

10th European ALARA Network Workshop
Experience and new developments in implementing ALARA
In occupational, public and patient exposures



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**Putting radiation exposure in perspective with
other occupational risk factors**

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Occupational Risk Factors

- **Chemical risk factors: 100,000**
(Carcinogens:400)
- **Physical factors: 50**
- **Biological agents: 200**
- **Adverse ergonomic conditions: 20**
- **Allergens: 3000**

Hazardous Work Physical Hazards

- Noise over 85 dB(A)
- Vibration
- High pressures (air, water)
- Ionizing radiation
- Heat radiation, UV radiation, extreme temperature (e.g. sunstroke, frostbite)
- Continuous weight lifting (more than 20 kg for males, 15 kg for females)
- Where risk of repetitive strain injuries exist
- Dealing with electric voltage or close to open live wires, climbing electric poles, electricity service work

Hazardous Work & Biological Hazards

- Bacteria and viruses, risk of contamination
- toxic, infectious or allergenic biological agents and waste
- contact with wild or poisonous animals & transmissible animal diseases
- Slaughterhouses, carcasses
- Sewage system and toilet draining and cleaning

Hazardous Work Other Hazards

- Mining and underground work
- Loading and unloading ships
- Driving railway cars, coupling of railway cars
- Hazardous installations and service work
- Service and repair of pressure vessels
- Excavations or other collapsing structures
- Demolition work
- Work in closed containers
- Work where falling from high may occur

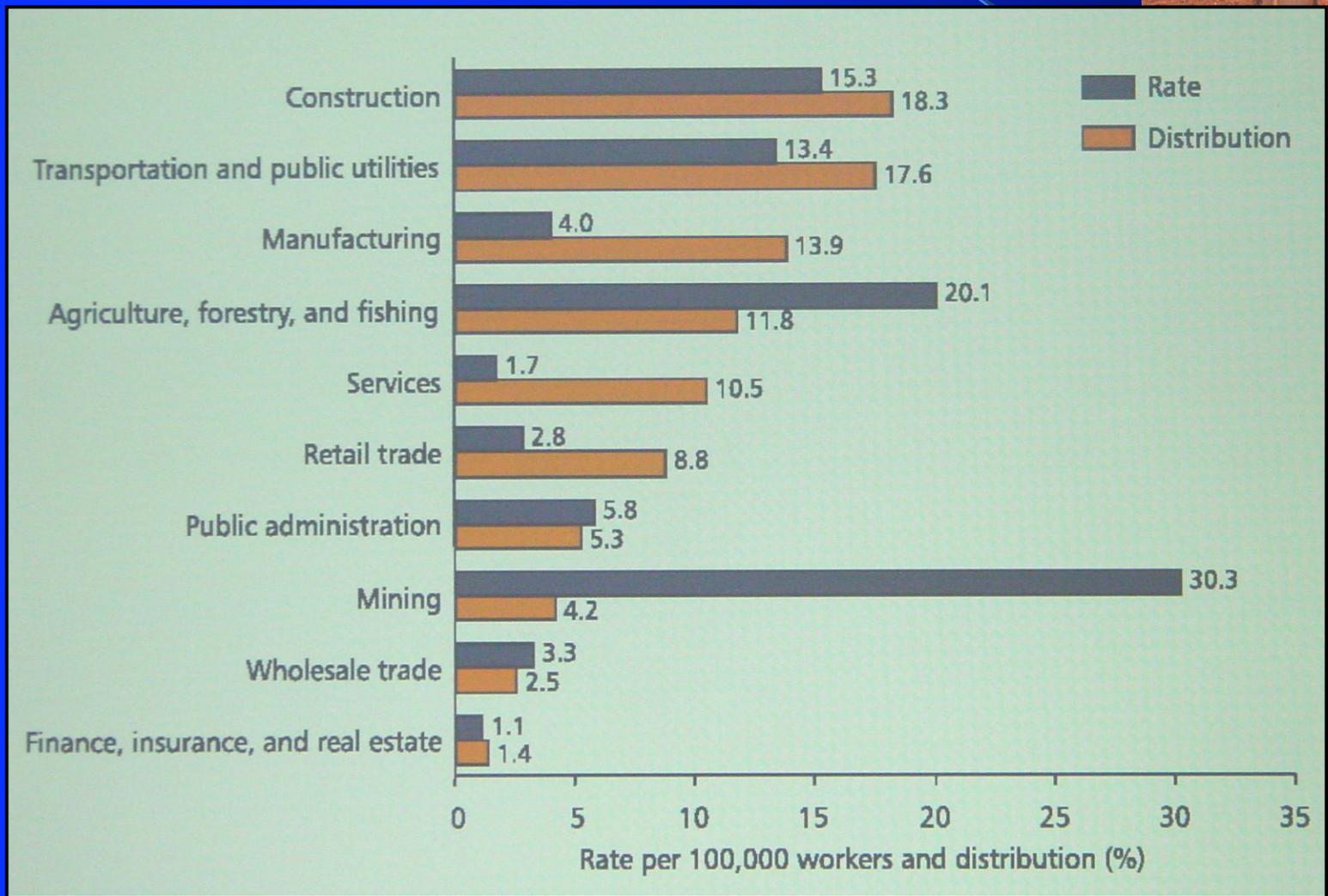
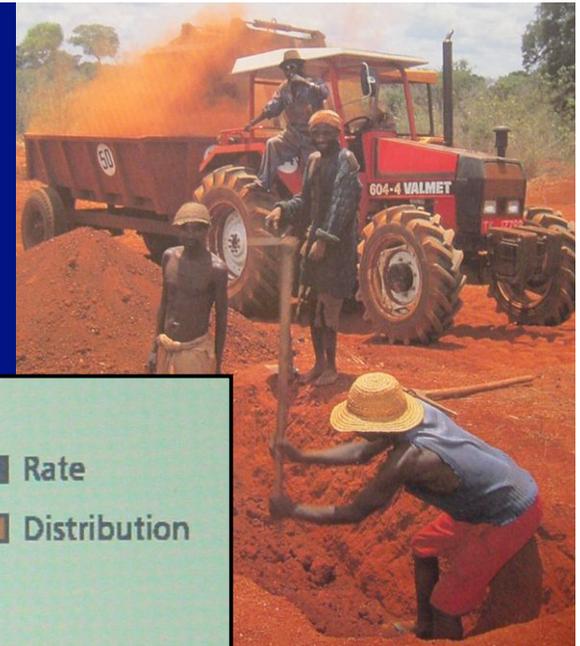
Hazardous Work Other Hazards

