WHO Collaborating Centres in Occupational Health

Directory, networking, priorities and future perspectives

by Suvi Lehtinen

13 October 1992
Preface

The National Institutes of Occupational Health convened a meeting on the initiative of the U.S. National Institute for Occupational Safety and Health (NIOSH) and the Finnish Institute of Occupational Health, in support of the WHO Workers’ Health Programme (WHO/WPH). The Meeting was held in Helsinki on 26–27 June 1990, with the purpose to identify the global needs of occupational health in the 1990s and to examine the interest of the national institutes to expand their individual and collaborative efforts in a more systematic way to contribute to the objectives and goals of the WHO Workers’ Health Programme.

The Helsinki Meeting elected a Planning Group, whose task was to prepare the First Meeting of the WHO Collaborating Centres in Occupational Health, which was decided to convene in Moscow in 1992 on the kind invitation of Professor Nikolai F. Izmerov. The Planning Group held a meeting in Geneva on 9–10 October 1991. In order to get necessary information for strengthening the network of the Collaborating Centres, the Planning Group decided to make a questionnaire survey among the Centres. The results of the survey were presented as the Working Paper in the First Meeting of the WHO Collaborating Centres in Occupational Health, held in Moscow on 8–11 September 1992.

This publication describes the objectives and future perspectives of the WHO Workers’ Health Programme, as well as the priorities and activities of the WHO Collaborating Centres in Occupational Health as indicated by the Centres in the questionnaires. The Summary Report and the three Working Group Reports of the successful Meeting held in Moscow, are also attached, as they will provide framework and guidance in the development, prioritization and networking of occupational health and safety activities in the Member Countries. The Directory of the WHO Collaborating Centres in Occupational Health will be updated every two years, next time after the Second Meeting of the WHO Collaborating Centres in Occupational Health, to be held in China in 1994. The Directory will also be available as a database.

It is our hope that this booklet will provide information and stimuli to the Collaborating Centres, to facilitate their contributions towards the goal Health For All by 2000, as well as to strengthen their inter-institutional activities within the Network.
As the health of the working populations is a prerequisite for the overall socio-economic development of all countries in the world, we wish to inform hereby also all other parties who are involved and interested in the development of *Occupational Health For All* who take part in the working life worldwide.

Dr. Mikhail Mikheev  
Chief  
Office of Occupational Health  
World Health Organization

Professor Jorma Rantanen  
Director General  
Finnish Institute of Occupational Health  
Chairman of the Planning Group and the  
First Meeting of the WHO Collaborating  
Centres in Occupational Health
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3. Directory of the WHO Collaborating Centres in Occupational Health

Reports of the First Meeting of the WHO Collaborating Centres
in Occupational Health
### List of abbreviations used

<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tbody>
<tr>
<td>AFRO</td>
<td>Regional Office for African Region</td>
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<tr>
<td>AMRO</td>
<td>Regional Office for Americas</td>
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<tr>
<td>BM</td>
<td>biological monitoring</td>
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<tr>
<td>CAD</td>
<td>Canadian dollar</td>
</tr>
<tr>
<td>CCEE</td>
<td>Countries of Central and Eastern Europe</td>
</tr>
<tr>
<td>CD-ROM</td>
<td>compact disc-read only memory</td>
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<td>DCs</td>
<td>developing countries</td>
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<tr>
<td>EAP</td>
<td>Expert Advisory Panel</td>
</tr>
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<td>EB</td>
<td>Executive Board</td>
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<td>EMRO</td>
<td>Regional Office for Eastern Mediterranean</td>
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<td>EURO</td>
<td>Regional Office for European Region</td>
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<td>FINNIDA</td>
<td>Finnish International Development Agency</td>
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<td>FIOH</td>
<td>Finnish Institute of Occupational Health</td>
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<tr>
<td>GNP</td>
<td>Gross National Product</td>
</tr>
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<td>HFA2000</td>
<td>Health For All by the Year 2000</td>
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<td>ICOH</td>
<td>International Commission on Occupational Health</td>
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<td>IFSG</td>
<td>International Fiber Safety Group</td>
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<tr>
<td>ILO</td>
<td>International Labour Office</td>
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<tr>
<td>IPCS</td>
<td>International Programme on Chemical Safety</td>
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<tr>
<td>IRPTC</td>
<td>International Register of Potentially Toxic Chemicals</td>
</tr>
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<td>NICs</td>
<td>newly industrialized countries</td>
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<td>NIOSH</td>
<td>US National Institute for Occupational Safety and Health</td>
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<td>ODs</td>
<td>occupational diseases</td>
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<td>OH&amp;S</td>
<td>occupational health and safety</td>
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<td>occupational health services</td>
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<tr>
<td>PDD</td>
<td>personal protective device</td>
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<tr>
<td>PHC</td>
<td>primary health care</td>
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<tr>
<td>SEARO</td>
<td>Regional Office for South-East Asia</td>
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<tr>
<td>TBC</td>
<td>tuberculosis</td>
</tr>
<tr>
<td>VDT</td>
<td>video display terminal</td>
</tr>
<tr>
<td>WHA</td>
<td>World Health Assembly</td>
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<tr>
<td>WHO/HQ</td>
<td>World Health Organization Headquarters</td>
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<tr>
<td>WHO/OCH</td>
<td>World Health Organization, Office of Occupational Health</td>
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<tr>
<td>WHO/WHP</td>
<td>World Health Organization, Workers' Health Programme</td>
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<tr>
<td>WPRO</td>
<td>Regional Office for Western Pacific</td>
</tr>
<tr>
<td>WRDs</td>
<td>work-related diseases</td>
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</table>
Programme priorities and activities

The WHO Workers' Health Programme is one of the components of the international health work of WHO, with the following overall objective adopted by the World Health Assembly:

The control of occupational health risks and the protection and promotion of the health of the working population as well as humanization of work.

The specific objectives of the Workers' Health Programme have been formulated as follows:

• to promote national workers' health programmes, including legislation, institutional development, training and education, applied research, and advisory services, as well as monitoring and evaluation, aiming at full coverage of people at work.
• to stimulate and support the continuous development and/or adaptation of appropriate technologies and approaches for the implementation of national workers' health programmes, with priority given to those workers at high risk.

To meet these objectives, the WHO Workers' Health Programme covers the following main areas of occupational health: (1) occupational health services infrastructure development; (2) health hazards control; (3) occupational exposure assessment,
which includes three elements: work environment monitoring, biological monitoring and health surveillance; (4) training and education; (5) information support.

The estimate made by the International Labour Office, ILO that two-thirds of the workers in the world have working conditions below the minimum standards is still considered valid. There still are evident occupational health needs of the 2 billion working population of the world. In addition, the costs caused by consequences of occupational health and safety hazards are tremendous. Due to the insufficient registration systems the exact numbers of occupational and work-related diseases, accidents, and their health and economic consequences are still obscure.

From epidemiological surveys carried out in some countries, it is known that workers in many countries still suffer from severe chronic occupational diseases affecting their health and working capacity, such as: (1) pneumoconioses and other occupational respiratory diseases, (2) neurotoxic and other illnesses caused by chemical agents, (3) hearing loss, (4) occupational skin diseases, (5) occupational cancer, (6) occupational musculoskeletal disorders, and (7) infectious and parasitic diseases related to work and other work-related illnesses.

Hence, in the WHO Workers’ Health Programme for 1992–93, attention has been paid to the improvement of reporting systems for work-related injuries and diseases, especially in developing countries. Such registration creates a basis for analyzing the causes of occupational health and safety outcomes, and for directing preventive measures accordingly. So far there is no worldwide reporting system or statistics in occupational health.

In the Programme special attention has been paid to agricultural workers in many developing countries, where they constitute the vast majority of the work force, but yet remain underserved. Other underserved working populations are seafarers, miners, construction workers and workers in small industries. Vulnerable groups include among others children, women of childbearing age, migrant workers and the partially disabled. The aging of workers in the industrialized world is also a matter of concern.

The WHO Workers’ Health Programme gives support to national and international activities related to the above mentioned aspects of occupational health. However, under limited human and financial resources the Programme is not able to get full coverage of all programme elements in the current biennium.

In spite of better standards of health and safety protection for workers in the Member Countries the leading work-related illnesses and injuries are very often in the same priority list: (1) respiratory diseases, (2) musculoskeletal disorders, (3) cancer, (4) injuries.
Emphasis of the WHO Workers' Health Programme for 1994–95 will be placed on supporting countries in primary prevention and in development of the coverage of occupational health services to the underserved working populations and workers at high occupational risk. Guidelines development, training, exchange of information, and support of applied research are the forms of implementing the WHO Workers’ Health Programme.

The substantive priorities set for 1994–95 by the WHO Office of Occupational Health (WHO/OCH) are:

• development of occupational health services
• control of occupational hazards
• exposure assessment through work environment monitoring, biological monitoring, and health surveillance
• preparation of guidelines on occupational health practice related to:
  — prevention of occupational respiratory diseases
  — occupational cancer
  — reproductive effects of occupational exposures
  — occupational health of agricultural workers and other underserved working populations
• research and training in the health of the working population.

Ongoing and planned activities of the WHO/WHP

The practical projects of the WHO Workers’ Health Programme which have any financial provision from the Regular Budget in 1992–93 are described below. External budget funds are received from the U.S. National Institute for Occupational Safety and Health (NIOSH) for projects described under the title Cooperative agreement with NIOSH. In addition, funds have been made available by the International Fiber Safety Group (IFSG) to collaborate in the field of monitoring and evaluation of airborne fibres at the workplace.

Two ILO/WHO Committees are to be held:

• ILO/WHO Committee on Occupational Health (11th Session)
• ILO/WHO Committee on Health of Seafarers (7th Session)

Two other projects are financed by the Regular Budget but at a very limited level.

• Educational material and appropriate technology on occupational hygiene practice in developing countries
• Research, development and training (underserved populations) and occupational groups at high risks
As was mentioned earlier, within the Programme framework for 1992–93 biennium an extrabudgetary contribution was provided by the International Fibre Safety Group for a specific project, which has been developed under the title:

- Harmonization of methods and quality assurance in the evaluation of exposure to airborne contaminants in the work environment: Health risk-related fibres

Proposals for similar projects have been developed by the WHO/OCH Unit covering the following airborne contaminants:

- heavy metals
- solvents
- pesticides.

Joint ILO/WHO Committee on Occupational Health

The Eleventh Session of the Joint ILO/WHO Committee on Occupational Health convened in Geneva on 27–29 April 1992. The Report of the Meeting is available either from the WHO Headquarters or the ILO Headquarters in Geneva. In order to inform about the most central decisions of the Joint ILO/WHO Committee, a summary of the recommendations in the technical areas of collaboration between ILO and WHO is given here.

1. ILO and WHO both have a unique and distinct role in the development of occupational health at the international level. The history of joint efforts of these two UN sister organizations is a good example of intersectoral collaboration, but has not yet always been translated into effective joint practical action at the regional and country level. Continued efforts of both organizations for further development of occupational health are needed and the programmes of each organization are mutually supportive, complementary but not duplicative. The main focus of the ILO activity has been on the provision of international guidelines and legal frameworks for the development of occupational health policies and infrastructures on a tripartite basis (including governments, employers and workers) and the practical support for improvement actions at the workplace, while WHO has concentrated on the provision of scientific backgrounds, methodologies, technical support and on the training of health and related manpower for occupational health.

2. There are several technical areas of collaboration between ILO and WHO which could effectively support the development of occupational health programmes at national level, such as:
• identification, assessment and management of old and new work-related health risks
• identification, diagnosis and prevention of occupational and other work-related diseases and their precursor symptoms
• adaptation of physical and psychosocial environments to protect workers’ health against occupational stress
• development of occupational health programmes for various sectors of economies
• strengthening of the role of organizational and working cultures in the promotion of health of workers and in the prevention of occupational health problems
• manpower development, training and education
• development of occupational health services
• collection and dissemination of information.

3. The Committee identified a need for specific urgent collaboration between ILO and WHO in areas where it considers that either organization working alone is unlikely to be particularly effective. This includes:

• a joint programme to improve the health of agricultural workers which would also co-ordinate the delivery of existing agricultural health-related programmes, such as chemical safety (including pesticides), injury prevention, manual handling, and the prevention of zoonoses, utilizing primary health care structures and functions supplemented with requisite expert support
• a joint programme to improve the health of workers in small industry and the informal sector, utilizing an approach which incorporates the roles of primary health care and improvement of working conditions and environment through preventive action at the workplace
• regional or sub-regional joint ILO/WHO meeting should be convened to help facilitate the development, support and monitoring of these joint programmes and to help ensure that other technical areas of collaboration between the agencies are appropriately utilized.

4. To enable effective response from both organizations to the occupational health needs of Member States, higher priority and adequate resources should be given for occupational health in the programmes of the ILO and WHO. The Member States are encouraged to upgrade the priority status of their occupational health programmes at national level.

**Development of information systems on occupational diseases**

In order to carry out occupational health and safety activities effectively, sufficient data bases are needed. As there are already many good data bases on various aspects of occupational health and safety available, their full utilization should be optimized. Many of the Member Countries have informed about their national statistics on occupational diseases, and their plans to develop both diagnostic criteria for occupational diseases, as well as the registration systems. Provided the criteria for registra-
tion can be harmonized, these could be used for establishing a global statistics on occupational diseases, which is being planned to be established in the WHO/OCH. This would enable the estimation of level and severity of occupational health and safety problems in the Member Countries and would give guidance in targetting the substantive elements of the Programme to the areas, where the countries have most evident needs.

Cooperative agreement with NIOSH

NIOSH has re-established a Cooperative Agreement to collaborate with the WHO Workers’ Health Programme, for three years beginning in October 1992. The individual projects agreed upon are the following:

1. Prevention of occupational respiratory diseases
   a) Medical surveillance of workers exposed to mineral dusts
   b) Environmental monitoring of airborne particles
2. Biological monitoring
3. Health protection in small-scale industry
   a) WHO inter-regional meeting on health protection in small-scale industry
   b) Guidelines for control of hazards in small-scale industry
4. Occupational health information support (International directory of data bases and data banks in occupational health).

Projects planned for 1994–95

Projects planned for 1994–95 and financed from the Regular Budget:

- Joint ILO/WHO Committee on Occupational Health
- Occupational respiratory diseases prevention
- Guidelines on occupational health practice
- Research and training in the health of the working populations.

For the areas mentioned in this Sub-chapter which have not been covered by detailed projects and activities, the WHO/OCH in cooperation with the WHO Collaborating Centres will have to seek for extrabudgetary resources for their further development.

