY

INDIVIDUAL LIFE STYLE
SMOKING, DRINKING
DIETARY HABITS
OCCUPATION
MENTAL STRESS etc.

BIOLOGICAL SAMPLES

HEALTH EFFCT : CANCER REGISTRY

MORTALITY SURVEY

NOTE: NESIED CASE CONTROL STUDY IS EFFECTIVE TO ESTIMATE RELATIVE RISK

Table 4

OCCUPATION BASED COHORT STUDY

EXPOSURE : SPECIFIC OCCUPATIONAL EXPOSURE
INDIVIDUAL LIFE STYLE
BIOLOGICAL SAMPLES

HEALTH EFFCT : CANCER REGISTRY
MORTALITY SURVEY

environmental factors in the community are available, but data of individual life-style are not readily avaiable. Without using these two data together for each individual, a lot of confounding factor problems will be faced. Therefore, data both environmental factors and life-style should be collected to ascertain the causal association. Also biological data (for example, data from blood samples, urine samples, etc.) sholud be collected. But usually, it is very expensive to conduct a cohort study. Therefore, a nested case control study should be considered to reduce the cost to estimate relative risk.

The same cohort study should be conducted in industries. In Japan, blood samples from most of workers are now taken for their annual health examination according to Japanese law. Therefore, if this kind of study can be designed and also if the workers will allow us to conduct such a study, these epidemiological studies can give us suitable data for risk assessment.

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The Role of Industrial Hygiene in Occupational Health
- Noise and Noise Control -

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Detp. of Environmental
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UOEH

INTRODUCTION

The sensation of sound is produced when pressure variations having a certain range of characteristics reach a responsive ear. These pressure variations may be produced by any object that vibrates in a conducting medium with the proper cycle rate, or frequency, and amplitude; however, common noise spectra have many different frequency components with many different amplitude.

Here, basic terminology, noise measurement, practical calculation procedures such as combining sound levels, and noise control are emphasized.

BASIC TERMINOLOGY

1. NOISE AND SOUND:

The terms noise and sound are often used interchangeably, but generally, sound is descriptive of useful communication or pleasant sounds, such as music, while noise is used to describe discord or unwanted sound. However, no instrument can distinguish between a sound and a noise-only human reaction can.

2. FREQUENCY (f):

The frequency of sound describes the rate at which complete cycles of high and low pressure regions are produces by the sound source. The unit of frequency is the cycle per second which is also called the hertz (Hz). The frequency range of the human ear is highly dependent upon the individual and sound level, but a normalhearing young ear will have a range of approximately 20 to 20,000 Hz at moderate sound levels.

The high frequency noise generally is more annoying than low-frequency noise.

3. SOUND VELOCITY (C)

In air, sound velocity is 340 m/s at 15 ℃ depending on the temperture.

Generally, $C\ (m/s) = 331.5\sqrt{T/273}$, T (°K)

1430 m/s in water: 4,000 m/s in wood: 5,000 m/s in steel

4. WAVELENGTH (λ)

The distance required for one complete pressure cycle to be completed is called one wavelength. The wavelength (λ) can be calculated from known values of frequency (f) and velocity (C): $\lambda = C/f$.

In air, C = 340 m/s, f = 20 − 20,000 Hz

λ = 30/(20 − 20,000) = 17 m − 17 mm

The wavelength (λ) is a very useful tool in noise control work. For example, The noise that has a wavelength that is much smaller than the size of an obstacle is affected by the presence of that obstacle.

5. SOUND AMPLITUDE

The amplitude of sound may be described in terms of either the quantity of sound produced at a given location away from the source or the overall ability of the source to emit sound. The amount of sound at a location away from the source is generally described by sound intensity, while the ability of the source to emit sound is described by the sound power.

6. SOUND POWER (P)

The sound power of a source is the tool sound energy radiated by the source per unit time. Sound power is normally expressed in terms of watts.

7. SOUND INTENSITY (I)

The sound intensity at a specific location is the average rate at which sound energy is transmitted through a unit area normal to the direction of sound propagation. The unit used for sound intensity is watts/m^2.

The average sound intensity may be related to the sound power produced in free-field conditions at a distance r from the source.

$$I = P/4\pi r^2 \qquad (1)$$

THE DECIBEL (dB)

The range of sound intensity commonly encountered is very wide.
For example, sound intensity well above the pain threshold (about 1W/m^2) is found in many work areas, while intensity down to the threshold of hearing (about 10^{-12}W/m^2) is also of wide interest.

This range of more than 10^{12} cannot be scaled lineally with a practical instrument because such a scale might be 106 km in length in order to obtain the desired accuracy (1 mm = distance betweem 1 x 10W^{-12}/m^2). In order to cover this very wide range of sound intensity, the logarithmic decibe l (dB) scale is selected. By definition, the dB is a dimensionless unit related to the logarithm of the ratio of a measured quantity to a reference quantity.

1. SOUND INTENSITY LEVEL (SIL)

Sound intensity level (SIL) is defined as

$$SIL\ (dB) = 10 \log I/I_{\square} \qquad (2)$$

where I is the measured sound intensity at some given distance from the source and $I_{\square}$ is a reference intensity. The reference intensity commonly used is 10^{-12} W/m^2.

$$\text{SIL (dB)} = 10 \log I/10^{-12} \quad (3)$$

$$\text{SIL (dB)} = 10 \log I + 120 \quad (4)$$

2. SOUND POWER LEVEL (SPL)

Sound power level (SPL) is defined by

$$\text{SPL (dB)} = 10 \log P/P_{\square} \quad (5)$$

where P is the measured sound power of the source and $P_{\square}$ is a reference power. The reference power commonly used is 10^{-12}W.

$$\text{SPL (dB)} = 10 \log P/10^{-12} \quad (6)$$

$$\text{SPL (dB)} = 10 \log P + 120 \quad (7)$$

3. NOISE LEVEL (dB (A))

The human ear is more sensitive to high-frequency sound that it is to low frequency sound. The sensitivity varied with frequency for the human ear is simulated with a frequency weighting network. A-weighted intensity level has been adopted as the measurement for assessing noise exposure by many countries. The frequency weighting shown in Figure is chosen because: 1) it approximates the ear's response characteristics and 2) it can be easily produced with a few common electric components.

