



**International Commission on Occupational Health - ICOH**  
**Commission Internationale de la Santé au Travail - CIST**

*Founded in 1906 as Permanent Commission*



**SCIENTIFIC COMMITTEE ON  
RURAL HEALTH:  
AGRICULTURE, PESTICIDES AND ORGANIC DUSTS  
WORKPLAN 2006-2009**

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## TABLE OF CONTENTS

Introduction & rationale .....	2
-Short discussion on the current situation on occupational health in agriculture .....	2
Short discussion on the current situation on occupational health in agriculture.....	3
Why a new Scientific Committee? .....	6
Objectives and tasks for the new Scientific Committee .....	7
The planned activities.....	8
1. Collaboration with Other Scientific Committees .....	8
2 Editorial activities .....	8
3. Participation in Congresses and other Scientific Events. ....	8
4. Training and Education .....	9
5. Participation in International Campaigns.....	10
The organization of the new Scientific Committee.....	10
Funding .....	11
Next Business Meeting of The Scientific Committee .....	11

## **Introduction & rationale**

Even though there is at present a trend toward urbanization, most of the human population (51%, according to World Bank data) live and work in rural areas; and ILO estimates that 1.3 billion of workers are engaged in agriculture. Many products are further processed in related industries, for example forestry, wood industry, paper- and cotton production.

Major issues are food and forestry production, and agriculture and related industries represents a key component in human activities in a world where e.g. food demand is growing very quickly. However, agriculture can cause environmental pollution and environmental resource depletion.

In this light, agriculture and related industries are completely different from any other activity, because they are strongly linked either with food quality and well-being of the general population or with environmental health. Therefore, promoting health in agriculture means also promoting the health of the general population and of the environment of entire nations (*“Healthy agricultural workers producing healthy foods in an healthy environment”*).

Despite this social importance, occupational health in agriculture and forestry are still poorly developed, either in developing or in developed countries, and agriculture is still one of the most dangerous and unsafe of all the human activities, involving very often also vulnerable subgroups, such as the elderly and children.

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### **Short discussion on the current situation on occupational health in agriculture**

Among "Agriculture activities", several different tasks and jobs are identified: tillage of soil, cultivation and harvesting; breeding and slaughtering of animals; production of seeds, production of handmade food, forestry work, and several other activities, and each of these activities is characterized by the presence of specific risk factors, which includes biological agents, plants, animals, insects, other types of organic dust, inorganic dusts and exposure to physical risk factors such as noise, vibration and ultraviolet light as well as ergonomic risk factors as heavy weights and working in inappropriate postures, or in conditions characterized by repetitive motions. Also exposure to chemical substances can take place; it is worth mentioning that not only pesticides are to be listed in this group, but also other substances such as solvents, diesel exhaust, and gasoline. Usually, the organization of agricultural work might be beneficial to the worker's health due to fact that most agricultural activities are carried out in the open air; however, these workers also have a very long work day, quite often starting at the sunrise and ending at the sunset and they may need to work under noxious climatic conditions.

Finally, other conditions, not directly related to the workplace, can affect agricultural workers' health, that is inappropriate hygiene and water supply.

Those risk factors may potentially lead to the following main consequences on workers' health:

- Allergic diseases
- Cancers due to exposure to carcinogens
- Hearing loss due to noise
- Heat strokes due to work in extreme climatic conditions
- Infectious diseases caused by contact with animals, insects, plants, and due to poor hygienic conditions and lack of running water supply
- Intoxications due to exposure to pesticides and other chemicals
- Musculoskeletal disorders
- Occupational injuries
- Poisonings due to contact with insects, snakes and other animals or plants
- Respiratory diseases
- Skin diseases
- Vibration induced white finger syndrome

As for the real burden of occupational diseases in agriculture, it is worth mentioning that, due to a huge number of unregistered workers, lack of appropriate registration, lack of diagnostic capacity, in many countries there are no reliable data on the true magnitude. Nevertheless, based on World Bank data, it is possible to estimate 840.000 fatal work related diseases per year in agriculture . Apart from fatalities, also the burden of occupational diseases in the sector needs to be estimated: data recorded in the European Union (EUROSTAT) suggest that the most common occupational diseases in agriculture are musculoskeletal, followed by respiratory diseases, skin diseases and sensory organ diseases. It is estimated that 3% agricultural workers in developing countries and 1.4% of crop workers in the US experience pesticide poisoning every year. It is also important to underline that allergies as a whole represent a very relevant topic of concern for agricultural workers. The burden of other diseases, including occupational cancers, is currently estimated to be very low. As for infections, the only reported occupational disease is represented by brucellosis. Consistently, official data clearly indicate the most important group of risk factors is represented by the biomechanical and physical ones.