Programming and planning in the WHO

Budgeting and preparing action plans

Programme planning in the WHO is based on the General Programme of Work. At present, the Eight General Programme of Work concerning the period 1990–95 is ef-
fective. The preparation of the Ninth Workers' Health Programme (1996–2002) has been started. It will be approved in 1995.

The budgetary and activity plan for the Workers' Health Programme and other programmes is prepared and approved for a biennium in the World Health Assembly, which convenes in May each year. The budget for the years 1994–95 will be approved in May 1993.

**Designation of Collaborating Centres**

The designation of the WHO Collaborating Centres is based on the proposal by the Regional Directors. The proposal should be based on the preliminary exploration with the institutions and national authorities concerned. The WHO programme officers in occupational health may advise on prospective centres, at both global and regional level.

The criteria used in the selection of institutions that may qualify for the designation as a WHO Collaborating Centre are as follows:

a) the scientific and technical standing of the institution concerned at the national and international levels

b) the place the institution occupies in the country’s health, scientific and educational structures

c) the quality of its scientific and technical leadership, and the number and qualifications of its staff

d) the institution’s prospective stability in terms of personnel, activity and funding

e) the working relationship which the institution has developed with other institutions in the country, as well as the inter-country, regional and global levels

f) the institution’s ability, capacity and readiness to contribute to WHO programme activities, whether in support of country programmes or by participating in international cooperative activities.

WHO Collaborating Centres are designated for an initial period of four years. The designation may be renewed for the same or shorter periods. Before the decision on redesignation is made, the activities of the Collaborating Centre in concern will be evaluated.
In addition to the general criteria described above, the Planning Group has decided on the following more detailed criteria, concerning the designation of Collaborating Centres in Occupational Health:

**Qualitative criteria**
- genuine interest and specific accomplishments of the institutions
- scientific excellence at the international level
- scope of the programme fitting well to the WHO Workers' Health Programme
- scope of activity of the institution may be either multi- or monodisciplinary
- capacity to transmit the outputs to the national level
- institutions with potential to adopt leadership in their sub-region

**Quantitative criteria**
- resources as to expertise and equipment should be sufficient
- financial support and support in kind

**Geographical aspects**
- global geographical distribution of the Collaborating Centres in Occupational Health should be ensured.

**Coordination and collaboration between the WHO/WHP and the Collaborating Centres**

**WHO Workers' Health Programme**

The WHO/WHP is an extensive and comprehensive programme for the global development of occupational health for all who take part in the working life. With the financial and manpower resources available, the WHO/OCH Unit will be able to implement only part of the objectives and activities itself. Efforts are made to mitigate the financial limitations of the WHP, both by the Unit itself and by the Member Countries at the national level. Special attention should, however, be paid to ensuring that the sponsors/funding organizations do not have agendas contrary to the mission of occupational health.

**The Network of Collaborating Centres in Occupational Health**

The Network of the Collaborating Centres in Occupational Health can be seen as a powerful and practicable tool in implementing various activities of the WHO/WHP.

The prerequisites for networking of the Collaborating Centres in the implementation of various activities within the WHO/WHP are among others
• effective and well-structured Programme which attracts Centres to implement it
• information about the WHO Workers’ Health Programme objectives and ongoing projects
• information about the other Collaborating Centres’ (Network members) activities and programme plans
• competence and interest of the Collaborating Centres
• mutual interest in carrying out joint projects in certain topics in two or more Collaborating Centres
• traditions in international collaboration between the Centres
• funding.

The main advantage of networking is to gather the strengths of all Collaborating Centres and make the best possible combination available for the Programme and towards the goal Occupational Health For All.

At the beginning, the main line of collaboration may be between the WHO/OCH Unit and the Collaborating Centres. The Planning Group is authorized to make decisions concerning the division of work between the Collaborating Centres.

The inter-institutional collaboration between the network members has been dealt with in informal discussions between the individual institutes. The interest and priority areas of the individual Centres or groups of Collaborating Centres in implementing specific programme elements and the practical forms of their contributions can be seen in Chapter 3: Directory of the WHO Collaborating Centres in Occupational Health.

**Planning Group**

The Planning Group serves as an advisory body to the OCH Unit in deciding a comprehensive strategic plan for the Unit. The aim of seeking priorities in the preparation of the comprehensive strategic plan is to find activities, which would give the widest possible impact on workers’ health, taking into consideration the limitations of resources in the WHO/OCH Unit. Thus, strict prioritization of the programme elements is needed. In evaluating the impact on workers’ health of various activities, aspects such as number of exposed, levels of hazardous exposures, consequences of the measures taken on the basic rights of the workers, changes in the actual work environments, changes and trends in the workers’ health status, and the cost of the project inputs in relation to outputs, are among the most essential criteria to be considered in the prioritization of alternative programme elements.

The strategy with the priority programmes will offer a basis for the Collaborating Centres to select the topics, targets and forms for their collaborative contributions.
Two priority activities for the WHO/OCH Unit have been identified already earlier (Helsinki Meeting):

a) training, at different levels, especially in developing countries, including the production of training and education material, e.g. AV materials,

b) preparation of guidelines in different aspects of occupational health practice.

The overall framework of networking is shown in Figure 1.

**Information between the WHO/WHP and the Collaborating Centres**

For the effective promotion of occupational health and the WHP itself, dissemination of information among all involved (experts, authorities and other decision-makers in occupational health and safety, workers, employers, as well as the general public) about the Programme activities is needed. This can be carried out in two ways:

a) disseminating information about the WHO Workers’ Health Programme objectives and activities,

b) compiling, elaborating and disseminating scientific information about most essential occupational health and safety problems.

WHO/WHP will convene study groups on selected priority problems to gather the existing knowledge and information available and to find out the gaps in our knowledge. The results are published as WHO Technical Reports. They can be used both for training of occupational health and safety experts, and for informing national decision-makers of the occupational health and safety problems.

With the help of continuous communication of information between the WHO and the Collaborating Centres, the action plans and accomplished results of the Centres are available for the WHO/WHP, and the Programme may make full use of their published results, as well as of the joint publications of the Collaborating Centres.

The aim of this publication is to inform the Collaborating Centres of WHO/WHP objectives, priorities, and procedures, as well as of each others’ current and planned activities.

The WHP Newsletter was decided to be established in the First Meeting of the Collaborating Centres in Occupational Health in 1992. It will be published quarterly and it will serve as a channel of up-to-date information on current activities of both the WHO/WHP and the Collaborating Centres.
Networking of the Collaborating Centres in Occupational Health

**INFORMATION ELEMENT**

- Reports on activities of the CCs
  - Meetings
  - Meeting Reports
- Information about national OH priorities
  - Strategic Plan
  - Technical Reports
- Directory of the CCs in OH
  - WHP Newsletter
  - Training Courses
  - Guidelines
- Bilateral Collaboration

**ORGANIZATIONAL FRAMEWORK**

- Meeting of the CCs in OH (every two years)
- Advice on priorities in OH
- Planning Group (once a year)
- Selection of programme priorities
- Division of work between the CCs
- Solutions to practical OH problems

**SUBSTANCE CONTENT**

- **OCCUPATIONAL HEALTH FOR ALL**
  - elimination of risks
  - promotion of health

- **Collaborating Centres in Occupational Health**
  - flexible to respond to changing problems of the working life
  - strong through network

**WHP Programme Priorities**

Figure 1. Networking of the WHO Collaborating Centres in Occupational Health
2 Results of the questionnaire survey

In order to gather information about the on-going activities of the Collaborating Centres and their networking possibilities, a questionnaire survey was carried out among the Centres. One of the aims of the survey was to facilitate the division of work between the Centres, as the Planning Group (Geneva, October 1991) found it appropriate to assign the coordinating role for specific tasks and for limited periods of time to any of them (functional lead role) instead of hierarchic organization of the Centres.

The questionnaire was sent out at the end of January 1992 to all Collaborating Centres, totalling at that time 38 institutions in 31 different countries. The replies were completed in the First Meeting held in Moscow. The total number of questionnaires returned was 29.

Geographical distribution, resources and scope of activity of the Collaborating Centres

One of the recommendations of the Planning Group (Geneva, October 1991) was that the global geographical distribution of the Collaborating Centres be ensured.

Table 1. WHO Collaborating Centres in Occupational Health in the WHO regions

<table>
<thead>
<tr>
<th>WHO Region</th>
<th>Number of the Centres</th>
<th>Labour force (a rough estimate)</th>
</tr>
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<tbody>
<tr>
<td>African Region (AFRO)</td>
<td>-</td>
<td>200</td>
</tr>
<tr>
<td>Americas (AMRO)</td>
<td>7 (2)</td>
<td>300</td>
</tr>
<tr>
<td>Eastern Mediterranean (EMRO)</td>
<td>3</td>
<td>100</td>
</tr>
<tr>
<td>European Region (EURO)</td>
<td>18 (2)</td>
<td>400</td>
</tr>
<tr>
<td>South-East Asia (SEARO)</td>
<td>3</td>
<td>475</td>
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<tr>
<td>Western Pacific (WPRO)</td>
<td>10</td>
<td>675</td>
</tr>
<tr>
<td>Total</td>
<td>41 (4)</td>
<td>2,150 bill.</td>
</tr>
</tbody>
</table>
Institutions in the process of designation have been indicated in parentheses.

As seen in Table 1, 41 Collaborating Centres are registered in the WHO/OCR and four additional institutions are in the process of designation. In addition, there are three Collaborating Centres in the field of health of seafarers, all in Europe. The majority of the Centres are in Europe. In the African Region there are no Collaborating Centres, and in the Eastern Mediterranean and South-East Asia regions the number of Collaborating Centres is smaller. It is in distinct disproportion with the size of the labour force of those regions.

The geographical distribution of the Collaborating Centres is shown in Figure 2.
The statistics presented in Tables 2-12 are based on the replies in the questionnaires of the 29 Collaborating Centres.

**Response rates**

The Institutes who replied to the questionnaire are indicated according to the region in Table 2. Also the year of first designation as a Collaborating Centre is indicated.

**Table 2. WHO Collaborating Centres, those who have replied, according to the year of first designation and region (total number of designated Collaborating Centres given in parentheses)**

<table>
<thead>
<tr>
<th>Year</th>
<th>AMRO</th>
<th>EMRO</th>
<th>EURO</th>
<th>SEARO</th>
<th>WPRO</th>
<th>Total</th>
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<td>2</td>
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</tr>
<tr>
<td>1984</td>
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<td></td>
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<tr>
<td>1989</td>
<td></td>
<td></td>
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<td>1992</td>
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<td></td>
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<tr>
<td>Total</td>
<td>6(7)</td>
<td>1(3)</td>
<td>14(18)</td>
<td>1(3)</td>
<td>7(10)</td>
<td></td>
</tr>
</tbody>
</table>

The response rates of the Collaborating Centres in each region varied from 33% to 85%.

**Size of the Collaborating Centres**

The size of the Collaborating Centres varies from large national institutes to small university units. The majority of the institutes are relatively small units. The total number of staff of the institutes, if the data has been available, has been indicated in Chapter 3.
Table 3. Distribution of the institutes according to the number of occupational health and safety experts

<table>
<thead>
<tr>
<th>Region/number of institutes</th>
<th>AMRO</th>
<th>EMRO</th>
<th>EURO</th>
<th>SEARO</th>
<th>WPRO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of experts</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1 - 50</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>51 - 150</td>
<td>4</td>
<td>1</td>
<td>3</td>
<td>8</td>
<td></td>
<td>24</td>
</tr>
<tr>
<td>151-</td>
<td>1</td>
<td>7</td>
<td>1</td>
<td>9</td>
<td></td>
<td>26</td>
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<td>6</td>
<td>1</td>
<td>14</td>
<td>1</td>
<td>1</td>
<td>17</td>
</tr>
</tbody>
</table>

Scope of expertise

In the questionnaire ten groups of occupational health and safety experts with different competence areas were listed (occupational health physicians, occupational health nurses, toxicologists, epidemiologists, occupational hygienists, ergonomists, chemists, safety engineers, psychologists, and physiotherapists). In Table 4, the first category (10) represents institutes that have the full spectrum of occupational health and safety expertise represented in their staff.

Table 4. Collaborating Centres according to the width of their occupational health and safety expertise

<table>
<thead>
<tr>
<th>Expert groups</th>
<th>AMRO</th>
<th>EMRO</th>
<th>EURO</th>
<th>SEARO</th>
<th>WPRO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>10</td>
<td>2</td>
<td>3</td>
<td>3</td>
<td>4</td>
<td>2</td>
<td>15</td>
</tr>
<tr>
<td>7-9</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td>1</td>
<td>15</td>
</tr>
<tr>
<td>2-6</td>
<td>3</td>
<td>3</td>
<td>1</td>
<td>2</td>
<td>2</td>
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<tr>
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<td>1</td>
<td>14</td>
<td>1</td>
<td>1</td>
<td>17</td>
</tr>
</tbody>
</table>

Out of the 29 institutions that returned the questionnaire, 5 had ten various expert groups of occupational health and safety represented in their personnel. Most frequently institutions in the category 7-9 were lacking safety engineers, physiotherapists and/or psychologists.

It can be seen that most of the Collaborating Centres can be classified as multidisciplinary institutions, which has been seen as an advantage, because one of the main principles in occupational health and safety is the multidisciplinary approach. However, the Planning Group (Geneva, October 1991) agreed that the scope of the activities of the Collaborating Centres may be either multi- or monodisciplinary.
Functions

Table 5 shows the functions of the Collaborating Centres. All of the Collaborating Centres reported research as their activities and the vast majority also training, information, and advisory services. One institute reported no training activities at the moment, and 5 institutes lacked information activities and/or advisory services.

Table 5. The functional distribution of the Collaborating Centres

<table>
<thead>
<tr>
<th>Activities</th>
<th>AMRO</th>
<th>EMRO</th>
<th>EURO</th>
<th>SEARO</th>
<th>WPRO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Research</td>
<td>6</td>
<td>1</td>
<td>14</td>
<td>1</td>
<td>7</td>
<td>29</td>
</tr>
<tr>
<td>Training</td>
<td>6</td>
<td>1</td>
<td>13</td>
<td>1</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>Adv. services</td>
<td>5</td>
<td>1</td>
<td>13</td>
<td>6</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Information</td>
<td>4</td>
<td>13</td>
<td>1</td>
<td>7</td>
<td>25</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>6</td>
<td>1</td>
<td>14</td>
<td>1</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

Activities of the Collaborating Centres

Research

Research carried out in the Collaborating Centres constitutes the basis for all other activities and guarantees that the occupational health and safety expertise needed for the interpretation and evaluation of scientific data is available at the Centres. Most of the Institutes cover all central topics of occupational health and safety research. Most frequently are reported occupational medicine, epidemiology, toxicology and occupational hygiene. Occupational safety (accident prevention), occupational psychology and ergonomics are topics that were not covered so often (in 12-17 out of 29 institutes).