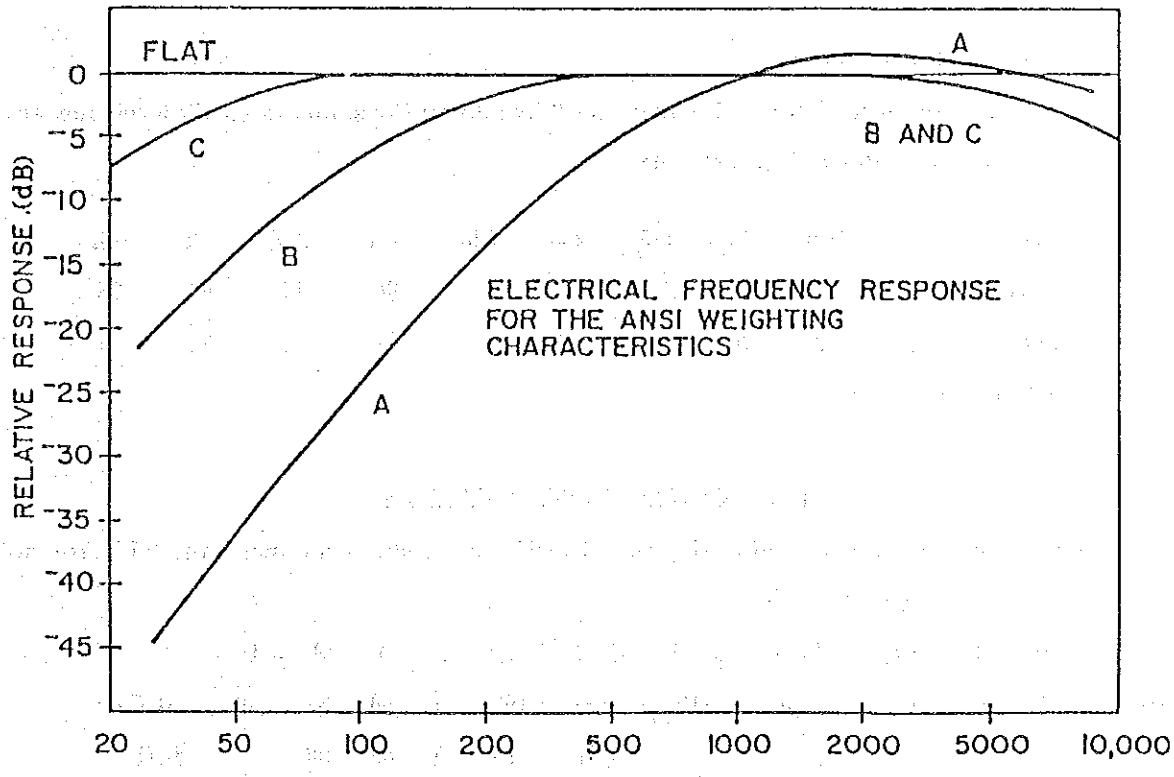


Figure 1 Frequency-Response Characteristics for Sound Level Meters

4. NOISE LEVEL IN FREQUENCY BANDWIDTHS

Noise level in frequency bandwidth is also used for industrial noise measurements. The most commom frequency bandwidth is the octave band. A frequency band is shown to be an octave in width when its upper band-edge frequency f_2 is twice the lower band-edge frequency f_1.

$f_2 = 2\ f_1$: $fm = \sqrt{f_1 f_2}$, fm : center frequency of the octave band (8)

Octave bands are commoly used for measurements directly related to the effects of noise on ear and for some noise control work.

5. COMBINING NOISE LEVEL

It may be necessary to combine sould intensity level (SIL) during hearing conservation or noise control procedures. For example, it may be necessary to predict the overall levels in an area that will result from existing levels being combined with those of a new machine that is to be installed. The combination of levels in various frequency bands to obtain overall or weighted overall sound intensity levels is another example.

Sound intensity level (SIL) cannot be added arithmetically because addition of these logarithmic quantities constitutes multiplication of intensity ratios. To add sound intensity level, the corresponding sound intensity must be determined and added the sound intensity.

	combining noise level				
La − Lb (dB)	0	1	2−4	5−9	10−
Addition (dB)	3.0	2.5	2	1	0

Example 1 : Add to 80 dB and 80dB.

Example 2 : Calulate the overall sound intensity level by adding the sound intensity levels measured in octave bands shown in the following table.

fm (Hz)	31.5	63	125	250	500	1 k	2 k	4 k	8 k
SIL (dB)	75	78	84	84	85	90	86	80	78
A weighted value noise level (dB (A))	−39	−26	−16	−9	−3	0	+1	+1	−1