- Work with dangerous animals, and test animals
- Manufacture of explosives, fireworks
- Pressurized or liquefied gases, acetylene welding bottles
- Containers that carry hazardous chemicals
- Machine driven, conveyor work when linked to a piece rate salary

Hazardous occupations

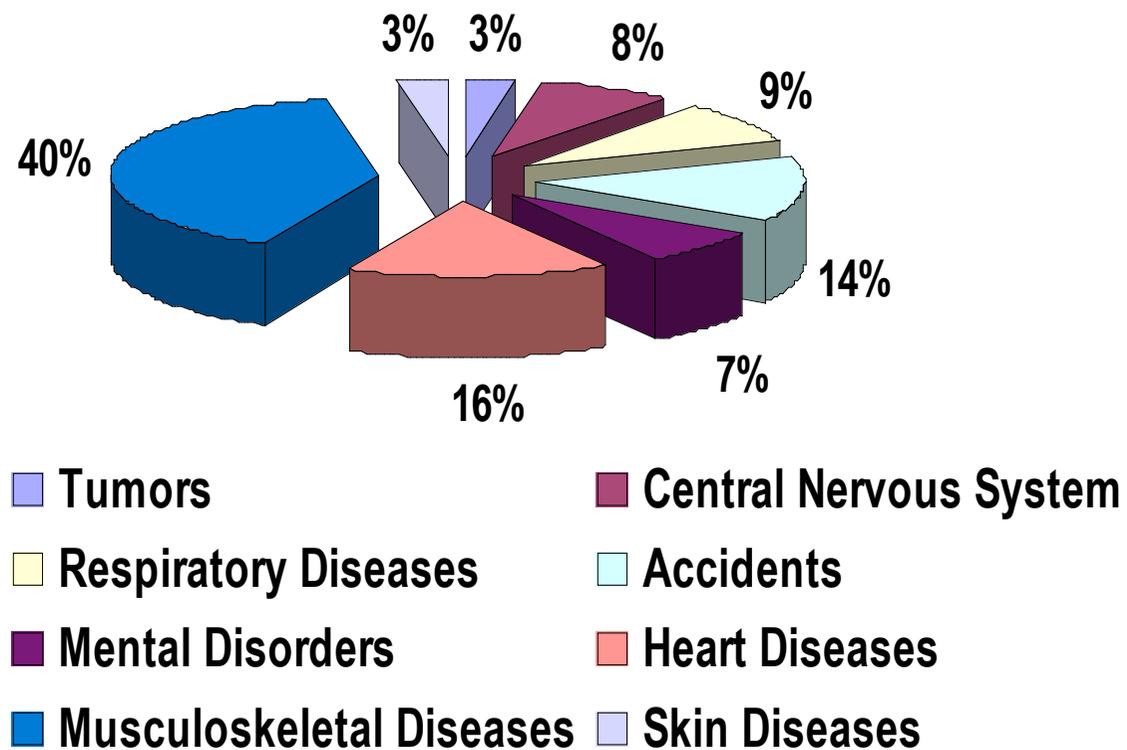
- Fatal logging injuries in mountain areas of North-Carolina 3420/ 100,000
- Commercial fishermen 155 / 100,000
- Timber cutters 133
- Airplane pilots 76
- Taxi drivers 50
- Electrical installers 38
- Farm operators 36
- Construction laborers 33
- Office worker 0.5