The main orientation of the Collaborating Centres in the field of research is shown in Table 6.
Table 6. The main orientation of research of the Collaborating Centres according to the questionnaires

<table>
<thead>
<tr>
<th>Topic</th>
<th>AMRO</th>
<th>EMRO</th>
<th>EURO</th>
<th>SEARO</th>
<th>WPRO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Occupational medicine</td>
<td>6</td>
<td>1</td>
<td>13</td>
<td>1</td>
<td>7</td>
<td>28</td>
</tr>
<tr>
<td>Occupational health services</td>
<td>4</td>
<td>8</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>18</td>
</tr>
<tr>
<td>Epidemiology</td>
<td>4</td>
<td>1</td>
<td>10</td>
<td></td>
<td>7</td>
<td>22</td>
</tr>
<tr>
<td>Occupational hygiene</td>
<td>5</td>
<td>1</td>
<td>13</td>
<td>1</td>
<td>7</td>
<td>27</td>
</tr>
<tr>
<td>Occupational physiology</td>
<td>3</td>
<td>1</td>
<td>8</td>
<td>5</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Ergonomics</td>
<td>3</td>
<td>8</td>
<td></td>
<td>6</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Occupational psychology</td>
<td>1</td>
<td>1</td>
<td>10</td>
<td></td>
<td>4</td>
<td>16</td>
</tr>
<tr>
<td>Occupational safety</td>
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<td>1</td>
<td>6</td>
<td>1</td>
<td>1</td>
<td>12</td>
</tr>
<tr>
<td>Toxicology</td>
<td>4</td>
<td>1</td>
<td>10</td>
<td></td>
<td>6</td>
<td>21</td>
</tr>
<tr>
<td>Statistics</td>
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<tr>
<td>Pharmacokinetics</td>
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<td></td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Environmental medicine</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
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<tr>
<td>Occ. clinical pathology</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Health personnel and training</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Health economics</td>
<td></td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Radiation protection</td>
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<td></td>
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<td>1</td>
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<td>1</td>
</tr>
<tr>
<td><strong>Total number of replies</strong></td>
<td>6</td>
<td>1</td>
<td>14</td>
<td>1</td>
<td>7</td>
<td>17</td>
</tr>
</tbody>
</table>

Training

Training forms a cornerstone and a core element for the activities of occupational health and safety both in the development of expertise and in the implementation of practically-oriented workplace level interventions, occupational health services and occupational health and safety measures. In spite of this, all Collaborating Centres do not organize regular short-term or medium-term training, not to mention long-term curricula in occupational health. The distribution of the training activities is shown in Table 7.

Table 7. Collaborating Centres according to the continent and type of training

<table>
<thead>
<tr>
<th>Length of training</th>
<th>AMRO</th>
<th>EMRO</th>
<th>EURO</th>
<th>SEARO</th>
<th>WPRO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Short-term training (1 d to 1 mo)</td>
<td>6</td>
<td>1</td>
<td>12</td>
<td>1</td>
<td>7</td>
<td>27</td>
</tr>
<tr>
<td>1-6 months courses</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>1</td>
<td>3</td>
<td>11</td>
</tr>
<tr>
<td>Long-term curricula (with diploma or degree)</td>
<td>4</td>
<td>1</td>
<td>8</td>
<td>4</td>
<td>1</td>
<td>17</td>
</tr>
<tr>
<td><strong>Total number of replies</strong></td>
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<td>1</td>
<td>14</td>
<td>1</td>
<td>7</td>
<td>17</td>
</tr>
</tbody>
</table>
The majority of Collaborating Centres are active in short-term training, whereas the long-term curricula leading to a degree or diploma are less prevalent (2/3 of the institutes). The number of those Collaborating Centres who do not organize any kind of training is, however, only a few.

There are a number of Collaborating Centres, especially in Asia and Australia, who organize regular long-term training in occupational health, leading to a diploma. They also expressed their interest and described their current activities in offering training positions also to students from other countries. This opportunity should be fully utilized.

**Information**

Organization of information services both to the occupational health and safety experts and other persons and organizations involved in occupational health and safety is crucial to all Collaborating Centres and the WHO/WHP itself. The Collaborating Centres were asked about their library services and publication activities. The results are described in Table 8.

<table>
<thead>
<tr>
<th>Information source</th>
<th>AMRO</th>
<th>EMRO</th>
<th>EURO</th>
<th>SEARO</th>
<th>WPRO</th>
<th>Total</th>
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</thead>
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<tr>
<td>Books</td>
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<td></td>
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<td>2</td>
<td>1</td>
<td>4</td>
<td>9</td>
</tr>
<tr>
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</tr>
<tr>
<td>5001-10000</td>
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<td>11</td>
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<td>- 500</td>
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<td>4</td>
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<tr>
<td>501-</td>
<td>2</td>
<td>7</td>
<td>4</td>
<td>13</td>
<td></td>
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</tr>
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<td>1</td>
<td>12</td>
<td></td>
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<tr>
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<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Films</td>
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<td>4</td>
<td>1</td>
<td>2</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Videos</td>
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<td>4</td>
<td>1</td>
<td>3</td>
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<td>1</td>
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<td>1</td>
<td>4</td>
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<td></td>
<td></td>
<td></td>
<td>1</td>
</tr>
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<td></td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>tens</td>
<td>1</td>
<td></td>
<td>7</td>
<td>6</td>
<td>14</td>
<td></td>
</tr>
<tr>
<td>hundreds</td>
<td>1</td>
<td></td>
<td>3</td>
<td></td>
<td>4</td>
<td></td>
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<td>1</td>
<td>14</td>
<td>1</td>
<td>7</td>
<td>18</td>
</tr>
</tbody>
</table>
The information services on occupational health and safety are well organized in most of the Collaborating Centres. The books and journals are the basic source of information in all Centres. However, the easy and practicable way of disseminating and retrieving information are the CD-ROMs and other data bases, and it seems that many of the Centres are shifting their information activities to these modern, electronic services.

Many of the Collaborating Centres reported to have a lot of slides to be used for training purposes. Also the lists of various training packages are valuable, as using the material already available would save time and costs of the trainers.

Worksafe Australia and NIOSH (USA) have a large pool of slides (8 000). Some of the Collaborating Centres have created their own data banks, e.g. on biostatistics of a coal mine (China), some are being compiled on hygienic exposure levels, occupational diseases, medical surveillance results, and chemical safety (Singapore).

Information about the scientific articles and other material published and already available is being compiled in the international data bases, e.g. NIOSHTIC, MEDLINE, CISINFO, etc. These international data bases should be fully utilized.

Advisory services

The scope of advisory services of the WHO Collaborating Centres is very broad. In most cases, the Institutes cover both the services concerning the improvement of the work environment and those intended for protection and promotion of health and working capacity of the worker. The distribution of advisory services among the Collaborating Centres is shown in Table 9.

Table 9. Distribution of expert advisory services

<table>
<thead>
<tr>
<th>Advisory service</th>
<th>AMRO</th>
<th>EMRO</th>
<th>EURO</th>
<th>SEARO</th>
<th>WPRO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hygienic measurements</td>
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<td>1</td>
<td>9</td>
<td>6</td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>Diagnosis of occ. diseases</td>
<td>4</td>
<td>1</td>
<td>10</td>
<td>7</td>
<td></td>
<td>22</td>
</tr>
<tr>
<td>Biological monitoring</td>
<td>1</td>
<td>1</td>
<td>11</td>
<td>6</td>
<td></td>
<td>19</td>
</tr>
<tr>
<td>Toxicological analyses</td>
<td>3</td>
<td>1</td>
<td>9</td>
<td>4</td>
<td></td>
<td>17</td>
</tr>
<tr>
<td>Psychological aptitude tests</td>
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<td>1</td>
<td>6</td>
<td>2</td>
<td></td>
<td>11</td>
</tr>
<tr>
<td>Hazard and risk assessment</td>
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<td>2</td>
<td>1</td>
<td>1</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Identification of high-risk occupations</td>
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<td>1</td>
<td>1</td>
<td>1</td>
<td></td>
<td>4</td>
</tr>
<tr>
<td>Standard setting</td>
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<td></td>
<td></td>
<td>4</td>
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<td>Physiological tests</td>
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</tbody>
</table>
Advisory service

<table>
<thead>
<tr>
<th>Advisory service</th>
<th>AMRO</th>
<th>EMRO</th>
<th>EURO</th>
<th>SEARO</th>
<th>WPRO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expert advisory services for authorities &amp; others</td>
<td>1</td>
<td>3</td>
<td>1</td>
<td>5</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Assessment of strain and stress</td>
<td>2</td>
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<td></td>
<td></td>
<td>2</td>
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<tr>
<td>Ergonomic evaluation</td>
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<td></td>
<td></td>
<td></td>
<td>2</td>
</tr>
<tr>
<td>Group OHS for small industries</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
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</tr>
<tr>
<td>Occupational inspection</td>
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<td>1</td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Diagnosis and treatment of acute poisonings</td>
<td>2</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Personal protective devices</td>
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<td></td>
</tr>
<tr>
<td>Medical examinations</td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Assessment of work ability</td>
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</tr>
<tr>
<td>Fatal accidents + epidemiology</td>
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<td></td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Autopsies of coal miners</td>
<td>1</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Health and environmental audits</td>
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<td></td>
<td></td>
<td></td>
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<td>1</td>
</tr>
<tr>
<td>Total number of replies</td>
<td>6</td>
<td>1</td>
<td>14</td>
<td>1</td>
<td>7</td>
<td></td>
</tr>
</tbody>
</table>

The advisory services seem to concentrate on occupational hygiene, occupational medicine, and toxicology.

**Collaboration at the national and international levels**

It turned out on the basis of the questionnaire survey that some of the Centres have collaboration with a very covering network of other national institutions in the field of occupational health and safety in their countries, and internationally as well, while some of the Centres did not report frequent collaborative contacts with other institutions. In the reality, the inter-institutional contacts may be more frequent than indicated in the questionnaires. Partly the obviously missing information may be due to the unclarity of the question.

Networking of the Collaborating Centres is a mechanism, with the help of which the Collaborating Centres can be activated to work in the direction of WHO/WHP objectives. Effective and productive networking can best be built on collaboration which has been established on the basis of genuine interest of experts. Conducting joint research projects or training, and making the network fully operable requires relatively long collaborative traditions and good coordination. The Planning Group and the WHO/WHP are therefore expected to take a strong leadership role in proposing programme priorities and catalyzing agreement on division of work between the Collaborating Centres.

At the beginning, the main line of collaboration may be between the WHO/OCH Unit and the Collaborating Centres. This is in line with the conclusion of the Planning
Meeting (Geneva, October 1991) that two types of support from the Collaborating Centres are needed:

a) provision of support for the WHO/WHP directly, and
b) serving as a framework for inter-institutional activities of the Collaborating Centres.

Main forms of collaboration with the WHO Workers’ Health Programme

The Collaborating Centres were asked about their collaborative activities with the WHO/WHP during the past three years. The aim of this question was to find out what concrete actions the Centres have carried out during the past few years.

The distribution of various forms of collaboration between the Collaborating Centres is shown in Table 10.

Table 10. Main forms of collaboration with WHO/OCH during the past three years

<table>
<thead>
<tr>
<th>Form of collaboration</th>
<th>AMRO</th>
<th>EMRO</th>
<th>EURO</th>
<th>SEARO</th>
<th>WPRO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organization of meetings</td>
<td>1</td>
<td>3</td>
<td>4</td>
<td></td>
<td></td>
<td>4</td>
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<tr>
<td>Participation in meetings</td>
<td>6</td>
<td>5</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Co-sponsoring symposia</td>
<td>3</td>
<td>2</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>EAP memberships</td>
<td>1</td>
<td>2</td>
<td>3</td>
<td></td>
<td></td>
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<tr>
<td>Consultations</td>
<td>2</td>
<td>1</td>
<td>5</td>
<td>4</td>
<td></td>
<td>12</td>
</tr>
<tr>
<td>Preparation and reviewing reports and documents</td>
<td>2</td>
<td>1</td>
<td>6</td>
<td></td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Conducting training</td>
<td>3</td>
<td>3</td>
<td></td>
<td></td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Participation in training</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>Organizing training for WHO fellows</td>
<td>1</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td></td>
<td>3</td>
</tr>
<tr>
<td>WHO-funded projects</td>
<td>1</td>
<td>5</td>
<td>3</td>
<td>9</td>
<td></td>
<td>9</td>
</tr>
<tr>
<td>Provision of information</td>
<td>1</td>
<td>1</td>
<td>4</td>
<td>1</td>
<td>2</td>
<td>9</td>
</tr>
<tr>
<td>Creation of int centres</td>
<td>1</td>
<td></td>
<td></td>
<td>1</td>
<td></td>
<td>1</td>
</tr>
<tr>
<td>Total number of replies</td>
<td>6</td>
<td>1</td>
<td>14</td>
<td>1</td>
<td>7</td>
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</tr>
</tbody>
</table>

On the basis of the questionnaire replies, the main forms of the Collaborating Centres to contribute to the Programme have been consultations, participation in the WHO meetings, provision of information, preparation and reviewing of the reports and documents, and carrying out WHO-funded projects. In addition to reporting the contributions to the WHO/WHP, the Collaborating Centres also reported their activities to the IPCS and WHO Regional activities, which indirectly give support to the implementation of the WHO Workers’ Health Programme.
The Planning Group (Geneva, October 1991) found the aspect of a minimum rate of activity important for an institute being designated/redesignated as a Collaborating Centre. It was decided that the minimum rate of activity be defined. The aim of taking this into consideration is to ensure the active interest of those Institutes designated as a Collaborating Centre to contribute to the WHO/WHP and allocate resources either as financial support or support in kind.

In order to make the reporting of various activities more effective and to ensure that all individual activities are recorded, the actions will also be recorded in the WHO/OCH Unit, using modern computer technology.

The Collaborating Centres were also asked what would be the most preferable forms of collaboration with the WHO/WHP and other Collaborating Centres. The results are shown in Table 11. It seems that earlier the forms of contributions to the WHP have been participation in the meetings, consultations and preparation and reviewing of the WHO documents. Now more practically active participation is foreseen by the Collaborating Centres. Particularly, they would prefer joint research projects within the framework of the WHP.