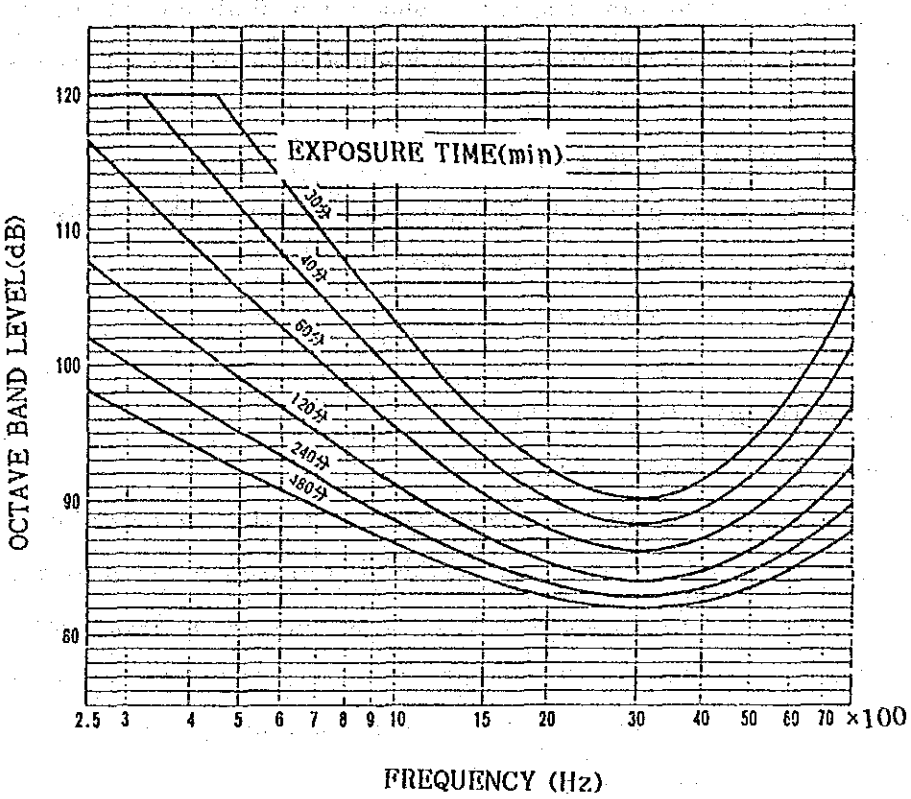
THRESHOLD LIMITED VALUES

ACGIH in USA and Society of Industrial Health (SIH) in Japan recommend the TLV for noise level (dB (A)), respectively, as follows,

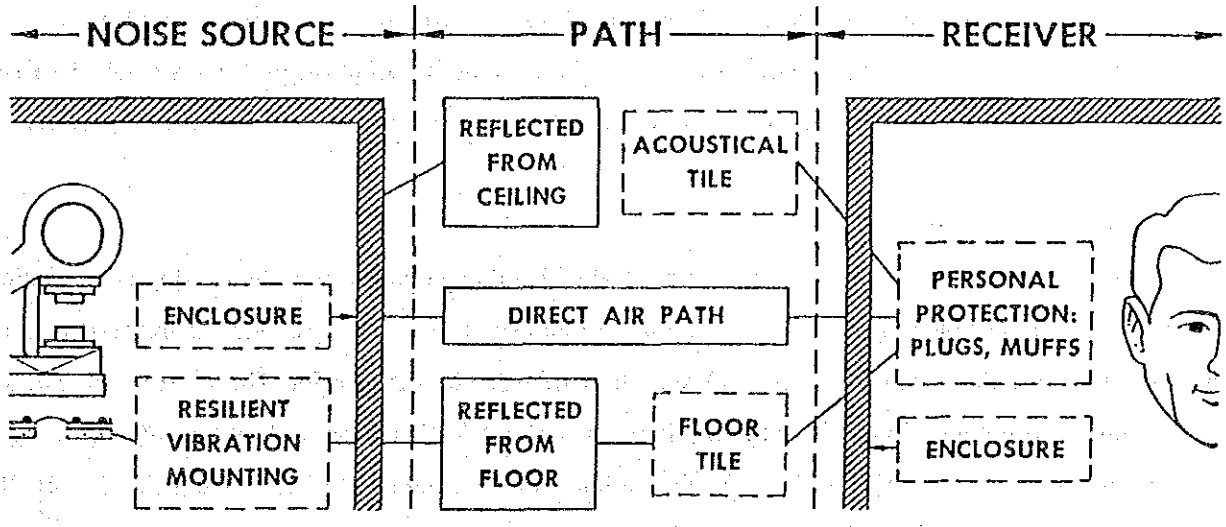
Duration per Day (hr)	1/8	1/4	1/2	1	2	4	8	16	
Noise level (dB (A))	115	110	105	100	95	90	85	80	ACGIH
			97	94	91	88	85		SIH

No exposure to continuous or intermittent in excess of 115 dB (A)

In Japan, Society of Industrial Health also recommends the TLV by octave band level as follows,



NOISE CONTROL



Noise produced by a source travels outward in all directions. If all of the walls, the floor, and the ceiling are hard reflecting surface, all the sound is reflected again and again. The sound level measured at any point in the room is the sum of the sound radiated directly by the source plus all the reflected sounds. Practically all industrial machine installations are located in such environments.

1. REDUCTION OF NOISE AT SOURCE BY:

The most desirable method of controlling a noise problem is to minimize the noise at the source.

1) Reduction of driving force and vibrating surface

2) Substitution with less noisy equipment.

2. REDUCTION OF NOISE BY CHANGES PATH

1) Increase distance between source and receiver

A free field has been defined as one in which the sound intensity decreases inversely with the distance from the source. These ideal acoustical conditions are rarely found in work environments because of the reflecting surfaces of equipment, walls, ceilings, floors etc., however, free-field conditions may sometimes be approached outdoors or in very large rooms. In this case, the sound intensity level at a given distance r from a small omni-directional noise source can be written in terms of the sound power level of source as

$$SIL\ (dB) = 10 \log P - 20 \log r + 109 \qquad (9)$$

Example: Predict the SPL and SIL that would be produced at a distance of 10 m or 20 m from a sound source (sound power 1 watt).