Average annual rate and distribution (%) of fatal occupational injuries by industry division, 1980-1995, source: NIOSH/USA



Costs of work-related injuries and diseases

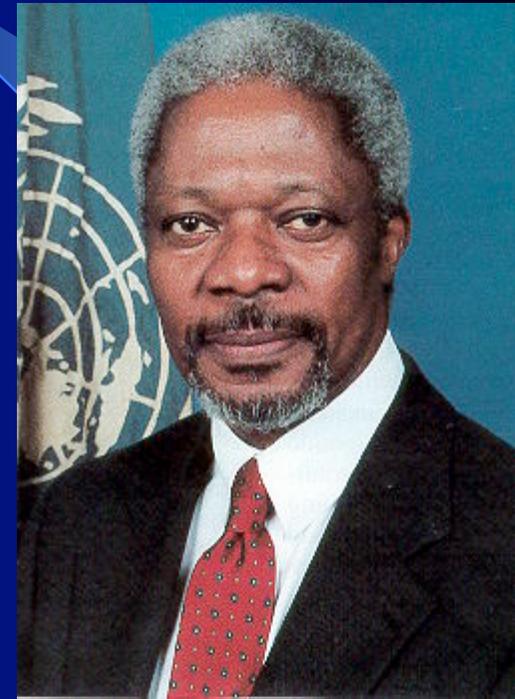
Costs by disease or injury



Occupational injuries and diseases

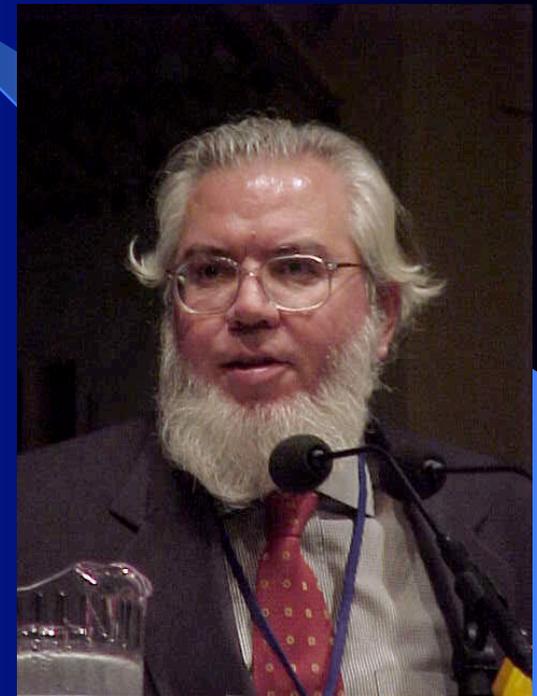
- 335,000 deaths
- 250 million accidents
- 160 million occupational diseases
- 4% of world's gross national product is lost

Source: Kofi A. Annan. Occupational health and safety: a high priority on the global, international and national agenda. Asian-Pacific Newslett on OSH 1997;4:59