Table 11. Preferred forms of collaboration

<table>
<thead>
<tr>
<th>Forms of collaboration</th>
<th>AMRO</th>
<th>EMRO</th>
<th>EURO</th>
<th>SEARO</th>
<th>WPRO</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Participation in meetings</td>
<td>1</td>
<td>1</td>
<td>5</td>
<td>2</td>
<td>9</td>
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<tr>
<td>Collection of OH information</td>
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<td>2</td>
<td>1</td>
<td>3</td>
<td>8</td>
<td>8</td>
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<tr>
<td>Training</td>
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<td>1</td>
<td>5</td>
<td>1</td>
<td>10</td>
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<td>Establishment of reg. networks</td>
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<td></td>
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<tr>
<td>Training for WHO fellows</td>
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<td></td>
<td>2</td>
<td>3</td>
<td>3</td>
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<tr>
<td>Preparation of training material</td>
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<td></td>
<td>1</td>
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<td>1</td>
</tr>
<tr>
<td>Preparation of documents</td>
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<td>7</td>
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<td>10</td>
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<tr>
<td>Cooperation in DCs</td>
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<td></td>
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</tr>
<tr>
<td>Total number of replies</td>
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<td>1</td>
<td>14</td>
<td>1</td>
<td>7</td>
<td>14</td>
</tr>
</tbody>
</table>

Priority areas of the Collaborating Centres

The Collaborating Centres were asked to list their priority areas for the next five years in order to compare their compatibility with WHO/WHP objectives and activities. The distribution of priority areas is described in Table 12. It can be stated that the spectrum of future priority areas covers the objectives of the WHO/WHP. Thus, possibilities for making use of the different capacities of the Collaborating Centres with the help of networking seem realistic.
Table 12. Priority areas of the Collaborating Centres for the next five years

<table>
<thead>
<tr>
<th>Priority area</th>
<th>AMRO</th>
<th>EMRO</th>
<th>EURO</th>
<th>SEARO</th>
<th>WPRO</th>
<th>Total</th>
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</thead>
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<tr>
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<td>4</td>
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<tr>
<td>Development of info systems</td>
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<td>2</td>
<td>4</td>
<td></td>
</tr>
<tr>
<td>Development of training</td>
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<td></td>
<td>3</td>
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<tr>
<td>Systematic monitoring of workers' health</td>
<td>1</td>
<td>1</td>
<td></td>
<td>2</td>
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<tr>
<td>Preventive solutions</td>
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<td>1</td>
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<tr>
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<tr>
<td>Standard setting</td>
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<tr>
<td>Chemical safety</td>
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<td></td>
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<tr>
<td>Aging workers</td>
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<tr>
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<tr>
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<tr>
<td>BM and risk assessment</td>
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<td>1</td>
<td>6</td>
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<td></td>
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<tr>
<td>Ergonomics</td>
<td>2</td>
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<td>2</td>
<td>1</td>
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</tr>
<tr>
<td>Occupational hygiene</td>
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<td>Occupational medicine</td>
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<tr>
<td>Occupational safety</td>
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<td></td>
<td>3</td>
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</tr>
<tr>
<td>Psychology</td>
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<tr>
<td>Physiology</td>
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<td>3</td>
<td></td>
<td>1</td>
<td>6</td>
<td></td>
</tr>
<tr>
<td>Toxicology</td>
<td>1</td>
<td>4</td>
<td></td>
<td>2</td>
<td>7</td>
<td></td>
</tr>
<tr>
<td>Combined effects</td>
<td>3</td>
<td></td>
<td>3</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>New technologies</td>
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<td>2</td>
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<tr>
<td>PPDs</td>
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<td></td>
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<td></td>
<td></td>
</tr>
<tr>
<td>Non-ionizing radiation</td>
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<td></td>
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<td></td>
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<td></td>
</tr>
<tr>
<td>Small-scale industries</td>
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<td>1</td>
<td>2</td>
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<td></td>
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</tr>
<tr>
<td>VDT work</td>
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<td></td>
<td>1</td>
<td></td>
<td>1</td>
<td></td>
</tr>
<tr>
<td>WRDs</td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Total number of replies: 6 1 14 1 7

OHS: Occupational health services
OH & S: Occupational health and safety
BM: Biological monitoring
DC: Developing country
OD: Occupational disease
PPD: Personal protective device
VDT: Video display terminal
WRD: Work-related disease
The table also demonstrates the huge breadth of occupational health in the Collaborating Centres, covering more than 30 substance areas.

**WHO/WHP activities for developing countries**

Special emphasis of the WHO/WHP in the improvement of occupational health and working conditions in the developing countries is placed on the improvement of reporting systems of occupational injuries and diseases, on the development of occupational health of agricultural workers and workers in small industries, and in improvement of the coverage of occupational health services to the underserved working populations (e.g. agriculture, small industries, informal sector).

The following Collaborating Centres have expressed their interest and offered some forms of collaboration for implementing various activities in collaboration with and for the benefit of developing countries:

<table>
<thead>
<tr>
<th>Worksafe Australia</th>
<th>Training of OHS professionals in the Asia-Pacific region; some of the staff members have extensive experience in developing countries.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shanghai Medical University, School of Public Health</td>
<td>Accepting fellows from developing countries to have continuous training in occupational health</td>
</tr>
<tr>
<td>High Institute of Public Health, Egypt</td>
<td>Research work on reasonable permissible levels for different exposures suitable for developing countries. Organizing a conference on occupational health for developing countries.</td>
</tr>
<tr>
<td>Finnish Institute of Occupational Health</td>
<td>Organization of training courses and preparation of training material for developing countries, especially those in Eastern and Southern Africa</td>
</tr>
<tr>
<td>Institute for Occupational Health, Dortmund</td>
<td>Cooperation with the developing countries, Asia, Africa, Eastern Europe</td>
</tr>
<tr>
<td>Institute of Occupational Health, Milan</td>
<td>Cooperation in occupational health and safety with developing countries</td>
</tr>
<tr>
<td>Institute of Industrial Ecological Sciences, Kitakyushu, Japan</td>
<td>Accepting WHO fellows for training</td>
</tr>
<tr>
<td>National Institute of Occupational Environmental Health, Viet Nam</td>
<td>Ergonomics and technology transfer in developing countries</td>
</tr>
</tbody>
</table>
3

Directory of the
WHO Collaborating Centres
in Occupational Health

1. Division of Occupational Health
   Department of Industrial Relations and Employment
   Dr. B. Nolan, Director
   P.O. Box 163
   Lidcombe, NSW 2141
   Australia
   tel. Int.+612-646 0235
   fax: Int.+612-646 0333

   Worksafe Australia
   Dr. Edward Emmett
   Chief Executive Officer
   Contact person: Dr. Neill Stacey
   GPO Box 58
   Sydney NSW 2001
   Australia
   tel. Int.+612-565 9297
   fax: Int.+612-565 9399
   telex: 177 243

Tasks

Worksafe Australia is a multidisciplinary organization with four tasks: research, information, training, and advisory services.
Expertise
The personnel of the Institute covers all other experts of OH & S except chemists and safety engineers (occupational health physicians, occupational health nurses, toxicologists, epidemiologists, occupational hygienists, ergonomists, psychologists, physiotherapists).

Training
Worksafe Australia organizes a series of professional development short courses aimed at OHS professionals and practitioners across Australia. In addition, 1-6 months courses which are also open to students from other countries, are organized: Intensive course in Occupational Medicine (12 weeks), and Course in Occupational Hygiene (13 weeks) for prospective occupational hygienists. Long-term training covers: Doctor of Philosophy; Master of Occupational Health and Safety (12 months full-time, treatise within 2 years); Diploma of Occupational Health and Safety (1 year full-time coursework).

Priority areas
Improved data describing the OHS situation in Australia to provide a foundation for industry-based prevention strategies
Regular descriptive surveys of exposure, effects, OHS awareness and attitudes in key industries
Systematic health and safety monitoring of major exposure groups
Research on preventive solutions
New technologies for biological monitoring and risk assessment

Collaboration
Participation in relevant meetings; Provision of consultancy services; Collection and dissemination of information, as well as training of OH & S professionals in Asia-Pacific region; Establishment of regional OHS networking arrangements for government, employer and trade union organizations. In addition, some Institute staff members have extensive experience in developing countries.

3.
National Center of Hygiene and Medical Ecology
The Director
Boulevard D. Nestorov 15
Sofia 1431
Bulgaria
tel. Int.+3592-591006
fax: Int.+3592-596 071
telex: 22712 mapres bg
4. Instituto de Salud Publica de Chile
Departamento de Salud Occupacional y Contaminacion Ambiental
Dr. Leonel Rojas Stolze
Contact person: Sra Nella Marchetti Pareto
Avenida Marathon No. 1000
Santiago de Chile
Chile
tel. Int. + 56-2 391 1105 anexo 700-709
fax: Int. + 56-2 238 4356
telex: 48

Tasks
Instituto de Salud Publica de Chile is a multidisciplinary organization with four tasks: research, information, training, and advisory services.

Expertise
The personnel of the Institute covers occupational health physicians, occupational health nurses, occupational hygienists, chemists, and safety engineers. The total number of occupational health and safety professionals is, however, relatively small.

Training
The Institute organizes in addition to short-term national training courses, also a 6-month course on Risk Prevention (Curso de Experto Profesional en Prevencion de Riesgos) and long-term training in collaboration with the Universidad de Chile (three academic semesters). These are also open for students from other countries.

Priority areas
Clinical and subclinical effects of metals, both occupational and non-occupational exposures
Establishing local health services
Development of techniques for evaluation of exposures

Collaboration
Research; control of exposures

5. Institute of Occupational Medicine
Chinese Academy of Preventive Medicine
Professor Changqi ZOU, Acting Director
29 Nan Wei Road
Beijing 100050
The People’s Republic of China
tel. Int. +861-301 6891
fax: Int.+861-301 4323
Tasks
The Institute of Occupational Medicine in Beijing is a multidisciplinary institute with four tasks and good personnel resources: research, information, training, and advisory services.

Expertise
The personnel covers other areas of expertise except safety engineers and physiotherapists. The Institute has a wide network of collaborating institutions both in China and abroad. The total number of personnel is 230.

Training
The institute carries out several training courses annually on various topics of occupational medicine, hygiene and toxicology.

Priority areas
Survey on occupational health in township and village-owned enterprises
Epidemiological investigation and etiological study on occupational cancers
Prevention and control of dust hazard
Studies on industrial toxicants, benzene, TNT, and pesticide poisoning
Studies on environmental and biological monitoring
Development and improvement of reporting network on occupational diseases

Collaboration
Research projects

---

6. Shanghai Medical University
School of Public Health
Professor GU Xue-qi, Director
Contact person: LIANG You-xin
138 Yi Xue Yuan Road
Shanghai 200032
People's Republic of China
tel. Int.+86-21-431 1900-214 (ext)
fax: Int.+86-21-433 0543
telex: 33325 smu cn

Tasks
The Shanghai Medical University, School of Public Health is a multidisciplinary institute with four tasks.
Expertise  The number of occupational health and safety personnel is relatively small. Occupational physicians, occupational health nurses, toxicologists, epidemiologists, ergonomists, chemists are represented in the personnel.

Training  The Institute carries out training in occupational health. A one-year training programme on occupational health and occupational disease prevention, leading to a degree, has been carried out in years 1989-1991.

Priority areas  Integration of OHS with PHC in the rural area
Occupational dermatology
Neurobehavioral toxicology
Reproductive toxicology
Occupational cancer and its risk management

Collaboration  Accept fellows from developing countries to have continuous training in occupational health; Integration of occupational health and PHC with Center for PHC, Shanghai;
Neurobehavioral toxicology with WHO and NIOSH; Editing series of teaching material on occupational health, industrial toxicology and/or health promotion at the workplace.

Ministerio de Salud
División de Salud Ocupacional
Dra Myriam Duemas de Rojas, Directora
Ing. Clara Barrera
Calle 16 Nro 7-39
Bogota, D.E.
Republica de Colombia
tel. Int.+571-282 0047
tax: Int.+571-282 0003
telex: 45413

Tasks  División de Salud Ocupacional is a small unit of occupational health with the following expertise: engineering and occupational medicine.
Priority areas

Further development of the initiative 1992: Year of the Workers’ Health for the period up to 1994.

Preparation of various materials on occupational health

Preparation of training modules and information material on occupational health.

8.

Institute of Occupational Health
Dr. Miriam Martinez Valladares, Director
Calzada de Bejucal, Arroyo Naranjo
Apartado 9064
Ciudad de la Habana
Cuba CB 10900
Tel. Int. 44 7820 and 44 7855
Telex: 512144 HIGEP-CU and 511149 MSP-CU

Tasks
The tasks of the Institute are research, training, occupational medical care, technical services, and standardization.

Expertise
The following experts are represented in the staff: occupational health physicians, occupational hygienists, toxicologists, psychologists, and epidemiologists.

Training
The Institute provides short-term training for national experts and for foreigners from Spanish-speaking countries.

In addition, an International Master Course in Occupational Health is organized for professionals from Spanish-speaking countries.

Priority areas
Promotion, prevention, early diagnosis, treatment and rehabilitation of occupational diseases

Physical and mental capacity related to workers’ health

Development of means for hygienic-sanitary control of occupational hazards

Occupational cancer

Standardization of the diagnosis of diseases of occupational origin

Collaboration
Research; Consultancies; Accepting of WHO fellows for training; Preparation of WHO documents
9. National Institute of Public Health
Centre of Industrial Hygiene and Occupational Diseases
Ass. Prof. Miroslav Cikrt, MD
Srobarova 48
Prague 10 100 42
Czechoslovakia
tel. Int. + 42-2-738 715
fax: Int. + 42-2-736 904
telex: 122 662

Tasks
The Centre of Industrial Hygiene and Occupational Diseases is a multidisciplinary institution with four tasks: research, information, training, and advisory services.

Expertise
Epidemiologists and physiotherapists are not represented in the personnel. The other areas of expertise are well represented. The total number of staff is approx. 100.

Training
The Institute organizes national training courses annually, no certificates.

Priority areas
Toxicology
Industrial hygiene, chemical and physical factors
Occupational diseases, lung diseases, occupational neurology
Psychology, physiology and ergonomics

Collaboration
Preparation and revision of WHO documents; Cooperation in scheduled forms accepted during the First Meeting of Collaborating Centres in Moscow

10. High Institute of Public Health
Occupational Health Department
Prof. Dr. Ragaa El-Gazzar
165, El-Honeya Avenue
Hadara Alexandria
Egypt
tel. Int. + 20-421 5575-6
telex: 54467 univy un
The Occupational Health Department of the High Institute of Public Health is a multidisciplinary institution with three main tasks: research, training and advisory services. The information activities are less developed than the other three.