However, the number of occupational diseases yearly reported is very low (only 1165 in the European Union), and doubts arise on a possible, significant, underreporting of such an events.

The epidemiology of cancer in agricultural workers is a very complex issue. Recent large efforts in the USA are starting to clear the picture of the epidemiology of cancer in relation to agricultural exposure. Potential carcinogenic threats in agriculture can be due to different kind of substances and risk factors. In fact, farmers and workers in related industries may

come in contact with a variety of substances, including pesticides, solvents, oils and fuels, dusts, asbestos, paints, welding fumes, zoonotic viruses, microbes, and fungi.

Moreover, ILO estimates suggest that half of fatal occupational injuries in the world are attributable to agriculture, and this means 170.000 fatalities in the sector per year, while the number of non fatal injuries can be estimated at around 130.000.000. In many cases, injuries are related with tractor use, but also with animals and other risk factors present in the agricultural settings.

It is also important to notice that agricultural workforce is not a homogeneous entity. There are huge differences within this group based on type of activities, level of mechanization, specialization, type of property, etc. Those differences cause also huge differences in occupational risks.

Risk patterns vary also in relation with the size of the farms and other rural industries, and this significantly varies among different countries: for example, in USA and Canada most of agricultural workers are working on mid-sized (10-50 Ha) and large size farms (>50 Ha); on the contrary, in many developed countries such as Italy, Spain, Greece and Portugal the majority of the farms are small sized (<10 Ha), and most of these small enterprises are typically family based. This explains why in many Mediterranean countries the number of registered enterprises exceeds the total number of employees.

In developed countries, farms are quite often operated by elderly workers. In USA more than half of 1.9 million of farms are operated by people over 55 years of age. A similar picture is also observed in many European Countries and South Korea. In Italy, most agricultural workers are over 65.

Since agricultural activities vary significantly by season, agricultural workers are very often seasonal and/or temporary workers who lack job security. They are involved in the lowest-skilled tasks (with lowest wages), often under poor working conditions. Quite often whole families, including children and the elderly, are involved. Usually, those workers do not have any information on occupational risks and do not have contact with occupational health and safety personnel.

Child labor is quite often present in agriculture and other rural industries, especially in developing countries: ILO estimates suggests that at least 250 million children aged between 5 and 14 years work in agriculture in developing countries, and that almost half of them work on full time basis.

Data collection in agriculture and other rural industries are very complicated, and significant data gaps are present. There are many reasons for this:

- A large proportion of the works is made by unregistered workers.
- Significant regulatory differences in the recognition of occupational diseases across countries (like different lists of occupational diseases in countries).
- In many corners of the world, if not in the whole world, occupational health structures and services are lacking in agriculture. As such, in the rare circumstances when health surveillance of agricultural workers is carried out, it is often done so by rural general practitioners who may be unaware of the occupational health risks in agriculture, and in some cases may lack training in occupational health. This means that very often they do not recognize an occupational disease and therefore do not report it. A typical example is represented by the failure to diagnose mild and moderate pesticide poisonings.
- Registering of occupational diseases is quite often a problem especially in developing countries.
- In many cases, the observed pictures are typical of a worker related disease. In these cases, the etiological contribution of agricultural activities needs to be quantified.
- Lack of public health resources and lack of effective collaboration among key actors of rural health, such as poison control centers, compensation agencies, and departments of agriculture and veterinary medicine.

When developing preventive activities, it must be taken into account that some main characteristics of agriculture and other related industries, which are similar across the globe, may complicate the planning and realization of risk assessment. These complicating characteristics include:

- Small size and family based enterprises as well as small scale industries are often prevalent. It is worth mentioning that in most national regulations, a relative or son/daughter are not necessarily considered a “worker”. Therefore, these workers are often excluded from any OH & Safety programs and protections.
- Living and working environments often overlap, as are risk factors.
- The activities done by an agricultural worker significantly vary among seasons, and, even in a single typical working day. This makes it very complicated to define “typical” conditions, necessary in any risk assessment activity.
- Several different chemical substances are intermittently used over time (different pesticides, other agrochemicals, such as fertilizers, growth hormones, but also solvents, gasoline and in small industries glues and lacquer etc.).
- Occupational exposure to chemicals can be affected by meteorological and environmental conditions.
- Some activities are done outdoors, and some indoors.
- Activities often involve the elderly and children, including in the developed world.
- The activities done by agricultural workers may significantly affect either the environment or the quality of the food provided to the population.