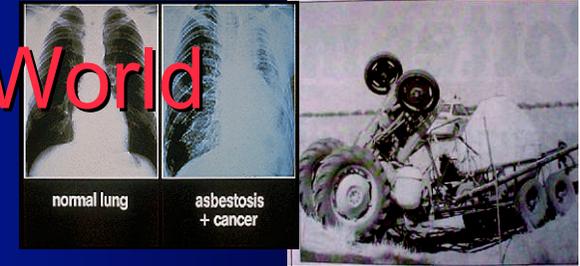


Deaths, Disabilities and Diseases

ILO Estimate of work
related deaths in 2000:
1.9 –2.3 Million



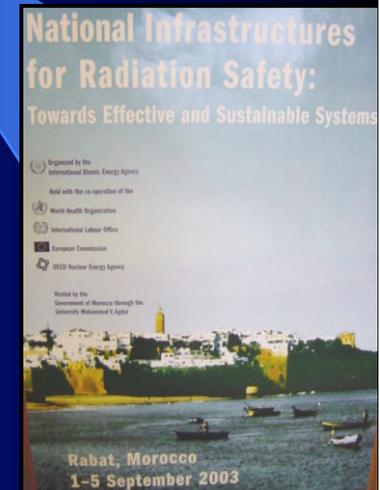
Work-related Annual Deaths - World



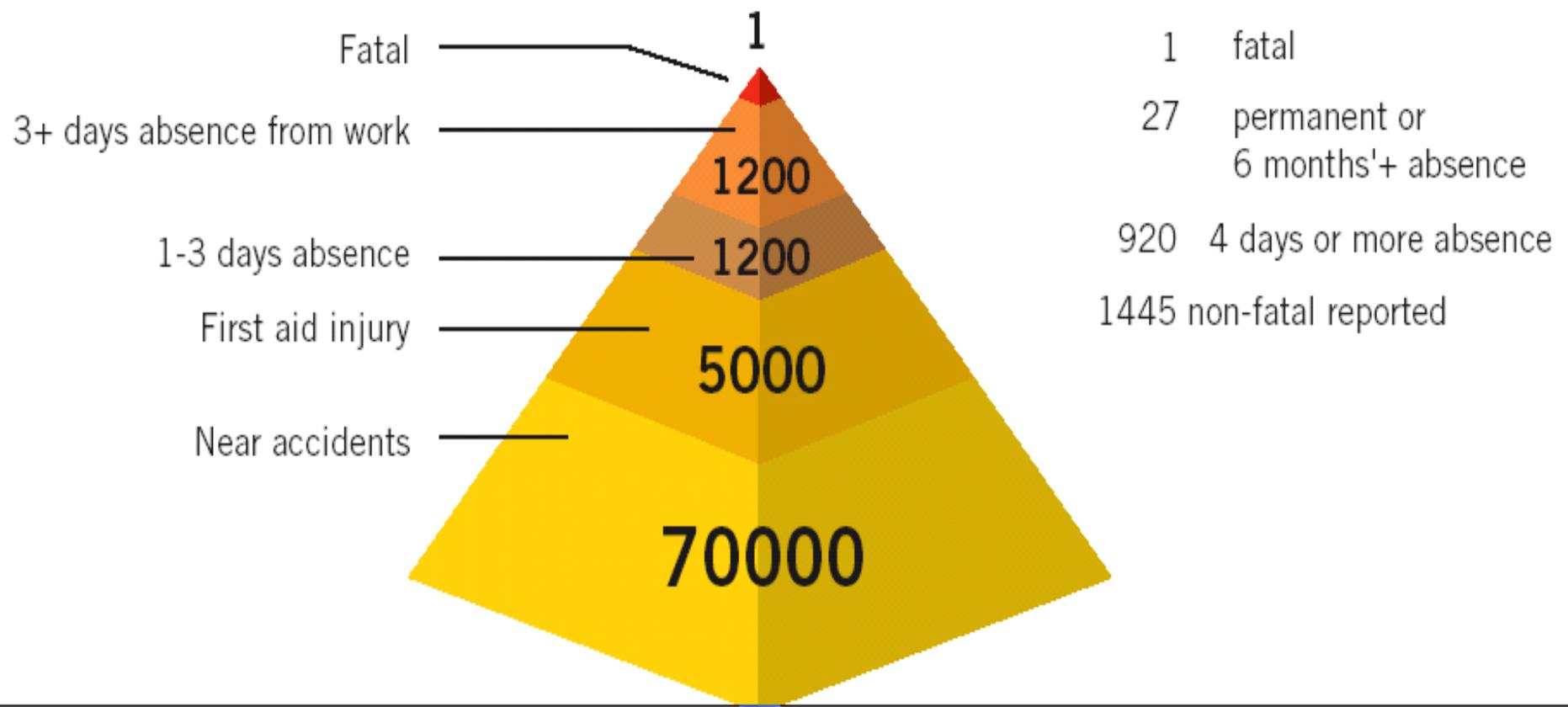
● Economically active population:	2.7 billion
● <i>Deaths attributed to occupation</i>	1.9 - 2.3 Million
● Work-related diseases:(lower limit)	1.6 Million
- communicable diseases, w/r	320 000
- cancer, w/r	610 000
- circulatory diseases, w/r	449 000
- chronic respiratory diseases (silicosis 36 000), w/r	145 000
- nervous system disorders, w/r	20 000
- digestive system diseases, w/r	21 000
- genito-urinary disorders, w/r	9 000
● Deaths caused by work accidents	355 000
● Commuting injuries (not included in overall deaths above)	158 000