All the other occupational health and safety professionals are represented in the personnel except physiotherapists. However, the number of each group of professionals is relatively small.

The Institute organizes one-week courses periodically for occupational physicians, chemists, biologists and safety engineers in industry. Special 1-6 month courses are designed on occupational health, biology and toxicology for students from developing countries. Long-term training is given at national and international levels: Diploma in public health majoring occupational health and industrial medicine (1 year), Diploma in public health majoring occupational hygiene (1 year), Master degree in the above two specialties (about 2 years), Doctor degree in the same specialties (4 years).

Research on reasonable permissible levels for different exposures in developing countries

Manual on different methodological approaches for biological monitoring

Ergonomics, job strain and cardiovascular risk factors

Mutagenicity

Exchange of information; Conferences; Preparing and editing documents

Finnish Institute of Occupational Health
Professor Jorma Rantanen, Director General
Contact person: Ms. Suvi Lehtinen, Chief of Office
Topeliuksenkatu 41 a A
SF-00250 Helsinki
Finland
tel. Int.+ 358-0-47 471
fax: Int.+ 358-0-47 47 548 or 414 634
telex: tlx 121394 occuphealth sf
The Finnish Institute of Occupational Health is a multidisciplinary research institution with four main tasks: research, information, training, and advisory services.

All the experts in occupational health and safety are represented in relatively high numbers. The total number of personnel is about 650.

The Institute of Occupational Health organizes approx. 140 training courses annually for occupational health and safety experts in Finland. Also long-term specialization training of occupational health physicians, occupational medicine specialists, occupational health nurses, occupational hygienists, and occupational physiotherapists is carried out in Finnish. The training conducted in English is mostly short-term courses and symposia.

Occupational health services
Work-related musculoskeletal disorders
Aging workers and maintenance of their work capacity
Psychosocial factors of work

Organization of joint meetings; Participation in consultations; Organization of training. WHO Workers’ Health Programme has been offered a distinct role in FIOH-FINNIDA-funded collaborative projects in developing countries.

12.

Association pour la Formation dans les Services Médicaux du Travail (AFOMETRA)
Dr. Michel Blondet
31, rue Médéric
B.P. 156
F-75821 Paris Cedex 17
France
tel. Int.+3314-4766 0230
fax: Int.+3314-4267 9684

The tasks of the Institute include research, training and advisory services.
Expertise  Occupational health physicians, toxicologists, epidemiologists, ergonomists, and psychologists are represented in the staff. The total number of staff is 23.


Priority areas  Communication of information
Prevention and ergonomics
Mental health
Epidemiology

13.

Federal Institute for Occupational Health
Dr. F.-K. Kochan, Director
Contact person: Dr. G. Maintz
Nöldnerstrasse 40/42
D-1034 Berlin
Germany
tel. Int. +49-30-231 5458
fax: Int. +49-30-231 5431
telex: 113141 ameds dd

Tasks  The Federal Institute for Occupational Health is a multidisciplinary institution with three tasks: research, information and advisory services.

Expertise  The experts of occupational health represented in the staff of the institution are as follows: occupational health physicians, epidemiologists, mathematicians, chemists, psychologists, physicists, biologists, and sociologists. The total number of personnel is 160.

Training  The Institute has no training activities at the moment.

Priority areas  Epidemiology and statistics, e.g. of work-related diseases and occupational diseases
Development of occupational health services
Musculoskeletal disorders
Effects of non-ionizing radiation
Effects of hazardous substances (neurotoxic, carcinogenic, allergic)

Occupational health problems of new technologies (bio- and gene engineering, information technologies)

14. Institut für Arbeitsphysiologie (IfADo)
Institute for Occupational Physiology at the University of Dortmund
Prof. Dr. Barbara Griefahn
Ardeystr. 67
D-4600 Dortmund 1
Germany
tel. Int.+ 49-231 1084-0
fax: Int.+ 49-231 1084 308

Tasks
Institute for Occupational Physiology, Dortmund is a multidisciplinary institution with the tasks of research, advisory services, training and information.

Expertise
Occupational health physicians, toxicologists, ergonomists, chemists, safety engineers, psychologists, physicists and biologists are represented in the staff of the Institute. The total number of personnel is 170.

Training
The training organized by the Institute comprises short-term training courses.

Priority areas
Combined effects of climate, vibration and noise
Occupational diseases related to manual material handling
Cumulative Trauma Disorders
Mental and physical aspects of information overload
Individual disposition for occupational diseases

Collaboration
The Institute has expressed its specific interest for collaboration with the developing countries in Asia, Africa, and in Eastern Europe.
17. National Centre of Ergonomic, Occupational Health and Safety
Ministry of Manpower
Mr. M. Soeripto, Chief
Jalan Jen. A. Yani 69-70
Cempaka Putih
Jakarta Pusat
Indonesia
tel. Int.+6221-413406, 412114

18. Institute of Occupational Health
University of Milan
Professor Antonio Grieco, Director
Contact person: Dr. Renato Gilioi
via San Barnaba, 8
I-20122 Milan
Italy
tel. Int.+ 39-2-57 991
fax: Int.+ 39-2-5518 7172
telex: 320484 unimi i

Tasks
The Institute of Occupational Health at the University of Milan is a multidisciplinary institution with four tasks: research, information, training and advisory services.

Expertise
The other main groups of experts of occupational health and safety are represented in the personnel of the institute except occupational health nurses and safety engineers.

Training
The Institute organizes both short courses and long-term national training programmes leading to a degree.

Priority areas
Occupational medicine
Ergonomics
Toxicology
Epidemiology
Work safety

Collaboration
Preparation of documents; Co-sponsoring international symposia and conferences; The Institute has created two international centres: International Centre for Pesticide Safety and Regional Experimental Field Centre for the Prevention of Pesticide Hazards.
19. National Institute of Industrial Health
Dr. Sohei Yamamoto, Director
Contact person: Dr. L. Kurabayashi
21-1, Nagao 6-chome, Tama-ku
Kawasaki 214
Japan
tel. Int.+81-944-865 6111
fax: Int.+81-944-865 6116

Tasks The Institute activities cover research and information.

Expertise The main groups of experts of occupational health are represented in the staff except occupational health nurses and physiotherapists. The total number of staff is 59.

Training The Institute does not organize any training courses.

Priority areas Mental occupational health
Biological monitoring of chemical and physical causes of occupational diseases
Ergonomics
Occupational Cancer
Technical improvements of the work environment

Collaboration Exchange of information

20. Institute of Industrial Ecological Sciences
University of Occupational and Environmental Health (UOEH), Japan
Prof. Takesumi Yoshimura, Director
1-1 Iseigaoka Yahatanishiku
Kitakyushu 807
Japan
tel. Int.+ 81-93-691-7403
fax: Int.+ 81-93-603 0158

Tasks The Institute of Industrial Ecological Sciences is a multidisciplinary institution with three tasks: research, training and information.
Training Several short-term courses are arranged. In addition, Amsterdam School of Occupational Medicine arranges yearly a 4-year course for physicians. In addition, a Master's Course on Occupational Health is organized.

Expertise Occupational health physicians, toxicologists, epidemiologists, occupational hygienists, ergonomists and biostatisticians are represented in the staff. The total number of staff is 37.

Training The Department organizes international 2-weeks courses on industrial toxicology and hygiene. A 3-month national Designated Factory Doctors' Course has been arranged. In addition, an international long-term course (9 months) leading to the Degree of Master of Medicine in Occupational Health is organized.

Priority areas Undergraduate and postgraduate education for physicians and occupational hygienists
Quality control services (laboratory)
Occupational hygiene reference laboratory
Research in occupational dermatitis, epidemiology, occupational cancers, solvents and heavy metals, ergonomics, and toxicology

Collaboration Consultations; Collaborative research; Conducting training courses; Participation in training and health programmes.

28. Instituto Nacional de Seguridad e Higiene en el Trabajo
Concepción Serrano Herrera, Director
Torrelaguna, no 73
28027 Madrid
Spain
tel. Int.+ 34-1-403 7000
fax: Int.+ 34-1-403 0050

Tasks Instituto Nacional de Seguridad e Higiene en el Trabajo is a multidisciplinary institute with the scope of activity including research, information, training, and advisory services.

Expertise Medical and technical experts are represented in the staff.

Priority areas Dissemination of information
Personal protective devices

Collaboration Exchange of information; Joint projects; Preparation of technical reports and training material
29. Hilal Institute of Occupational and Environmental Health and Safety  
Dr. Awad El Karim Ahmed  
P.O. Box 303  
Khartoum  
Sudan  
tel. Int.+ 249-80598

Tasks  The Institute has three main tasks; research, training and advisory services. Information activities are not so well developed.

Expertise  Occupational health physicians, occupational hygienists and occupational health inspectors are represented in the staff.

Priority areas  Training of occupational health physicians and occupational hygienists

Research work to identify the main occupational health hazards at the national level

Introduction of occupational health nursing

Collaboration  Training; Joint research; Seminars

30. WHO Psychosocial Centre  
Professor Lennart Levi  
Box 60205  
S-10401 Stockholm  
Sweden  
tel. Int.+468-728 6400  
fax: Int.+468-344143  
telex: 12442 fotex s

31. Institute of Occupational Health Sciences at the University of Lausanne  
Professor M. Guillemin  
Rue du Bugnon 19  
CH-1005 Lausanne  
Switzerland  
tel. Int.+ 41-21-313 2121 (medecine) 41-21-313 2131 (hygiene)  
fax: Int.+ 41-21-313 2120  
email: mguillemin @ ulmed.unil.ch (internet system)
Tasks
Institute of Occupational Health Sciences at the University of Lausanne is a multidisciplinary unit with the four tasks: Education and training; Research; Services; Promotion of occupational health.

Expertise
See priority list.

Training
National short courses are organized, e.g. on ventilation.

Priority areas
Occupational hygiene and risk management
Mineral fibres, metals and solvents (exposure assessment)
Biological monitoring (development of new methods)
Occupational hygiene (new strategies)
Occupational medicine (early diagnosis of occupational diseases)

Collaboration
Training and education in occupational hygiene is a specifically expressed area of collaboration; Harmonization of procedures and methods in occupational hygiene; Exchange of information; Training of individuals.

Division of Occupational Health
Department of Health
Ministry of Public Health
Dr. Twisuk Punpeng, Director
Samsen Road
Bangkok 10200
Thailand
tel. Int.+ 66-2-281 2466
fax: Int.+ 66-2-282 5176

Tasks
Division of Occupational Health is a multidisciplinary unit with emphasis on research, training and information. Major tasks include
- surveillance of important occupational diseases
- coordination of National Occupational Health Programmes
- development of appropriate technology and work models for occupational health programmes in a developing country
- development, strengthening and support of public health infrastructure to undertake effective occupational health service programmes.
Expertise

The occupational health and safety experts represented in the staff are physicians, nurses, hygienists, chemists, toxicologists, biologists, and psychologists. The total number of personnel is approx. 100.

Training

The Unit takes care of the manpower development of occupational health, disseminates information and trains government and private officials, students and others on occupational health.

Priority areas

Occupational health in small-scale industries and agriculture

Development of appropriate techniques for evaluation of exposures

Development of appropriate technology for early detection of occupational diseases

Development of a surveillance system for occupational diseases

Health service research and development.

Collaboration

Exchange of information; Accepting of fellows from developing countries for short course training in occupational health; Participation in meetings; Undertaking joint projects related to occupational health in developing countries; Assistance in the organization of WHO Collaborating Centres meetings.

33.
Institut de Santé et de Sécurité au Travail
Mr. Abdelkader Maaloul, Directeur général par intérim
13, rue de Crète
Tunis
Tunisia
tel. Int.+216-345 011
fax: Int.+216-346 254

34.
Institute for Occupational Health
Professor Yu.I. Kundiev, Academician, Director
75, Saksagansky Street
252033 Kiev
Ukraine
tel. Int.+ 70-44-220 8030
fax: Int.+ 70-44-220 6677

49
The Institute of Occupational Health in Kiev is a multidisciplinary institute with good human resources, and with four tasks:

1) hygienic, epidemiological, experimental and clinical studies
2) information support
3) training
4) advisory services.

All experts in occupational health are represented in the staff in relatively high numbers.

Several training courses on health aspects of pesticide use are organized in collaboration with the IPCS and IRPTC. National courses are arranged as well on labour hygiene, occupational pathology, etc. The Institute organizes long-term national training programmes leading to a degree. A specialized council for defending a Candidate and Doctor of Sciences Thesis is located at the Institute.

Occupational epidemiology
Combined effects of occupational factors
Toxicology of heavy metals
Dermal toxicology
Psychophysiology of operators
Effects of organic dust
Occupational health in agriculture
Occupational health in electrowelding

Agricultural workers are the main target group. The Institute has a good network of collaborative organizations.
Tasks
The tasks of the Institute include research, training and education, and advisory services.

Expertise
Occupational health physicians, occupational health nurses, toxicologists, epidemiologists, occupational hygienists, and psychologists are represented in the staff. The total number of staff is relatively small, approx. 20.

36. National Institute for Occupational Safety and Health (NIOSH)
Dr. J. Donald Millar, Director
Contact person: Dr. Richard A. Lemen, Deputy Director
1600 Clifton Road
Atlanta GA 30333
USA
tel: Int.+404-639-3773
fax: Int.+404-639-2170

Tasks
NIOSH is a multidisciplinary organization with the mission and mandate to develop and establish recommended occupational safety and health standards and to conduct research, training, technical assistance, and related activities to assure safe and healthful working conditions for every working person in the U.S.

Expertise
All experts of occupational health and safety are represented in the staff. The total number of personnel is approximately 950.

Training
NIOSH organizes 40-50 short-term courses annually, and has an extensive training programme leading to a degree in industrial hygiene, occupational health nursing, occupational medicine, and occupational safety.