### **Why a new Scientific Committee?**

It is evident that the International Commission on Occupational Health is supposed to be a key actor in the promotion of Occupational health and Safety in Agriculture and related industries. Since agricultural activities are very complex, a holistic approach is strongly needed and the collaboration of all the different actors within rural health is necessary. These are the reasons why the Scientific Committee on Agriculture, the Scientific Committee on Organic Dusts and the Scientific Committee on Pesticides have been merged in a single and new SC, the

### **Scientific Committee on Rural Health: Agriculture, Pesticides And Organic Dusts.**

This new Scientific Committee will take the task of promoting actions addressed at the objectives identified in a specific paragraph, also through collaboration with other Organizations active in Rural Health.

The appointment and approval of the Officers of the Scientific Committees has been stipulated in the Constitution ( Art 5, section 3, points e and k, Art 7, Sections 1-4) and the Bye Law 11. On the basis of the above regulations, based on the proposal of the Committee Meeting, and after the consultation of the Vice-President, Dr. Fingeruth, the ICOH President Prof. Jorma Rantanen has appointed, on August 30<sup>th</sup>, 2006, for the period 2006 – 2009, Dr. Claudio Colosio (Italy) as the chair of this new Scientific Committee, and Prof. Petar Bulat (Serbia) as the Secretary.

### **Objectives and tasks for the new Scientific Committee**

Based on the above considerations, the following objectives can be identified as a priority in agriculture, and the new Scientific Committee is supposed to address its activities at promoting awareness and concrete actions addressed at:

1. Developing and supporting national and local systems for surveillance and data collection, mainly in developing countries and countries in transition.
2. Promoting adoption and enforcement of legislation (with a particular attention for developing countries and countries in transition) including legalization of workers engaged in agricultural activities and eliminating child labor.
3. Promoting occupational health structures and services, involving and training also general practitioners to this task, periodic health screening to workers of small farms and small scale industries, and the organization of labor inspection for agriculture workers.
4. Identifying risk factors useful to prevent injuries in agriculture and small scale industries, including elimination of tractor roll over fatalities, and reduction of other fatalities.
5. Promotion of the safe use of pesticides and other chemicals, and adoption of integrated pest management practices, elimination of all obsolete and the most dangerous pesticides and organic solvents; and promotion of sound use, storage and disposal of plant protection products.
6. Increasing awareness of dietary issues and food safety.
7. Taking care of problems related to the presence, among agricultural workers, of immigrants (capacity of understanding local languages; educational levels; awareness of the utility of personal protective equipment, etc.) and ageing of the workforce and related problems.
8. Training and educating local rural-health experts. Promoting the teaching of rural health issues in the Universities, at every level (university degree, schools of specialization, masters, etc.).
9. Creating local and international networks of all the subjects involved in rural health programs (Occupational health physicians, occupational health personnel, risk assessors, technical staffs of the enterprises, etc.).
10. Creating reference centers, at the local, national, and international levels.

## **The planned activities**

The first action of this new Scientific Committee has been a two-day seminar held in Napoli, Italy, on January 25-26 2007. Host has been Prof. Nicola Sannolo, member of the Committee. In order to maintain democracy and transparency, members who have not been able to participate in the meeting read this document and sent to the Chairperson their proposals and suggestions in a written form. All the proposals have been included in the document, that have been read and emended during Napoli meeting.

The main activities of the Scientific Committee are the following.