Work-related effects of radiation

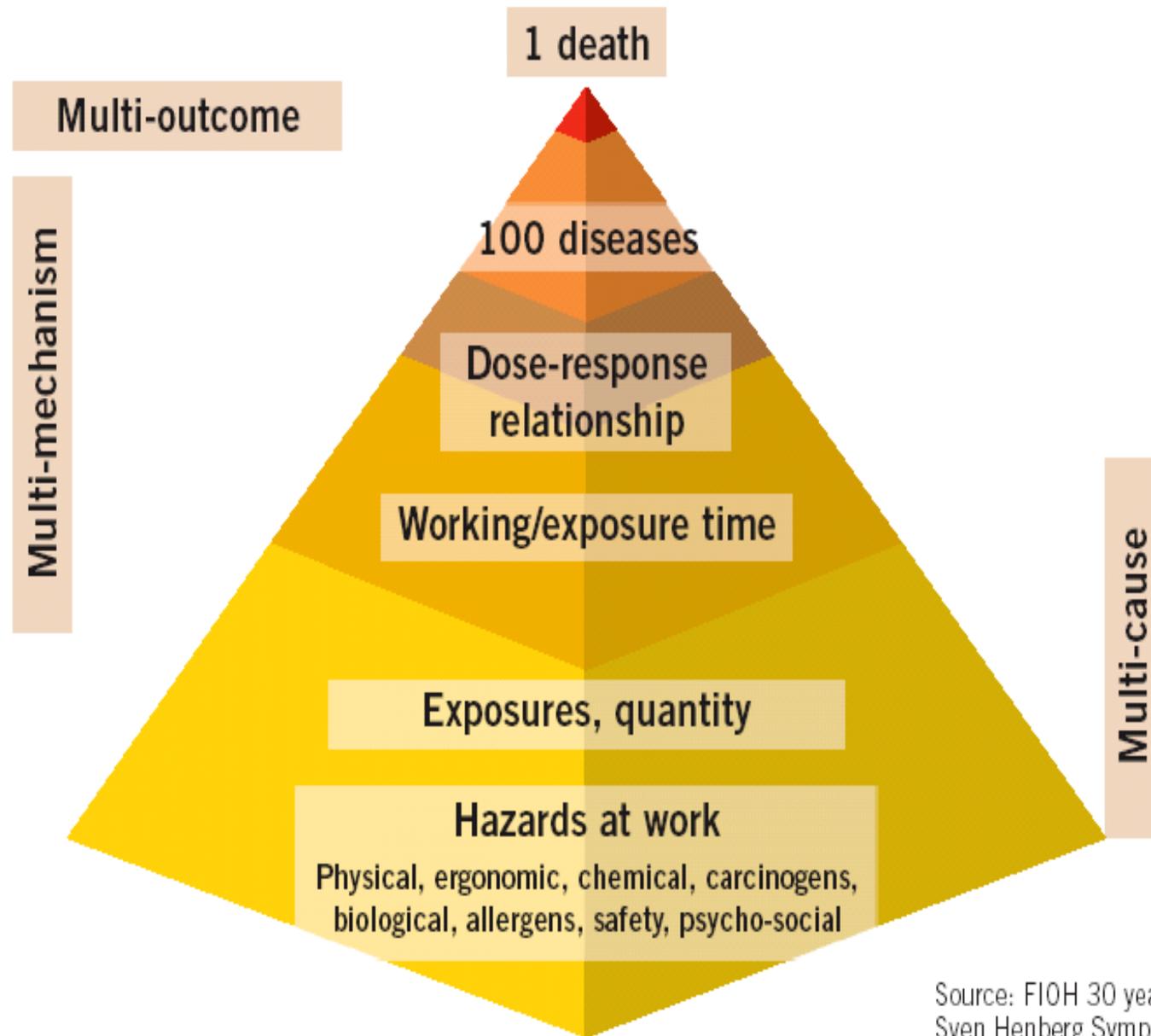
- **Cancer of pancreas, attributable fractions: men 0.8%, women 1.9%**
- **Lung cancer caused by radon and combined effects: men 4.5 %, women 1.2%**
- **Bone cancer : 0.6/0.6 %**
- **Skin melanoma, airline pilots 0.1/0.1%**
- **Female breast cancer, 1.7%**
- **Skin non-melanoma, ultraviolet radiation, men 13.1%, women 3.8%**
- **Leukaemia, low-frequency magnetic fields, men 17.8%, women 2.3%**