Priority areas
Occupational lung diseases
Musculoskeletal injuries
Occupational cancers
Severe occupational traumatic injuries
Occupational cardiovascular diseases
Disorders of reproduction
Neurotoxic disorders
Noise-induced hearing loss
Dermatological conditions
Psychological disorders
Occupational infectious diseases

**Collaboration**
Organization of meetings; Preparation of guidelines; Exchange of information and scientists

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37. **The Johns Hopkins University**
School of Public Health
Dr. A. Sammer, Head of the WHO Collaborating Centre
615 North Wolfe Street
Baltimore, MD 21205
USA
tel. Int.+1301-955 4130
fax: Int.+1301-955 1811

38. **New York College of Osteopathic Medicine of New York Institute of Technology**
Dr. Philip O. Fleischer
Old Westbury, New York 11568
USA
tel. Int.+ 516-626 6922
fax: Int.+ 516-626-9290

**Tasks**
The New York College of Osteopathic Medicine is a small unit with main emphasis on occupational physiology, ergonomics and occupational lung diseases. It has, though, activities going on in the four tasks: research, information, training and advisory services.

**Expertise**
The occupational health and safety experts represented in the staff with 1-2 experts are occupational health physicians, occupational health nurses, toxicologists, ergonomists, psychologists and physiotherapists.

**Training**
The Unit is concentrating on the development of training for Gulf States in occupational epidemiology, toxicology, and nursing education.
Priority areas

Strengthening of undergraduate programme
Development of residency or fellowship programmes in occupational medicine
Further development of the use of biomechanics and ergonomics

Collaboration

Exchange of faculty; Provision of speakers for programmes produced by other Centres

39.

Southwest Center for Occupational and Environmental Health
School of Public Health
Dr. George L. Delclos, Principal Investigator
Contact person: Sarah A. Felknor
P.O. Box 20186
Houston, Texas 77225
USA
tel. Int.+713-792 7459
fax: Int.+713-792 4407

Tasks

The South-West Center for Occupational and Environmental Health is a multidisciplinary unit. Research, information, training, and advisory services belong to the scope of activity of the Unit.

Expertise

The Center has a full spectrum of occupational health and safety experts except for chemists.

Training

Several degree programmes (1-5 years) are carried out: Master in Public Health, Master of Science, Doctor in Public Health, Ph.D. and accredited Residency in Occupational Medicine.

Several short-term (1-3 days) training courses are carried out for occupational physicians, occupational health nurses and industrial hygienists.

Priority areas

Industrial hygiene measurements (exposure assessment)
Occupational respiratory diseases
Occupational hazards of health care workers
Ergonomic evaluations
Programme development, management and evaluation
### Collaboration

Planning and implementing research agenda; Training of occupational health professionals; Programme planning and evaluation; Surveillance of occupational respiratory diseases; Occupational hazards of health care workers.

#### National Institute of Occupational and Environmental Health

**Dr. Le van Trung, Director**  
1B pho Yec xanh  
Hanoi  
Viet Nam  
tel. Int.+ 2.63649

<table>
<thead>
<tr>
<th>Tasks</th>
<th>The National Institute of Occupational and Environmental Health is a multidisciplinary institute with four tasks. The number of personnel is approx. 100.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expertise</td>
<td>Occupational health physicians, occupational health nurses, toxicologists, occupational hygienists, ergonomists, chemists, and psychologists are represented in the staff.</td>
</tr>
<tr>
<td>Training</td>
<td>Short-term courses at the national level are carried out on various topics of occupational health.</td>
</tr>
</tbody>
</table>
| Priority areas | Prevention and control of pesticides poisoning  
Prevention and control of pneumoconioses  
Occupational environment and occupational diseases in small-scale industries  
Psychophysiology of work  
Ergonomics in technology transfer  
Strengthening of occupational health network |
| Collaboration | Exchange of specialists and documents; Special interest has been expressed as to strengthening occupational health and safety collaboration in developing countries. |
The Institute of Occupational and Radiological Health has four main tasks: research, training, dissemination of information, and advisory services.

Most of the occupational health and safety experts are represented in the staff of the Institute. The total number of personnel is 214.

The Institute organizes short-term courses, both national and international. One-semester education in occupational health for medical students in the fifth year of studies is arranged. In addition, the Institute carries out specialization training in occupational health (3 years), Master of Science programmes (4 semesters) in occupational health, occupational toxicology, radiological health and assessment of work ability. Training courses with a certificate in occupational health for GPs and graduated students are organized (2 semesters,) as well as specialization in occupational toxicology for chemists (3 years).

Toxic chemicals
Work-related diseases
Hazards in small-scale industries
Improvement and integration of occupational medicine and occupational hygiene
Occupational epidemiology, especially of asbestos-related diseases

Organization of international training; Participation in the WHO-funded projects; Exchange of scientific information; Planning and conducting of epidemiological studies (occupational cancer, asbestos-related diseases, reproductive effects)
Priority areas

Prevention of occupational risks (INRS)
Evaluation of hazards at the workplace
Identification of unknown occupational risks
Interaction between individual characteristics and occupational risks
Efficiency of preventive actions
Computerized systems on occupational risks and health (IN-SERM)
Disability and work; musculoskeletal disorders
Occupational respiratory diseases
Psychosociological factors in occupational stress

Collaboration

Research; Analytical methods; Epidemiological studies; Exchange of researchers

4.

Department of Epidemiology and Public Health Medicine
University of Bristol
Dr. Robin Philipp
Canynge Hall
Whiteladies Road
Bristol BS8 2PR
United Kingdom
tel; Int. + 44-272-303030
fax; Int. + 44-272-238568

Tasks

The tasks of the unit consist of research, training and advisory services, such as design of epidemiological studies, consultancies in public health and occupational health risk assessments.

Expertise

Occupational health physicians, occupational health nurses and epidemiologists are represented in the staff. The total number of staff is 7.

Training

The Unit arranges annually seminars for undergraduate students. In addition, a two-year part-time occupational health nursing diploma course is organized, as well as a two-week introductory course in environmental medicine.
**Priority areas**

Recreational and drinking water quality and the public and occupational health

Housing and human settlement issues

Strengthening the uses of occupational and environmental epidemiology in risk assessments of occupational and environmental exposures

Health risks assessment and preventive advice for overseas travel

Indoor and outdoor urban air quality and health

**Collaboration**

Development of training materials; Development of epidemiological risk assessment methods; Research; Development of clinical audit in occupational and environmental medicine
Collaborating Centres in the Health of Seafarers

1. **Institute of Occupational Health**
   Prof. Dr. D. Szadkowski
   Adolph-Schönfelder Str. 5
   2000 Hamburg 76
   Germany
   tel. Int.+4940-7896 4354
   fax: Int.+4940-7896 4273

   **Tasks**
   The tasks of the Institute are research, training, information and advisory services.

   **Expertise**
   Occupational health physicians, toxicologists, epidemiologists, ergonomists, and engineers are represented in the staff. The total number of staff is 34.

   **Training**
   The Institute organizes short-term training courses for port health officers, navy doctors, and occupational safety specialists. In addition, an international 4-weeks course with final examination is organized on First Aid at Sea for ship officers.

   **Priority areas**
   Training of ship officers in first aid
   Life saving appliances at sea
   Hygiene on board

   **Collaboration**
   Training

2. **Institute of Maritime and Tropical Medicine**
   Dr. W. Renke, Director
   Powstania Styczniowego 9 B
   81-519 Gdynia
   Poland
   tel: Int.+48-58-22 30 11
   fax: Int.+48-58-22 33 54
   telex: 054325 immit pl

   **Tasks**
   The Institute of Maritime and Tropical Medicine is one of the medical research institutes of the Ministry of Health.
It has the following tasks: research in maritime occupational health, tropical medicine and health, travel medicine, diagnostic and curative services for maritime workers (90 beds), training, information, and advisory services.

**Expertise**

Most of the experts in occupational health are represented in the staff. The total number of personnel is 320, including 50 medical officers and 48 other workers with university degrees. Some staff members have extensive experience of working in developing countries in WHO-coordinated health programmes.

**Training**

The Institute carries out short-term courses on maritime medicine and tropical medicine. In addition, for laboratory courses certificates are issued. Specialization training for medical officers in maritime medicine is organized by the Institute. Training of fellows from developing countries is carried out.

**Priority areas**

Epidemiology of diseases and injuries in maritime workers
Toxicity of materials used in shipbuilding
Psychosocial aspects of work at sea
Tropical health and epidemiology
Health promotion of seafarers and travellers

**Collaboration**

Participation in the WHO meetings; Preparation of guidelines (updating of the International Medical Guide for Ships); Coordination of collaboration between the centres of maritime medicine; Harmonization of fitness standards for service at sea; Collaborative projects with institutes in other countries.

### 3.

**Research Institute of Transport Hygiene**  
Ministry of Public Health of Ukraine  
Prof. A.M. Voytenko, Director  
92, Ue. Sverdlova  
Odessa 270039  
Ukraine  
tel. Int.+7048-225364, 226887
First Meeting of the WHO Collaborating Centres in Occupational Health

8–11 September 1992
Moscow, Russian Federation

Summary Report

Introduction

1. The First Meeting of the WHO Collaborating Centres in Occupational Health was organized on 8-11 September 1992 in Moscow as a continuation to the Meeting of the National Institutes of Occupational Health in Support of the WHO Workers’ Health Programme, held on 26-27 June 1990 in Helsinki.

Dr. N.P. Napalkov, Assistant Director-General of the WHO, welcomed the participants on behalf of the World Health Organization and stressed that occupational health has an important role in the WHO General Programme of Work, particularly through its close relations with the designated priority areas, such as the relationship between the state of the world economy and sustainable health development, health of man in a deteriorating physical environment, and dissemination of information for educational, managerial and scientific purposes.

Academician Valentin I. Pokrovskij, President of the Russian Academy of Medical Sciences and Dr. Jevgeni N. Beljajev, Chairman of the State Committee of Sanitary-epidemiological Surveillance of the Russian Federation welcomed the participants on behalf of their organizations. Dr. Pokrovskij emphasized the importance of occupational health research also from the point of view of medical sciences. Dr. Beljajev emphasized the role of occupational health in a situation where industrial environments have a growing effect on the health of populations. Occupational health research is important in establishing a scientific basis for setting standards for general and work environments.

Professor Jorma Rantanen was elected Chairman, Professor Nikolai F. Izmerov and Dr. Richard A. Lemen Vice-chairmen, and Ms. Suvi Lehtine as Rapporteur and Professor Takesumi Yoshimura and Dr. Robin Philipp Co-rapporteurs.
The agenda of the Meeting is given in Annex 1 and the list of participants in Annex 2 to this Report.

**Scope and purpose of the Meeting**

2. Dr. M. Mikheev, Chief of the Office of Occupational Health of the WHO, described the present status of the WHO Workers' Health Programme (WHP). In the Programme the objectives are described at a relatively general level. The aim of the present Meeting was to achieve programme proposals specified and defined at a more pragmatic level. Dr. Mikheev also introduced the projects that are included in the WHO budget for 1992–93. Difficulties in the implementation, however, are encountered because of the stringent economic situation of the whole WHO and WHP in particular. In order to overcome the financial limitations, extrabudgetary funding and support from the Collaborating Centres is needed. To get better visibility for the WHP, a series of various guidelines in occupational health practice were deemed appropriate. Dr. Mikheev also described the programme elements agreed to be funded with the help of the NIOSH (USA) support.

3. Professor Jorma Rantanen introduced the decisions of the Planning Group Meeting, held in Geneva on 9-10 October 1991, to prepare the agenda of the First Meeting of the WHO Collaborating Centres. He stressed that on the basis of the Planning Group’s work, terms of reference of the Collaborating Centres, the networking and the division of work were to be elaborated in the present Meeting.

4. The purpose of the First Meeting of the WHO Collaborating Centres was to

- define the priorities in policy-making in occupational health in order to enhance the priority position of occupational health on the policy agenda, both at the national and international levels
- identify the priority problems in occupational health in the mid-1990s both nationally and globally
- examine the possibilities for establishing a network of the WHO Collaborating Centres to further support the WHO Workers’ Health Programme, both at the national and international levels, and
- find mechanisms for agreeing upon the division of work between the Collaborating Centres.
Introduction to the activities of the WHO Collaborating Centres in Occupational Health

5.
Thirty-one reports were given on the activities of the Collaborating Centres and of some other institutions invited as observers to the present Meeting. In addition to descriptions of structures and activities of the institutions, the reports also contained an introduction to the actions for the WHP at present and in the past, as well as proposals for contributions to the WHP in the future. The information collected in this way will be used for completion and revision of the Working Document: Directory of WHO Collaborating Centres in Occupational Health.

6.
The Meeting was organized in three Working Groups, Group 1: Priorities in Policy-making in Occupational Health (Dr. R.A. Lemen, chair, Ms. S. Lehtinen, rapporteur). Group 2: Priority Problems in Occupational Health (Professor J. Rantanen, chair, Professor T. Yoshimura, rapporteur). Group 3: Networking of the Collaborating Centres (Professor N.F. Izmerov, chair, Dr. R. Philipp, rapporteur). The Groups prepared their reports to the Meeting (Annexes 3-5) and the proposals made were considered in the preparation of conclusions and recommendations of this Report.

Conclusions and Recommendations

7.
The working populations play a vital role in the socioeconomic development of all countries. The vast majority of the adult populations are involved with work for about one third of their lifetime. To achieve the goal, Health for All by the Year 2000 (HFA), occupational health has to become an integral part of the HFA Programme.

WHO/OCH should emphasize in all contexts the importance of maintaining and promoting the health of the working populations. In developing occupational health programmes, the health objectives should always have the first priority. Though important, the economic benefits and costs, productivity and other material aspects should be registered as positive or negative side effects. The WHO/WHP was encouraged to emphasize the role of occupational health in the implementation of the HFA 2000 Programme.
8.
The Meeting found the revision of the present WHP timely and necessary due to numerous changes in the working life, changes in the socioeconomic development of the countries, attainment of some of the Programme objectives, and modifications needed as a consequence of the economic constraints.

The Meeting recognized some occupational health needs specific for developing countries, newly industrialized countries, Countries of Central and Eastern Europe, and industrialized countries. Also a number of problems which are common for all countries, such as the need to develop manpower training, information systems, and occupational health services, were recognized.

In the revision of the Workers' Health Programme due consideration should be given to the specific needs of the countries at different phases of development and also to specific groups of workers with special occupational health needs (e.g. agricultural workers and seafarers). The revision should be done in spite of the limited financial and manpower resources, which makes it difficult for the WHO/OCH Unit to assume new commitments at the moment.

9.
National situation analyses on the status of occupational health and working conditions are needed to create awareness, identify priorities and improve the visibility of occupational health in the various countries. Such analyses should be periodically repeated by each country. The analyses may contain data from surveillance of hazardous exposures and situations at work and the surveillance of their impact on the health of the workers.

Occupational health remains to be a key issue and an important determinant of the overall health status of the individuals due to wide occurrence of occupational health and safety hazards, rapid changes in working methods and work environments derived from the implementation of new technologies, and major demographic changes in the working populations. Such developments increase the need for occupational health research and services and call for strengthened actions for the development of occupational health at the national and international level.