2) Absorb noise and reduce reverberation

Use of acoustical material on walls, ceiling, and floors to absorb sound waves and to reduce reverberations can result insignificant noise reduction. Sound absorption materials applied to the walls and ceiling can reduce the reflected noise but have no effect on the noise directly radiated by the source.

3) Reduce transmission

Noise can be reduced along the path by means of shield and enclosures to minimize the transmission of noise to area occupied by employees. Sound transmission loss (TL) through a barrier may be defined in terms of the sound intensity level reduction afforded by the barrier. The TL for continuous, random noise commonly found in industry increases about 5 dB for each doubling of wall weight per unit of surface area (M), and for each doubling of frequency (f); $TL = 18 \log(f \times M) - 44$ dB.

Multiple wall construction with enclosed air spaces provides considerably more attenuation than the single material wall.

Noise leaks which result from cracks or holes, or from windows or doors, in a noise barrier can severely limit noise reduction characteristics of the barrier.

3. REDUCTION OF NOISE AT RECEIVER BY:

1) Personal protection (Plugs and Muffs)

2) Rotation of personnel to reduce exposure time.

3) Changing job schedules.

QUESTIONNAIRE

FOR THE ATTENDANTS

TO

OPEN TECHNICAL SEMINAR ON OCCUPATIONAL HEALTH

A. General

1. Name in full : _____ _____ Age

(Please underline Family name)

2. Present post : _____

(Organization)

Office addresss : _____

Telephone : _____

3. Home address : _____

Telephone : _____

4. Your impression on the level of this seminar

☐ too basic ☐ just right ☐ too advanced

5. What subjects are interesting to you during this seminar?

6. What is the most important problem in Occupational Health in your country or area?

7. Any questions or consultations to the lecturers in relation to the contents of this open seminar?

8. Any comments or suggestions you wish to offer about this seminar?

B. For ex-participants only

1. Please write down your course name and year of your participation in Japan.

Course name : Occupational Health Year of participation: _____

Others ( )

2. To what extent can you apply the knowledge/skills,etc. acquired during the training in your present job?

☐ All ☐ A little

☐ Some

☐ Most ☐ None

Please explain your answer briefly :

_____

_____

_____

3. Which part of your training at JICA was most useful to you in relation to your subsequent works and responsibilities?

_____

_____

_____

_____

4. What do you consider to be the most serious obstacles in the performance of your present job, if any?

Lack of :

☐ trained personnel ☐ technical literature

☐ equipments ☐ national training institutes

☐ fund ☐ others ( )

☐ research facilities

☐ up to date academical/technical imformation

5. Employment record since the year of yor participation.

Duration of Service	Position (or assignment)	Organization
—		
—		
—		
—		
—		
—Present	Same as (a)	

6. Please give a description about your current duties.

7. Is there any request to follow-up activities of JICA?

Please mention below briefly.

Thank you very much for your cooperation.

The Role of Ergonomics in Occupational Health and Safety
-- An Ergonomic Approach to "VDT operation " --

Masaharu KUMASHIRO
Dept. of Ergonomics,
IIES, UPEH, Japan

1. What is Ergonomics"?

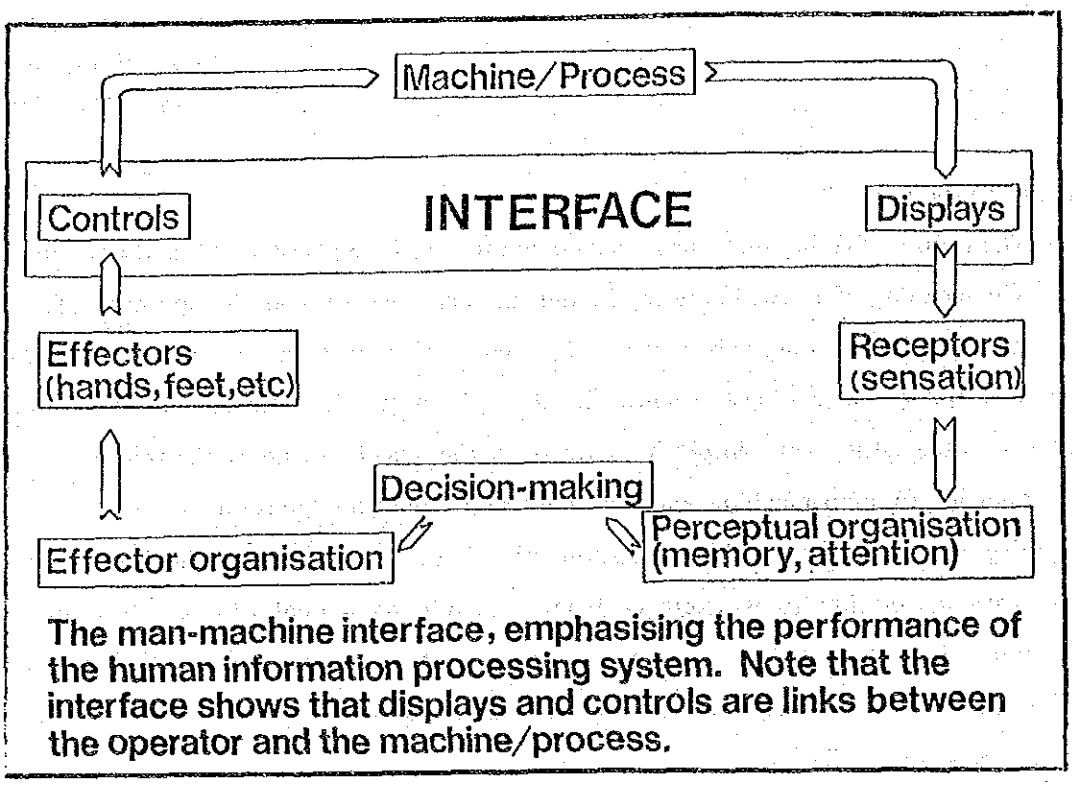
The term of Ergonomics" has been come into use in England, and it is the Greek language. The meaning of Ergos is the work, and the meaning of nomos is the natural law or habit.