The relation of fatal accidents, other accidents and incidents



Links between hazards, exposures and work-related negative outcomes/diseases

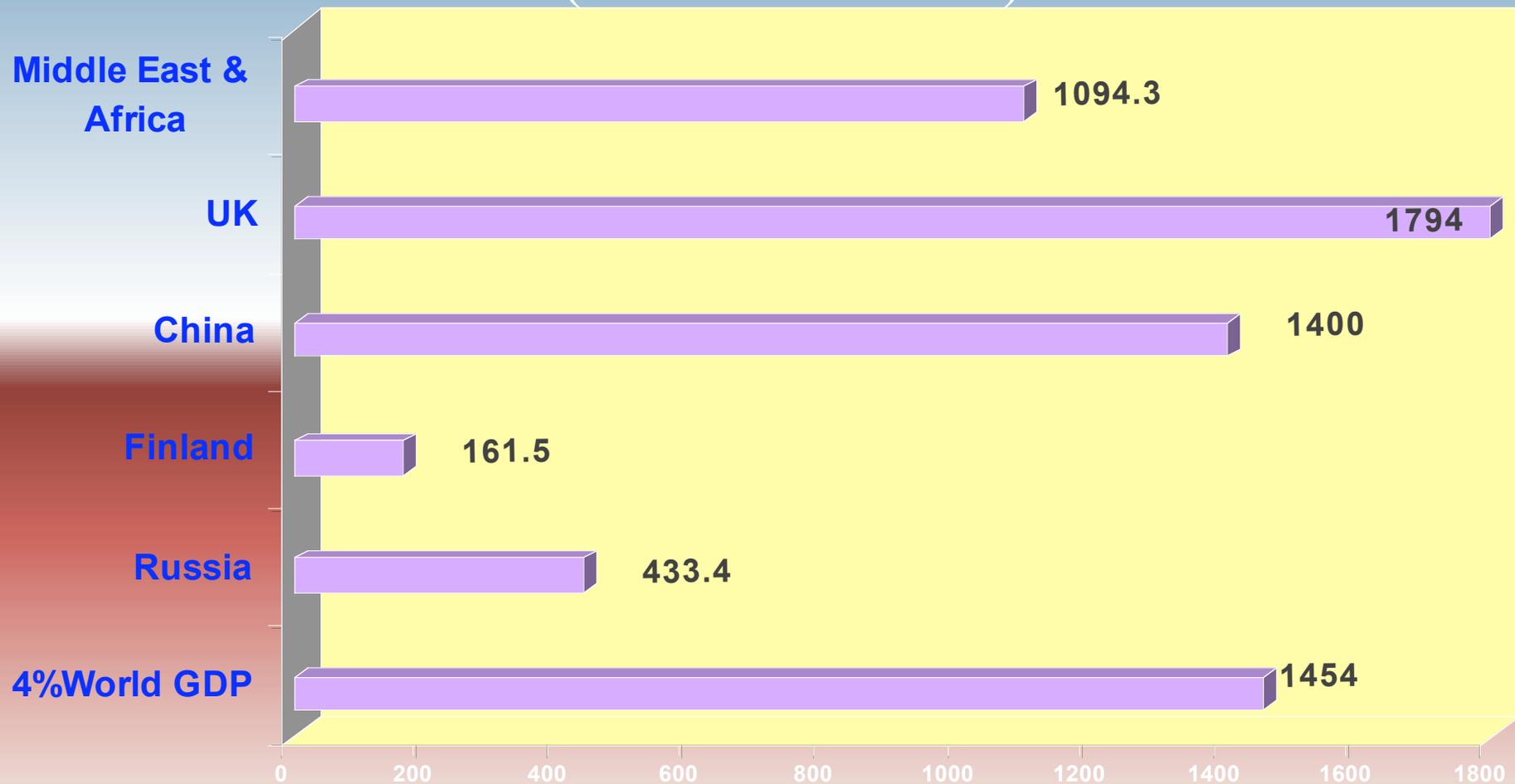


Source: FIOH 30 years of Epidemiology
Sven Henberg Symposium, ILO/SafeWork

Magnitude of Safety and Health Problems at Work

ILO estimates that 4% of the world Gross Domestic Product is lost due to accidents and work-related diseases.