### 1. Collaboration with Other Scientific Committees

The collaboration with other scientific committees is planned. In brackets the name of the person in charge of the link:

Allergy and Immunotoxicology (J. Godnic Cvar),  
Epidemiology in Occupational Health (P. Cocco)  
Health Services Research & Evaluation in Occupational Health (K. Husman)  
Musculoskeletal Disorders (S. Mattioli)  
Neurotoxicology and Psychophysiology (L. London)  
Occupational Toxicology (M. Manno)

### 2 Editorial activities

The option of preparing some texts has been discussed. After a broad discussion, it was decided to put in agenda the publication of the text: "Health Surveillance and Prevention in Agriculture". The text will include also the updating of the text published in 1994 "Health Surveillance of Pesticide Workers". A tentative table of contents will be prepared by the Editorial Board and will be circulated among the SC members. Meanwhile, the Chair of the Scientific Committee will get in touch with WHO and ILO Officers to propose a collaboration at the preparation of the text.

### 3. Participation in Congresses and other Scientific Events.

The participation in the following events has been approved:

May 30th - June 1st 2007. Cartagena das Indias (Colombia). XXVII Congreso Colombiano de Medicina del Trabajo y Salud Ccupacional. X congreso de la asociación latinoamericana de salud ocupacional also. The Committee will be present with two keynote lectures provided by Dr. Claudio Colosio.

September 10-12, 2007, Beijing, China: Seventh International Symposium on Biological Monitoring. The event will be organized in collaboration with two other ICOH SCs, the SC on Toxicology and the SC on toxicology of metals. Main task of our Scientific Committee will be the organization of a session addressed at biological monitoring of pesticides.

October 9-12, 2007, Banff, Alberta, Canada. The 19th International Conference on Epidemiology in Occupational Health-EPICOH2007. Organization of the session "Wood dust". Organizers: *Paul Demers, Vivi Schlunssen*.

Jan 31-Feb 2, 2008, Cotonou, Benin. Seventh Panafrican Congress on Occupational Health. Preparation of some presentations and organization of a training course (see "Training Activities").

February 22-24,2008, Aurangabad, India. Eleventh Asian Congress of Agricultural Medicine & Rural Health. Preparation of some presentations and organization of a training course (see "Training Activities").

Sept 28-Oct1, 2008, Rhodi, Greece. Eurotox – 45th congress of the European societies of toxicology. Organization, in collaboration with the Scientific Committee on Toxicology of the International Association on Agricultural Medicine and Rural Health, of the Minisymposium

“risk assessment and prevention of health effects from pesticide use in agriculture”.  
Chairpersons: Claudio Colosio and Petar Bulat.

March 22-27, 2009, Cape Town, South Africa. 29th ICOH: International Congress on Occupational Health. The Committee will organize the following activities:

a. Keynote or Plenary Session Speakers. We have proposed the following:

Occupational Diseases and Injuries in Rural Settings: a challenge. Speakers: Claudio Colosio (Italy) and Petar Bulat (Serbia).

Microbiological cell wall agents and their receptors in occupational toxicology. Speaker: Torben Sigsgaard (Denmark)

Control of biological risk from animal breeding. Speaker: Wilawan Jungpraesert (Thailand).

b. Topics to be used as session titles during the conference related to the congress theme - Occupational Health: A Basic Right at Work - An Asset to Society

Health for all in third millennium: an objective not reachable without basic occupational health for agricultural workers. Chairpersons: Kelley Donham, Kai Husman and Leslie London.

c. minisymposia.

Organic dust exposure- from farming to industry. Chair: Torben Sigsgaard (Denmark)

Asthma and COPD in organic dust exposed settings. Chair: Eva Andersson (Sweden)

Pesticide risk control: strategies for education and training. Martin Wilks (CH); Claudio Colosio (Italy).

New approaches for pesticide risk assessment and health surveillance. Angelo Moretto (Italy); Richard Glass (UK).

Biological risk from agricultural activities. Gert Van der Laan (The Netherlands), Chiara Somaruga (Italy), Gabri Brambilla (Italy).

October 13 - 16, 2009. Cartagena das Indias, Colombia (to be confirmed yet). Collaboration with the International Association on Agricultural Medicine and Rural Health at the organization of the “17<sup>th</sup> International Congress of Agricultural Medicine & Rural Health (From theory to practice: searching OHS solutions for rural workers in developing countries).

2008 or 2010 (still to be decided), Organic dust conference. Venue: Denmark.