Engonomics is sometimes called in different such names as human factors (engineering), biomechanics, applied psychology, applied physiology and etc.. In spite of their foundations being different each other, they can simply be defined as the science to know the relationship between man and machine or man-machine and environment or man-information of them.

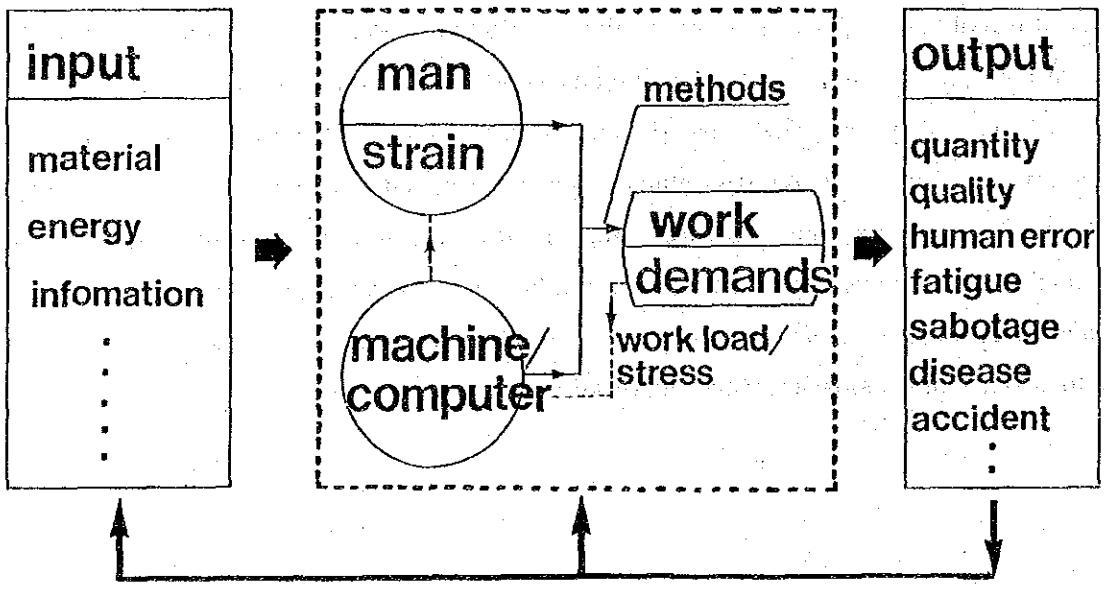
Ergonomics is defined by the Ergonomics Research Society as the "scientific study of human factors in relation to working environments and equipment design". The International Labor Organization (ILO) defines it as the "application of the human biological sciences to achieve the optimum mutual adjustment of man and his work, the benefits being measured in terms of human efficiency and well-being."

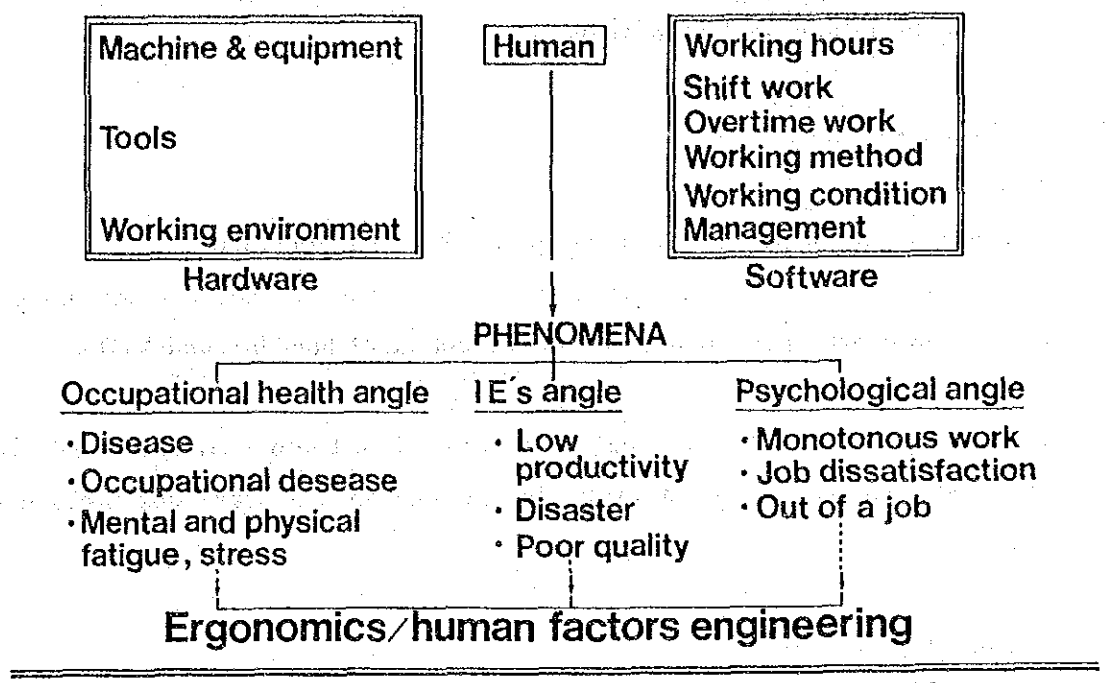
Although the countless fundamental and vital problems of ergonomics are existed in the field of modern industries, some of them are apt to be fully ignored.