Global Economic Losses and GDPs of Selected Countries (in billion US\$)



World GDP: 36356 billion US Dollars in 2003

International Labour Organization

- The ILO is a tripartite organization with worker and employer representatives taking part in its work on equal status with those of governments.
- The number of the ILO member countries now stands at 179.
- In 1969 the ILO was awarded the Nobel Peace Prize

International Labour Organization

- **Standard-setting** is one of the ILO's major means of action to improve conditions of life and work worldwide.
- ILO standards are **Conventions** and **Recommendations** adopted by the International Labour Conference.

International Labour Conference

- Between 1919 and 2006, 187 Conventions and 198 Recommendations were adopted.
- Many of these instruments relate to occupational safety and health.



International Labour Organization

In June 1960, the International Labour Conference adopted Convention (No. 115) and Recommendation (No. 114) concerning the protection of workers against ionizing radiations.

International Labour Organization

- The C. 115 applies to **all activities** involving **exposure** of workers to ionizing radiations **in the course of their work** and provides that each Member of the ILO who ratifies it shall give effect to its provisions by means of laws or regulations, codes of practice or other appropriate methods.

Convention No. *CIIS* was ratified by 47 countries.

Country	Ratification date
Argentina	15:06:1978
Azerbaijan	19:05:1992
Barbados	08:05:1967
Belarus	26:02:1968
Belgium	02:07:1965
Belize	15:12:1983
Brazil	05:09:1966
Chile	14:10:1994
Czech Republic	01:01:1993
Denmark	07:02:1974
Djibouti	03:08:1978
Ecuador	09:03:1970
Egypt	18:03:1964
Finland	16:10:1978
France	18:11:1971
Germany	26:09:1973
Ghana	07:11:1961
Greece	04:06:1982
Guinea	12:12:1966
Guyana	08:06:1966
Hungary	08:06:1968
India	17:11:1975
Iraq	26:10:1962

Italy	05:05:1971
Japan	31:07:1973
Kyrgyzstan	31:03:1992
Latvia	08:03:1993
Lebanon	06:12:1977
Mexico	19:10:1983
Netherlands	29:11:1966
Nicaragua	01:10:1981
Norway	17:06:1961
Paraguay	10:07:1967
Poland	23:12:1964
Portugal	17:03:1994
Russian Federation	22:09:1967
Slovakia	01:01:1993
Spain	17:07:1962
Sri Lanka	18:06:1986
Sweden	12:04:1961
Switzerland	29:05:1963
Syrian Arab Republic	15:01:1964
Tajikistan	26:11:1993
Turkey	15:11:1968
Ukraine	19:06:1968
United Kingdom	09:03:1962
Uruguay	22:09:1992

International Labour Organization

The C. 115 and R.114 lay down **basic principles** and establish a **fundamental framework** for radiation protection of workers. They also contain provisions which concern the **protective measures** to be taken, the **monitoring** of radiation and the **medical supervision** of workers.

Other ILO Conventions and Recommendations Relevant to the Radiation Protection of Workers

Occupational Cancer Convention No. 139 and Recommendation No. 147, 1974.

Working Environment (air pollution, noise and vibration) Convention No. 148 and Recommendation No. 156, 1977.

Employment Injury Benefit Convention No. 121, 1964.

The List of Occupational Diseases Recommendation No. 194, 2002.

Codes of Practice & Guidelines

ILO also provides **practical guidance** in the form of codes of practice or guidelines. They are used as reference work by anyone in charge of formulating detailed regulations or framing occupational safety and health programmes.

ILO Policy on the Improvement of Working Conditions and Environment

- Work should take place in a safe and healthy working environment;
- Conditions of work should be consistent with workers' well-being and human dignity;
- Work should offer real possibilities for personal achievement, self-fulfilment and service to society.

Basic Principles in Occupational Safety and Health

- **Responsibilities of the employer** towards the health and safety of the workers in his/her employment;
- **Role of the competent authority:** national policy, regulation, inspection, enforcement;

Basic Principles in Occupational Safety and Health

- **Basic workers' rights:** right to know, to participate, to stop work in case of imminent danger, etc.