#### 4. Training and Education

The proposal of preparation of training & education packages, addressed at delivering training courses, in particular in developing and in transition Countries, It has been approved. The book “Health Surveillance of Pesticide Workers” will be the basis for the preparation of the materials for the courses. At present, training courses are planned as back to back events of the following congresses:

- Cotonou (Benin) in the frame of the 7th Panafrican Congress on Occupational Health (January 31st – February 2nd, 2008). The course will be delivered in English and French languages, will last one week and, after the first experience carried out in 2008, will be repeated yearly, and proposed in other developing countries (see Annex 1, tentative programme of the course)
- Aurangabad, India, in the frame of the Eleventh Asian Congress of Agricultural Medicine & Rural Health (February 22-24, 2008). Organization of a training course. Programme similar to the one proposed for the Cotonou event.
- The Committee is also willing to support other training and education activities, such as distance learning experiences, summer schools (Dr. Colosio has informed the participants that a summer school course is in preparation in Milan, under the responsibility of the new “International Centre For Research And Documentation On Agriculture And Health”, recently established at the San Paolo Hospital of Milan).

## 5. Participation in International Campaigns.

The SC is already engaged in the Global Campaign Healthy Village, launched in Lodi and led by the WHO.

A further campaign the SC plans to launch is “Working at improving knowledge on the global burden of disease from Agricultural Work”.

This is not an activity to be carried out by the SC itself, but a proposal that the SC will submit to International Organizations and Association to define options, times, approach and, possibly, funding.

### **The organization of the new Scientific Committee**

In order to reach all the planned objectives, and due to the large number of members, the Committee will be organized in subgroups and working groups.

Subgroups: are permanent groups dealing with specific aspects of RH. At present, the following subgroups have been identified (underlined: the contact person of the subgroup)

**Education, Dissemination & Networking**: J. Mustajbegovic; P. Bulat; P. Cocco, C. Colosio; R. Glass; J. Karadzinska Bislimovska (to be confirmed); G. van der Laan; M. Wilks.

**Organic dusts**: E. Andersson, G. Brambilla, A Colombi, K. Donham, O. Omland, T Sigsgaard.

**Pesticides and other chemicals**: A. Moretto, P. Bulat, G. Calvert, C. Colosio, R. Glass, R. Harari, J. Liesivuori, N. Sannolo, C. Wesseling, M. Wilks.

**Prevention of accidents**: E. Ariano, J. Karadzinska Bislimovska.

**Infectious diseases in farming**: C. Somaruga, G. van der Laan.

All the SC members are now invited to apply for one or more of the following subgroups.

Working groups: for specific activities. They can be created to fulfill a specific task or obligation, and are not supposed to be permanent. At present, the following group has been created:

**Editorial activities**. The option of preparing some texts has been discussed. After a broad discussion, The text: “Health Surveillance and Prevention in Agriculture” was put in agenda. Editorial Board: C. Colosio, P. Bulat; E. Andersson; K. Donham; M. Wilks.

## **Funding**

The Committee discussed deeply the possibility of finding funding to support the activities. The following possible sources of funding have been identified:

World Bank, in particular for activities to be carried out in developing countries.

Local Institutions: when appropriate

NATO: different kind of activities can be supported by NATO funding, in particular; Advanced Research Institutes and training and education activities. Some geographical areas seem to be particularly interesting to the Organization.

EU Cooperative Projects: several projects can be done, addressed at "third Countries", with the support of European Union.

EU Seventh FP: this is a very important source of funding. Since most of the Committee Members have been working together in different Commissions and Working Groups, the Committee is ready to propose some applications. In particular different members of the Committee will identify specific working lines in the programme. The member who decided to apply will firstly involve in the project other member of the Committee, to create the basis for a long term collaboration. Interestingly, also non EU countries can be involved (without funding if developed; in other cases, some possibility of funding exists). The most appropriate form of application is in any case, in the unanimous opinion of the Committee, the so called "Network of Excellence". The possibility of funding will be explored in the very next future.

ICOH: the Committee has been informed that funds can be made available by ICOH to promote the participation in Scientific Activities of colleagues from developing or in transition Countries.

Private sponsors: the event organized by the Committee will be supported, when appropriate, by private sponsors. Any condition of conflict of interest must be evaluated and avoided.

## **Next Business Meeting of The Scientific Committee**

The next business meeting of the Scientific Committee will be held during the Cape Town ICOH Congress.

This document has been drafted in Milan, in June 2006, in the frame of the ICOH Congress, has been circulated and commented by the SC members and finalized in the Napoli Planning Meeting.

This document, if well implemented, might also be the basis of a publication in an International Journal.