Ergonomics aims at promoting safety, comfortability and efficiency at work situation in industry through arranging better relationships between man, machines and environment. Ergonomics achieves its aims by applying such disciplines as industrial psychology, work physiology, anatomy, anthropology, engineering sciences and sociology in an integrated approach. It facilitates if appropriately applied, the utilization of human capability and prevents any unnecessary waste in the use of human resources. Therefore, the task of ergonomics is to develop the most comfortable conditions for the worker as regards climate, noise level and lighting, to reduce the physical workload, to improve working postures and reduce the effort of doing certain movements to facilitate psychosensorial functions in reading instrument displays, to make the handling of machine levers and controls easiser, to make better use of spontaneous and stereotyped reflexes, to avoid unnecessary information recall efforts, and so on.



The man-machine interface, emphasising the performance of the human information processing system. Note that the interface shows that displays and controls are links between the operator and the machine/process.





Ergonomical Problems in the Industrial Field

4. Ergonomic procurement guidelines for VDT operation

1) Health costs of VDTs

There is already evidence of the health costs that might be associated with the movement towards VDT-based automation.

There are usually located in 4 main areas:

(1) Visual effects

(2) Postural effects

(3) Work design effects, psychological stress and fear of automation

(4) Skin disorders causd by the combined effect of airborne chemical contaminans in rooms and static electricity generated by a low percentage of humidity and VDTs.

It, also, has been pointed out that the relationship between the radiation and its effects. However, it would seem perhaps most fitting to say that we can leave this problem out of consideration.

2) Postural problems at VDTs

(1) An important aspect of postural load is the swelling of the lower leg with long periods of sitting.

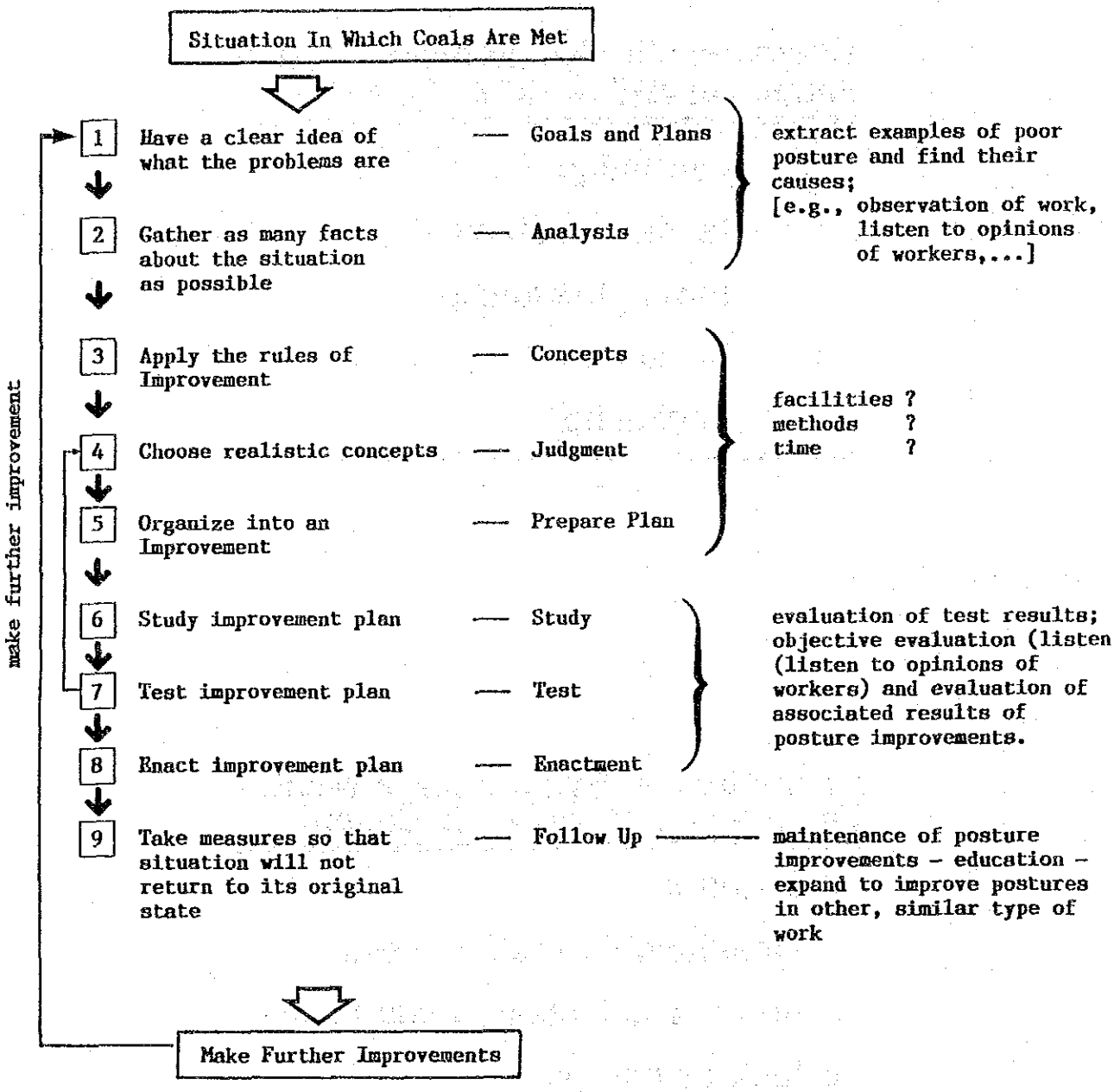
Measurements demonstrated that reports of leg discomfort were correlated with increase in lower leg volume even after an hour of continuous sitting at a desk-chair combination. Longer periods gave rise to more discomfort and swelling. However, short periods (2 minutes) of movement at quarter hour intervals restored the situation and kept the reported leg discomfort over long periods of sitting to tolerable limits. In general, we can recommend that fatigue etc. relieved by changing posture throughout the day.