Data obtained from situation analyses should be utilized for informing decision-makers, employers and workers. Such data should also be used for the preparation of national policies and for the planning and development of practical actions for occupational health and safety.

Every country should prepare and periodically review and update a national programme for occupational health and safety, including a situation analysis, policy objectives and practical proposals for improvement of the work environment and
health of the workers. In the preparation of such a policy, guidance from international organizations should be considered and appropriate guidelines of the WHO should be utilized.

In the implementation of such policies and programmes, adaptation of objectives and actions to actual local needs, and consideration of needs for protecting and providing services to vulnerable, high-risk and underserved groups should be recognized. The Collaborating Centres and national institutes should play a key role in the preparation and implementation of such policies and plans.

10.
With respect to the importance of health to the working populations and individual workers, the occupational health activities were recognized to have too low priority at both the national and international level in the planning and management of national and WHO activities.

Joint actions of the Collaborating Centres and the WHO should be undertaken to improve the priority position of occupational health both at the national and international level. Measures should be taken to put occupational health on the agenda of decision-making bodies of WHO, such as the Executive Board (EB) and the World Health Assembly (WHA). The Planning Group was given the task of approaching the EB in order to achieve these objectives.

11.
In order to be able to convince the decision-makers of the possibilities and benefits of occupational health, various reports, publications and other information material are needed. These should include, in addition to scientific reports intended for occupational health and safety experts, also popularized information on occupational health and safety intended e.g. for the general public, grassroot-level populations and other people working in the administration of occupational health and safety.

In order to keep the target groups informed of the current activities of the WHP and the Collaborating Centres, a Newsletter was decided to be established. Selected topics of occupational health will be discussed by the Planning Group and selected for elaboration by study groups convened by the WHO/WHP. The study group reports will be published in order to add to the knowledge of the occupational health and safety personnel and to improve the visibility of the WHP. Among other information materials, the report of this Meeting should be utilized for making decision-makers aware of the needs, objectives and achievements of the WHP.
With regard to the level of ambition and occupational health needs of the Member Countries, the present funding and manpower resources of the WHO/OCH Unit are not sufficient. It was recognized that at the same time the economic recession makes the promotion of occupational health more difficult in every country. There are, however, many sources of funding that both the WHO/OCH and the Collaborating Centres may mobilize.

WHO/OCH should seek funding at both the national and the international level in order to strengthen its staff and operational budget. In the long run, the major part of the operational budget for the WHO/OCH Unit should, however, be allocated from the WHO Regular Budget.

The Collaborating Centres were encouraged to identify the potential sources of funding in their countries. In addition, the Collaborating Centres were also recommended to support the WHP in organizing training courses, symposia and conferences, as well as in the provision of services of data bases and provision of validated information relevant for occupational health in developing countries, and in recruiting experts to the WHO/OCH Unit. Such contributions of the Collaborating Centres should be registered as supportive actions for WHO/WHP in kind.

The strategies, approaches and methods for the identification and assessment of occupational health problems, for their prevention and control, and for health promotion need not be the same for countries in different phases of development. Feasible and appropriate methods for each category of countries should be developed to meet such special needs.

Based on the high prevalence of manual work and heavy physical work, and due to the uncoverage of general health and social protection, there are several needs in the developing and the newly industrialized countries for the development of occupational health, such as strengthening of infrastructures, training of manpower, establishment of systems for registration and statistics on occupational injuries and diseases, establishment of institutes of occupational health, and establishment and updating of legislation and standards, as well as inspection of compliance to regulations.

The methods for identification, analysis and assessment of occupational exposures and their health effects should be developed for use in developing and newly industrialized countries. Such methods should be feasible for field use, of low cost and still validated and reliable. Due consideration should be given in the WHP for the development of such methods. Support from WHO/OCH and/or its Collaborating Centres
19. The working populations have an important role in the economic development of any country. According to the ILO, two thirds of the workers in the world still work in conditions that may harm their health. Economic losses caused by poor working conditions and poor occupational health are tremendous, amounting to 10–15% of the GNP in some of the Member Countries. It was also recognized that at present there are not sufficient data on the economic consequences of occupational health hazards and the work disability caused by them in many countries. Also, the data sources are difficult to combine because of differences in legislation and occupational health service systems.

The Collaborating Centres were encouraged to carry out studies both at national and company level on the economic effects of occupational diseases, occupational accidents, work disability, morbidity and sickness absenteeism, and to assess the economic benefits of occupational health services.

20. New problems of the working life were recognized to call for more attention in the 1990s, such as the health impact of the implementation of new information technologies, new materials, and biotechnologies, special occupational health aspects of information work and service occupations, including health services, the need to develop psychosocially optimal work environments, the need to consider the problems of occupational health and working ability of the unemployed, problems of the aging work force, prevention of work-related diseases, such as musculoskeletal disorders, certain cardiovascular disorders and respiratory diseases, development of practical methods for health promotion and their evaluation, provision of occupational health services for underserved groups, such as agricultural workers, seafarers, and migrant workers, certain marginalized groups, such as prostitutes who may have an impact also on public health, occupational health problems from the transfer of hazardous technologies and substances, health problems of handling and disposal of hazardous wastes, problems of environmental impact of occupational activities, as well as severe and widespread problems of social dumping of workers.

Due consideration should be given to new emerging problems in the preparation and implementation of occupational health programmes at the national and international level. In the control and management of many such problems, not only the specific occupational health actions but also the approaches directed simultaneously to the work environment, workers' health, to structural aspects of working organizations and social structures related to work, should be taken into consideration.
21.
Around the world, the majority of the undertakings are small and have poor possibilities to cope with occupational health and safety hazards. They are seldom covered by inspection or occupational health services, and their occupational health needs are prevalent and evident.

WHO/WHIP and the network of the Collaborating Centres should pay particular attention to the occupational health problems of small-scale undertakings. Methods for the prevention and control of such hazards, feasible for small industries also in rural areas, should be developed. Special programmes on education and training of employers and workers are also needed.

22.
Due to demographic developments the problems of elderly workers are gaining more importance in the 1990s. A growing number of chronically ill and handicapped individuals need also adaptation of the work and the work environment to the capacities of the worker.

The WHO/WHIP should have a special element for health promotion at the workplace; early rehabilitation, prevention of work disability and maintenance of individual working capacity, as well as promotion of the access of handicapped individuals to the working life. Guidance in developing occupational health services to adopt these activities should be given to the Member Countries.

23.
Meeting of the Collaborating Centres was found to be both an effective and desirable tool for the support of WHO/WHIP and for activating the Network of the Collaborating Centres as well as for the establishment and strengthening of inter-institutional links between the Centres. The organization of similar meetings biannually was found to be desirable.

The Next Meeting of the Collaborating Centres was decided to be convened in Beijing/Shanghai, China in mid-October 1994 on the kind invitation by the Chinese participants, Professor ZOU Changqi, Professor LI Yurui and Dr. LIANG You-xin.

24.
Between the meetings of the Collaborating Centres the advisory functions for the WHO/OCH Unit will be carried out by a special Planning Group.
First Meeting of the Collaborating Centres in Occupational Health

Moscow, Russian Federation, 8-11 September 1992

List of participants

Dr. J. Arenga, Instituto de Saude Ocupacional, Av. Defensores de Chaves, 79-B, 1000 Lisboa, Portugal
(Tel: +(3511) 76.77.07/9; Fax: 793.59.78; Telex: 657-42 p)

Dr. N. Aungkasuvapala, Senior Expert in Occupational Health, Department of Health, Ministry of Public Health, Samsen Road, Bangkok 10200, Thailand
(Tel: +(662) 281.24.66; Fax: 282.51.76)

Professor S.M. Cardoso, Head, Instituto de Higiene e Medicina Social, Faculdade de Medicina de Coimbra, Universidade de Coimbra, Rua Larga, 3049 Coimbra, Portugal
(Tel: +(35139) 29.431; Fax: 20.484)

Professor G.L. Delclos, Southwest Center for Occupational and Environmental Health, The University of Texas, Health Science Center at Houston, P.O. Box 20186, Houston, TX 77225, United States of America
(Tel: +(713) 792-4644; Fax: 792-4407)

Professor F.J.H. van Dijk, Vakgroep Gezondheidkunde, Faculteit Geneeskunde, Academisch Medisch Centrum, Coronel Laboratorium, Universiteit van Amsterdam, Meibergdreef 15, 1105 AZ Amsterdam, The Netherlands
(Tel: +(3120) 566-91.11/53.25; Fax: 691.24.01)

Professor S. Dodic, Director, Clinical Center "Dr Dragomir Karajovic", Institute of Occupational and Radiological Health, Deligradska 29, Beograd, Yugoslavia
(Tel: +(3811) 68.41.55; Fax: 643-675)

Professor A. Fomi, Institute of Occupational Health, Clinica Luigi Devoto, University of Milan, Via San Barnaba, 8, I-20122 Milan, Italy
(Tel: +(392) 57.99.26.52; Fax: 551.871.72)

Dr. E. Galambos, National Institute of Occupational Health, Nagyvarad Ter. 2, P.O. Box 22, H-1450 Budapest, Hungary
(Tel: +(361) 113-7890; Fax: 113-6891; Telex: 22-5109)
Professor B. Griefahn, Director, Institut für Arbeitsphysiologie and der Universität Dortmund, Ardeystrasse 67, W-4600 Dortmund 1, Germany
(Tel: +(49231) 1084-221/222; Fax: 1084.308)

Mr. J. Guasch, Instituto Nacional de Seguridad e Higiene en el Trabajo, Ministerio de Trabajo y Seguridad Social, Torrelaguna, 73, 28027 Madrid, Spain
(Tel: +(341) 404.98.34; Fax: 403.00.50)

Professor M. Guillemin, Director, Institute for Occupational Health Sciences, Rue du Bugnon 19, CH-1005 Lausanne, Switzerland
(Tel: +(4121) 313.21.31; Fax: 313.21.20)

Professor J. Indulski, Director, Nofer’s Institute of Occupational Medicine, 8, Teresy Str., P.O. Box 199, Lodz 91-950, Poland
(Tel: +(4842) 55.25.05; Fax: 34.83.31; Telex: 885-360 imp pl)

Professor N.F. Izmerov, Director, Institute of Occupational Health, Russian Academy of Medical Sciences, Budennogo Prospekt 31, 105275 Moscow, Russian Federation
(Tel: +(7095) 365.02.09; Fax: 366.05.83)

Dr. F.-K. Kochan, Director, Bundesanstalt für Arbeitsmedizin, Nöldnerstrasse 40/42, O-1134 Berlin, Germany
(Tel: +(4930) 231.54.58; Fax: 231.54.31; Telex: 113-141 amedz dd)

Professor Yu.I. Kundiev, Director, Institute of Occupational Health, 75, Saksagansky Street, Kiev 252033, Ukraine
(Tel: +(7044) 220.80.30; Fax: 220.66.77)

Professor Seung Han LEE, Catholic Industrial Medical Center, Catholic University Medical College, 505 Banpo-Dong, Soch’o-Ku, Seoul 137-701, Republic of Korea
(Tel: +(822) 590.12.43; Fax: 532.38.20)

Ms. S. Lehtinen, Chief of Information and International Affairs, Finnish Institute of Occupational Health, Topeliuksenkatu 41 a A, SF-00250 Helsinki, Finland
(Tel: +(3580) 47.47.344; Fax: 47.47.548 or 414.634; Telex: 121394 tltx sf occup-health)

Dr. R.A. Lemen, Deputy Director, National Institute for Occupational Safety and Health (NIOSH), Centers for Disease Control, 1600 Clifton Road, Atlanta, Georgia 30333, United States of America
(Tel: +(404) 639-3773; Fax: 639-2196)
d) Compilation of data on selected priority problems and their publication in the WHO Technical Reports Series and as other publications.

Working Group 2 defined the priority problems in occupational health that should be solved in the countries. As there already is much knowledge and information available on certain problem areas, it would be appropriate to gather the existing knowledge together and find out the gaps in our knowledge. For this purpose, the WHO/OCH was encouraged to convene study groups to gather the information available and to develop the existing data further. The results of these study groups will be published in the WHO Technical Reports Series. This will add to the knowledge of the individual occupational health and safety experts in the Member Countries and improve the visibility of the WHP.

e) Establishment of a Newsletter of the WHP and the Collaborating Centres (6-8 pages, quarterly newsletter, simple format, black and white) to come out with the following contents.

The first issue would contain:
- summary report of the present meeting.

The future issues might include reports of other similar meetings, and
- description of WHO/OCH activities;
- international upcoming meetings;
- introductory articles on various topics of occupational health and safety;
- legislative activities;
- reports and news from the WHO Regional Offices and the ILO;
- training and education;
- country news;
- information about new data bases.

It was agreed that Dr. Mikheev be the Editor-in-Chief of the Newsletter, with the Planning Group serving as an Editorial Board. At the starting phase, NIOSH (USA) and FIÖH (Finland) promised to provide technical assistance for publishing of the Newsletter.

One copy of each issue will be sent to every Collaborating Centre which in turn will distribute the Newsletter to all those whom they deem appropriate. The Collaborating Centres were encouraged to take the task of translating the Newsletter into their own languages.

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4.
The Working Group discussed the integration of occupational health into economic development. It was stated that work is an activity that involves the vast majority of the adult populations for about one third of their lifetime. To achieve the goal of the *Health for All by the Year 2000 Programme (HFA)*, occupational health has to become an integral part of the HFA Programme. However, it should be taken into account that some countries may, in search of short-term savings, compromise the health of the workers in favour of economic growth. Therefore the long-term benefits of occupational health in the sustainable development of national economies should be stressed.

a) The Working Group strongly encouraged the WHO/OCH to emphasize the role of occupational health in the general development of societies and in the implementation of the HFA by 2000 Programme, because ignoring the health of the working populations would prevent the WHO from achieving its goal for HFA 2000.

At present there are not sufficient data on the economic impact of occupational health hazards and work disability caused by them in many countries. Also, the data sources are difficult to combine because of differences in legislation, occupational health care systems and in the stage of development of the countries.

b) The Working Group encouraged the Collaborating Centres to carry out studies both at national and company level on the economic effects of occupational diseases, occupational accidents, work disability, morbidity and sickness absenteeism. In addition, also an urgent need for a state-of-the-art description and assessment of the economic benefits of occupational health services was recognized.