Characteristic Symptoms of Physical Fatigue in VDT work, in Japan

- eye fatigue
- tension in shoulders
- lower-backache
- backache
- neckache

Characteristic Symptoms of Mental Fatigue in VDT work , in Japan

- irritation
- inexplanable restlessness
- head is not clear, feels heavy
- lack of energy
- insomnia



How should posture be improved?

— Scientific Approach to improving posture at work —

2) chair

As examples of improper seating arrangements, van Wely gave chairs with no support for the lower back, backless chairs, sitting positions with no appropriate place for feet, and chairs with arms that are too high. These can be seen with tables and chairs which are not adjusted to the size of the bodies of workers. In other words, the cause lies in the inappropriateness of facilities and equipment to the characteristics of the human body.

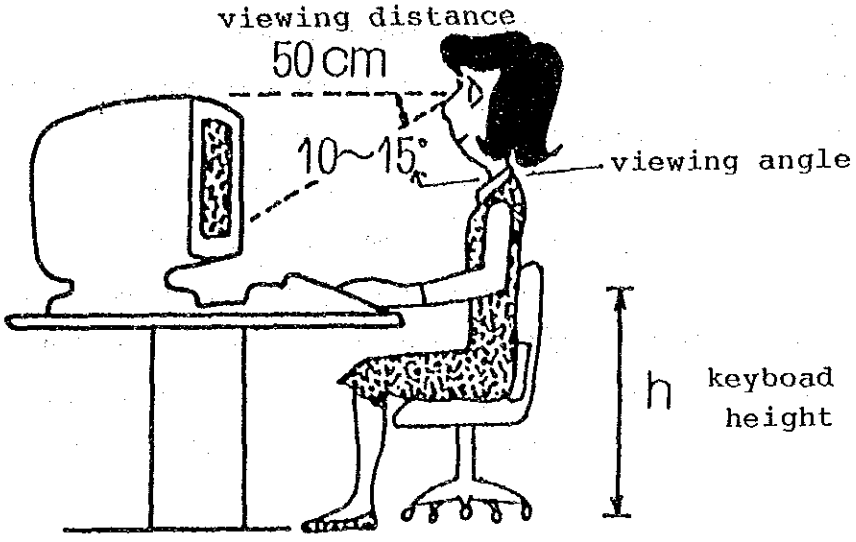
In the following Table, Chairs are used as an example. It shows how they can be of injury to people and gives some ideas for improvements. It is also important to remember that, during work, people tend to bend forward.

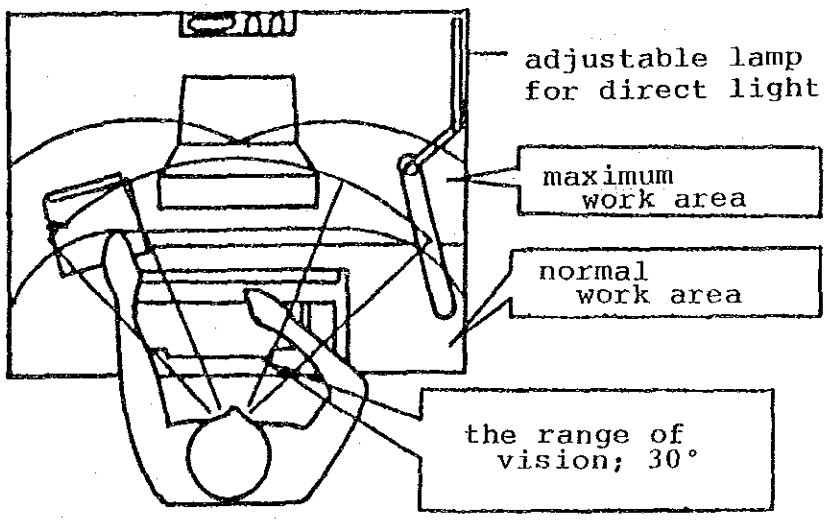
The problems of poor chair

Problem points	Resulting Factors	Points to Improve
1) The height of the chair back is inappropriate.	Burden on back and lower back.	The height and angle of the chair back should be easily adjustable. By turning a handle, a spring mechanism could bring the cushion of the seatback forward to provide a sturdy support for the lumbar vertebrae.
2) The seat is soft.	Pressure on stomach, buttocks become tired.	Make cushions of the proper texture by using a balance of soft-hand-soft materials.
3) The height and depth of the seat is inappropriate.	Legs become tired.	The height and angle of the seat should be easily adjustable. By using a synchromechanism, the linkage of the back and seat of chair would make it possible to learn backwards or forwards.
4) The chair arms are inappropriate.	Should become stiff.	The height of chair arms should be easily sdjustable.
5) Chair legs are not stable.	Cannot concentrate.	Use stable five-legged chairs and put stopped on the casters. Workers can choose freely between "concentraton" and "release".

3) Design of VDT work stations

The work station had to to consist of keyboard, VDU, document holder, table, chair, footrest, conceived as independent but co-ordinated modules.





4) Techno-stress

As regards the effects of VDTs on the human body as cited from 1) to 4) above (in section 1, page 6), there are a number of methods which can fairly easily solve the problems through improvements in working environments, redesigning of workstation, an appropriate work-rest break schedule, etc..

However, the effect on the psychoneurotic system, that is, the problems of computerized work and mental stress remains a difficult problem to solve.

Brod (1984) designated a stress phenomenon or a workshop maladjustment syndrome stemming from human imvolvememt with computers as technostress.

In discussing the measurement of technostress, it is necessary to emphasize an introspective method from an emotional and psychological point of view, in additnon to the conventional physicological method. In other words, since changes in sociopsychological working environments are believed to be the cause of mental stress, it is important to properly measure sociopsychological stress and detect the factors responsible for inducing stress (stressors).

(1) Characteristic symptoms of mental fatigue in Japanese VDT operators.

---irritation

---inexplanable restlessness

---head is not clear, feels heavy

---lack of energy

---insomnia

(2) Main complaints and symptoms of software workers; Indications of "Techno-stress"

---sense of irritation

---sense of uneasiness

---depression

---sleeplessness

---gastrointestional problems

3) What is the "Techno-stress"?

TECHNO-STRESS

Digital Concept

Persual Of Perfection

Drop In Capacity For Feeling Warmly Towards Others

➡ Deterioration Of Human Relationships

In Japan, there are only a few people who have gone so far as to loose all emotion.

Rather, it would appear to be a mismatch of personalities, working atmosphere, and other factors.

It is assumed that the working environments where the new technology is used to a maximum extent serve to further amplify potential stress sources at workplace, such as total job satisfaction, overload (overtime work hours) and computer-paced conditions.

5) Ergonomic countermeasures in VDT operation.

(1) It should be taken into a consideration that a continuous working hour on the VDT operation does not exceed 60 minutes.

(2) The working stoppage time should be provided at least 10 minutes for each 60-minute working hour.

(3) Programmers and workers in charge of the CAD/CAM operation should be given the rather long vacation (Holidays with pay included) and provided with a interval for the next job.

(4) Keeping the human relationships of interview type. For this, it is effective to utilize the partition. However, since the partition system has an effect of heigtening the concentration to the job and disadvantage (Isolation) of decrease of human communication in the workshop in the mixed state, it is important that the point for harmonizing these opposite factors should be grasped. As a plan of this problem solving, height of the lower limit value (Approx. 1.2m from the floor) whose visual line in interrupted with the sitting sate on the chair becomes proper.

(5) Redesign of the workshop should be planned so that the result of the job execution may be feedback. (Proceeding the full filment of the job)

(6) Each individual worker should have a varied job from the other's. (Expansion of the job, proceeding the multi-skilled worker)

(7) Ergonomical countermeasures regarding the desk, chair and other divices, and the workshop environment.

(8) Avoiding the same working position, variation of the working posotion should be simply done.

(9) Method of better work training should be founded.

6) Operating hours, etc.*

(1) Operation hours of a day

No limits have been set by the guidelines on the number of operation hours per day because; Experience has shown that good health can be preserved for most of the workers, if a proper occupational health programme for VDT operation is implemented at the workplace and if each worker makes an effort to maintain his or her own good health. Types of VDT operation and its workloads at different workplaces very largely. The effects of a VDT operation on health differs greatly from an operator to another. For these reasons, no maximum limit of daily operation hours has been laid down in the present guidelines.

Workers to whom managers should give considerations for limiting daily hours of operation through job designs, rotations, etc., are those under the operation category A in the "Clasification of work categories in VDT operation" attached to Annexed table 1.

(2) Operation Stoppage

The purpose of operation stoppage is to prevent fatigue caused by strains to the eyes, hands and arms, etc., as a result of watching the CRT display screen, operating the keyboard, or keeping a fixed posture continuously for a long time. Operation stoppage is intended to give the operator an opportunity, after a relatively long period of continuous work, to stop the VDT operation, relax, and look at distant scenery, or to move various body parts which are seldom used during VDT operation. It is not a mere rest period.

A short pause is the stoppage of work for a minute or two during the course of a countinuous VDT operation. It is desirable that operators are allowed to take short pauses freely without any regulation of fixed intervals.

*Guidelines to occupational health in VDT operation;
Labour Standards Bureau, Ministry of Labour Japan, 20 December, 1985.

7) Methods for Musculoskeletal, Visual and Psychosocial Stress in VDT operatiors

1 : Background actors

Factors as age, sex, type of work on screen, duration of current work, social status, work situation, reason for work and characterisrics of the company will be recorded. In addition, the family situation, economy, work load at home, physical exercise and leisure activities will be measured.

2 : Medical questionnaire

All subjects will be interviewed by the occupational physicians.

Social factors as sleep problems, feeling of tension and psychological problems will be measured. Pain intensity for the last month will be assessed. The visual problems and eye strain will be assessed together with headache (location and intensity).

3 : Psychosocial questionnaire

The psychosocial questionnaire will deal with more demographically related conditions, the VDT work especially, other tasks and additional, paid employment.

4 : Ergonomic questionnaire

This questionnaire will deal with the environment features, productive work time lost and any negative impacts on performance due to environmental factors.

5 : Physical examination

The physical examinations will consist of a general observation of the musculosokeletal system, measurements of the range of passive movements of the neck and head, palpation of muscle spasm and sore spots (trigger points) of m. trapezius. The symptoms and signs of Carpal Tunnel Syndrome will be recorded.

Pain intensity and duration as well as physical examination regarding symptoms and signs of musculoskeletal illness will be conducted by the occupational physicans.

6 : Vision analysis

The visual problems and eye strain will be assessed together with headache (location and intensity).

The subjects will undergo a detailed vision analysis. Symptoms and case history, static retinoscopy, subjective refraction, monocular with binocular adjustment, oculomotoric balance, amplitude of accommodation, stereoscopic acuity, ouclar motility, visual fields, pupil reflexes and ocular inspection.

7 : Ergonomic investigation

The ergonomic investigator will deal with factors which are not obvious with observation, such as illumination, features of the working space, room climate, work hazard, office equipment, working desk, chair, VDU and keyboard. The working station, environment, visual display unit/ keyboard and the working posture will be examined as well.

3. 持ち帰り資料

a. Primary Health Care in Indonesia

(Ministry of Health, Republic of Indonesia 1990)

b. National Institute for the Improvement of Working Conditions and Environment (パンフレット)

c. Workplace Safety and Health (パンフレット)