5.
The Working Group discussed the possibilities and forms of the Collaborating Centres to contribute to the implementation of the WHP. It was noted that in addition to extrabudgetary funds, there are other forms of support that can and should be registered as contributions to the WHP. These were:

- the length of time that experts use for the WHO projects
- studies carried out in individual countries in line with the WHP priorities
- co-sponsoring of meetings, training courses and symposia.
**Policy issues**

1. The Group found it difficult to carry out extensive operational programmes with the available resources in the WHO/OCH Unit. Thus the role of the WHO in the development of workers' health was identified to be a catalytic one. The pro-health policy struggling for the improvement of occupational health and safety, overall health status and quality of life of the working populations, individual workers and their families was, however, deemed as the most important principle in any programme and action of WHO. This approach was found to be also economically sustainable on the long-term basis and thus to support overall socioeconomic development of the countries.

**Occupational health needs in different countries**

2. The Group recognized the qualitative differences in occupational health and safety (OH&S) problems in developing, newly industrialized (NI) and industrialized countries. While in many developing countries the majority of workers are still employed in agriculture, the occupational health problems are dominated by heavy physical work, exposure to organic and mineral dusts, pesticides and traditional mechanical traumas. Infrastructures for OH&S are not well developed and there is

- lack of data bases
- lack of trained manpower
- lack of any resources, such as equipment, materials and money
- the special needs of agriculture and small-scale industries are not well met
- the primary health care approach is needed to meet the problems in practice.

Thus the available infrastructures and resources do not cover the OH&S needs of the developing countries.

3. The NI-countries are characterized by rapid industrialization, implementation of often outdated and hazardous technologies, high potential for generation of occupational and environmental hazards but insufficient mechanisms for their identification, management and control. The OH&S problems are typical for traditional manufacturing industries and could be in most cases controlled with the help of methods available in the industrialized countries. Thus the transfer and appropriate application of OH&S technologies which have been developed in the industrialized countries, combined with the training of experts, employers and workers might be the most effective way to control the hazards.
4. The industrialized countries are experiencing major changes in their working life due to the rapid shift of balance from the primary and secondary production sectors to the tertiary one. While the majority of the workers are working in office-type environments, the traditional OH&S risks and some dangerous new factors are focussing on smaller high-risk groups. Simultaneously, due attention is expected to be given to the OH&S problems of vulnerable groups such as individuals with a hypersensitive constitution, women at reproductive age, elderly and migrant workers. In the office-type work environment, psychosocial aspects, psychological stress, and problems of indoor climate also need growing attention. The questions of office ergonomics require the development of managerial systems, a psychosocial environment in general, and organization of work in the offices. Such problems require new strategies and new approaches and skills from the OH&S personnel.

National situational analysis

5. The Group examined the need for strengthening of OH&S programmes at the national level and decided to propose the following stepwise strategy for the development of such programmes.

a) national situational analysis of OH&S systems of the country:
   - status of legislation
   - governmental authorities
   - registration and statistics of occupational accidents and occupational diseases
   - available infrastructures
   - training and information needs

b) identification of weaknesses and strengths and needs for development on the basis of such an analysis

c) preparation of a national policy and programme for OH&S including at least the following elements:
   - development of surveillance of major problems and hazards
   - development of epidemiology
   - production of guidelines and standards
   - development of manpower resources by education and training
   - development of occupational health services
   - development of a national centre of excellence (institute of occupational health) for continuous development, implementation and evaluation of such national programmes.

Which steps out of a to c are relevant for each country depends on its tradition in OH&S and on the development and pace of change in its working life. Every country should carry out such a situation analysis at least once in 5 years.
**Actions for industrialized countries**

12. In their response to item 8 e) for industrialized countries, the Group emphasized the need to develop predictive methods for the identification and assessment of OH&S hazards, methods for detection of health outcomes at subclinical stage and after a long latency period, as well as methods for identification of new hazards and new health outcomes in the changing working life. Among such new problem areas, the methods for the development of psychosocial work environments, organization of work in high-tech office environments (information work), development of healthy and productive working units (self-learning organizations), detection and prevention of new biological occupational health hazards, such as HIV-enhanced risk of chronic communicable diseases (TBC) and hazards connected with work with biotechnology methods and products. One of the major problems in the industrialized countries will also be the adaptation of work and work environment to the capacities and needs of the aging worker. Connected to the problems of aging, the prevention of musculoskeletal and cardiovascular disorders should also be considered. Besides adaptation of work and the work environment, also promotion of workers' health and maintenance of the working capacity of aging individuals should be given due attention.

13. The Group also recognized the need to develop research programmes and services for underserved groups of workers, such as seafarers, agricultural workers, migrant workers and workers in small-scale industries. The Group further recognized the need to identify, assess and control the health impact from transfer of hazardous technologies and growing OH&S problems connected to such transfers.

**Strengthening of the WHO/OCH Unit**

14. The Group analyzed the available budgetary and manpower resources in the WHO/OCH Unit against the occupational health needs of the countries and needs of effective implementation of WHP. The resources of the Unit were found to be seriously underdimensioned. As methods for strengthening the Unit's operational capacities, the following actions were proposed for the Collaborating Centres:

a) sending experts to the OCH Unit for carrying out operational tasks

b) organizing regional or subregional courses and symposia on behalf of the OCH Unit

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c) co-sponsoring meetings on specific topics jointly with the OCH Unit and if appropriate with other Collaborating Centres

d) providing and distributing evaluated information to countries and from countries to the OCH Unit.

**Horizontal activities between the Collaborating Centres**

**15.**
Besides vertical links between the individual Collaborating Centres and the WHO/OCH Unit, horizontal links between two or several Collaborating Centres were deemed highly desirable, and such links were found to support the implementation of WHP. The practical actions in such inter-institutional activities could be e.g.:

a) organization of joint symposia

b) exchange of information, such as annual reports, current research programmes, research updates, lists of publications, newsletters, CD-ROMs if available

c) in selected cases, and after careful assessment of feasibility, joint research projects could be initiated

d) ad hoc consultations in acute needs of information

e) exchange of experts

f) interlaboratory harmonization, quality control and evaluation of methodologies

g) in selected cases, and where appropriate and needed, provision of material aid.
Working Group 3. Networking of the Collaborating Centres

Professor N.F. Izmerov
Institute of Occupational Health, Medical Academy of Sciences, Moscow, Russian Federation (chair)

Dr. R. Philipp
WHO Collaborating Centre for Environmental Health Promotion and Ecology, University of Bristol, Bristol, England (rapporteur)

Dr. J. Arenga
Institute of Occupational Health, Lisbon, Portugal

Professor D.L. Delclos
Southwest Center for Occupational and Environmental Health, Houston, USA

Professor S. Dodic
Institute of Occupational and Radiological Health, Belgrade, Yugoslavia

Professor A. Forni
Institute of Occupational Health, Milan, Italy

Professor M. Guillemin
Institute of Occupational Health Sciences of the University of Lausanne, Lausanne, Switzerland

Professor LI Yurui
Institute of Occupational Medicine, Beijing, People’s Republic of China

Professor N.I. Meniaiilo
Donetsk Research Centre of Work Hygiene and Traumatic Prevention, Donetsk, Ukraine (observer)

Dr. J.A. St. Aubin
Canadian Centre for Occupational Health and Safety, Hamilton, Canada

Ms. L. Vinogradova
Donetsk Research Centre of Work Hygiene and Traumatic Prevention, Donetsk, Ukraine (observer)

Introduction

The Working Group noted that the term "networking" encompasses communication, relations, sharing and exchange, and that it is an essential activity for sustainable development in the inter-related areas of research, education, policy formation, legislation, monitoring and surveillance. The Group was asked to consider several questions and make its recommendations in response to each one:

Question 1. What are the prerequisites for networking?

Recommendations

Networking should be between WHO Collaborating Centres and with other institutes that are in the process of receiving such designation.
Collaborating Centres that are networking need to have a bank of information that is being regularly updated.

They need, too, to have a means of transmitting and receiving information by, and in order of preference:

a) electronic (E) mail  
b) fax  
c) microdiskette/floppy disc  
d) letter mail.

**Question 2. What are the functions for the Network of Collaborating Centres?**

**Recommendations**

The Working Group

- recognized the importance of facilitating links with existing WHO global networks such as the Global Environmental Epidemiology Network (GEE NET) and the Global Environmental Technology Network (GETNET)  
- noted the objectives of the WHO GEE NET  
- believed that strengths for the Network of Collaborating Centres in Occupational Health will be achieved by accessing pre-existing WHO research and training information materials;

and recommended the following functions for the Network:

a) to target WHO materials for distribution  
b) to provide a "sounding board" for the development of WHO work  
c) to establish "a roster" of expertise in specialized areas  
d) to exchange information among participants  
e) to develop research cooperation among participants  
f) to strengthen training in occupational health.

**Question 3. What should the Terms of Reference be for Collaborating Centres in Occupational Health?**

**Recommendations**

The Working Group believed this is a matter that rests with WHO, national Ministries of Health, Foreign Affairs, Overseas Development and International Relations, and the Centres within countries that have been duly identified by WHO and relevant governmental ministries for such consideration. The Working Group does though,
endorse Section 5 (Terms of Reference of the Collaborating Centres), 7 (Criteria for the WHO Collaborating Centres), and 11 (Terms of Reference for the Coordination Group of the Collaborating Centres) in the Background Document: WHO Informal Consultation of the Planning Group for the Network of WHO Collaborating Centres in Occupational Health, held in Geneva, 9-10 October 1991. These actions were:

a) Terms of Reference of the Collaborating Centres

• besides their general terms of reference, each Collaborating Centre may be asked to undertake specific tasks in the implementation of the Workers’ Health Programme
• a minimum rate of activity for being designated/redesignated as a Collaborating Centre will be defined
• activities of the Collaborating Centres will be followed up and reported in the meetings of Collaborating Centres
• The Advisory Committee on Occupational Health and the Coordination Group of the Collaborating Centres Network will be merged together.

b) Criteria for the WHO Collaborating Centres

Qualitative
• genuine interest and specific accomplishments of the institutions
• scientific excellence at the international level
• scope of the programme fitting well to the WHO Workers’ Health Programme
• the scope of activity of the Institute may be either multi- or monodisciplinary
• capacity to transmit the outputs to national level
• institutions with potential to adopt leadership in their sub-region are welcomed.

Quantitative
• resources as to expertise and equipment should be sufficient
• financial support or support in kind from the Collaborating Centres is welcomed.

Geographical aspects
• global geographical distribution of Collaborating Centres should be ensured.

c) Terms of Reference for the Coordination Group of the Collaborating Centres

The Coordination Group should adopt the role of a Programme Advisory Committee and it should undertake the following tasks:

1) identification and evaluation of future trends and needs concerning occupational health
2) advisory role concerning programme contents and priorities
3) contacts with the decision-makers and other relevant bodies
4) fund raising
5) evaluation of the Workers’ Health Programme.
Question 4. How should networking be organized at the national and international level?

Recommendations

- Part of the national contributions to the WHO budget should be given as costs of services from individuals and Centres to the Network of Collaborating Centres.
- Representatives of other relevant organizations such as the International Labour Office (ILO) and the International Commission on Occupational Health (ICOH) should be invited to meetings of the Network of Collaborating Centres in Occupational Health.
- WHO should consider tighter integration of the programme of its work for workers’ health between the Central Office and its Regional Offices and take steps to keep the Collaborating Centres informed by placing this information in an electronic mailboard or newsletter.
- WHO should collate and disseminate through the Network information on the whereabouts of national and international quality control programmes in occupational health.

Question 5. What practical actions can be proposed by individual Collaborating Centres or by joint actions?

Recommendations

Several practical actions are ready to be implemented:

Action 1

The Canadian Centre for Occupational Health and Safety

- is willing to offer use of its electronic bulletin board to Network members free of charge for the first year and at a nominal fee of USD 50 each year after that, provided that they pay the time costs for their telephone use. Although technical support can be given by the Centre, WHO must assume responsibility for the content of this bulletin board. A first step would be the inclusion of details of the Network and its members, and their areas of interest and expertise.
- has prepared a self-paced distance learning course on CD-ROM in the safe handling of chemicals for use in the training of operatives in the workplace.
- is looking for a joint venture of some CAD 700,000 to prepare a self-paced 10-12 hour CD-ROM Training Disc for Health Care Workers.

Action 2

The Faculty of Occupational Medicine, Royal College of Physicians, London, UK, has produced and is able to distribute to members of the Network, copies of:
Doctors in the Workplace: a document to help employers understand the current view of the role of occupational medicine and occupational physicians, their place and function in industry, commerce and other organizations and the benefits which they bring.

Teaching in Occupational Medicine in Undergraduate Medical Training: a report of the Joint Education Committee of the Faculty of Occupational Medicine and the Society of Occupational Medicine.

Guidance Notes for Applicants, Supervisors and Visitors on Accreditation, Training Programmes and the Approval of a Senior Registrar Graded Training Post in Occupational Medicine: issued by the Specialty Advisory Committee on Occupational Medicine, Joint Committee on Higher Medical Training, and the Membership Committee, Faculty of Occupational Medicine.

Action 3

The WHO Collaborating Centre for Environmental Health Promotion and Ecology, University of Bristol, England

• has developed and can make available several problem-management questionnaires which are being used in their courses as a student learning tool in occupational and environmental medicine and health.
• has developed with the Royal Institute of Public Health and Hygiene, London, UK, the Communicable Disease Surveillance Centre, London, UK, and the Royal College of Physicians, London, UK, a two-week full-time equivalent distance learning certificate course in the application of environmental and occupational epidemiology to health risks assessment, management and the prevention of communicable diseases and toxicological problems in the workplace and general environment. It could be piloted internationally with members of the Network.
• in its efforts towards sustainable development, would like Network members to comment on its draft environmental medicine education and training materials, and to participate in their use and evaluation.

Action 4

The Amsterdam School of Occupational Medicine can help through the newly established European Association of Schools of Occupational Medicine

• to exchange audiovisual training materials
• to exchange teaching assessments and examination questions.
Action 5

Worksafe Australia is willing to examine its bank of 8,000 slides to identify those that could be used for teaching and training purposes in other Collaborating Centres.

**Question 6. When and where should the next meeting of Collaborating Centres be convened?**

**Recommendations**

The next meeting of Collaborating Centres should be convened in two years’ time, possibly at WHO/HQ, Geneva or in a Collaborating Centre which is ready to host the Meeting. Specific priority topics for it will be identified by the Planning Group.

Between 6 and 12 months from now, the Planning Group should undertake an audit of inputs, processes, outputs and outcomes for the Network since the First Meeting in September 1992. This audit should be distributed within WHO and to Network members.