Basic Principles in Occupational Safety and Health

Hierarchy of preventive measures(C.148,1977):

- technical measures,
- organizational measures,
- personal protective equipment;

And more recently (C. 176, 1995 Article 6):

- elimination of risks,
- control measures, minimization of risks,
- personal protection equipment;

Objectives of ILO OSHE Programmes

- Reducing the number and seriousness of occupational accidents and diseases;
- Adapting the working environment, equipment and work process to the physical and mental capacity of the worker;

Objectives of ILO OSHE Programmes

- Enhancing the physical, mental and social well-being of workers in all occupations; and
- Encouraging national policies and programmes of member States and supplying appropriate assistance.

The development of OSH-MS

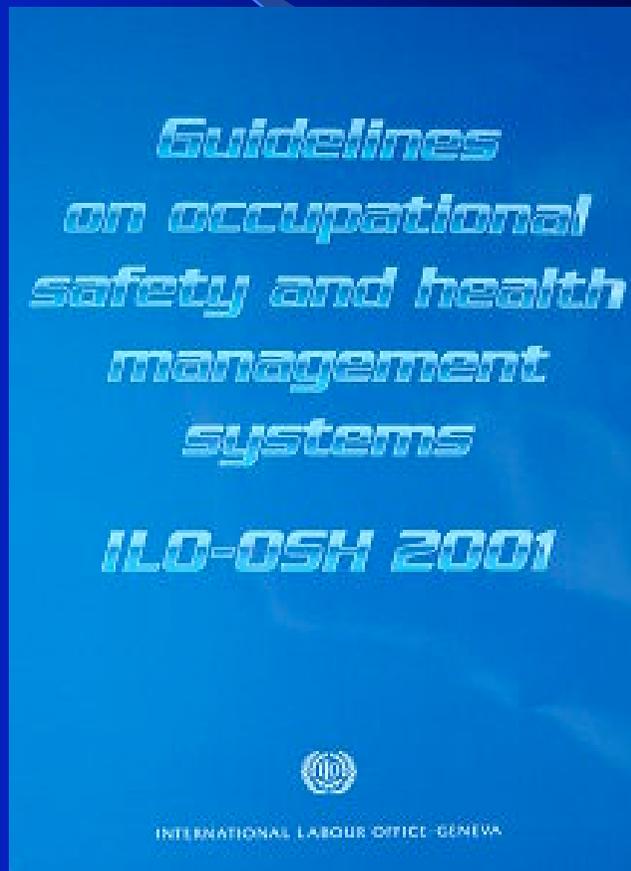
- Liberalisation of trade and economies
- Increase in occ. accidents and diseases
- Traditional command-control mechanisms inadequate
- « Systems » approach
- Development of standards by ISO during early 90s (9000 series on quality management & 14000 series on environmental management)

Why OSH-MS?

- Systematic way to manage OSH activities in the organisation
- OSH as an integral part of the organisations' value system
- Reduction of hazards and risks, accidents and diseases
- Low absenteeism, higher productivity, greater job satisfaction

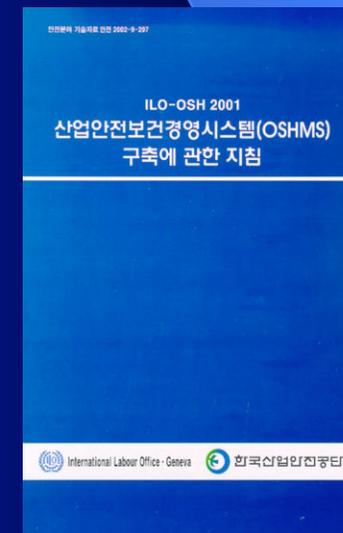
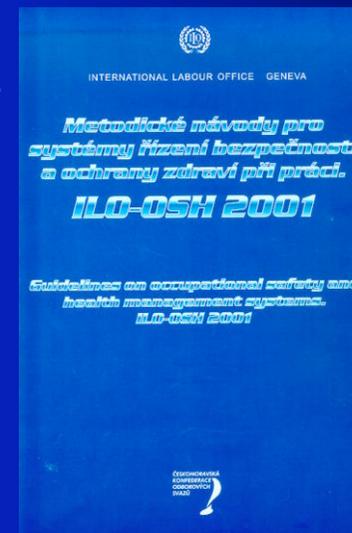
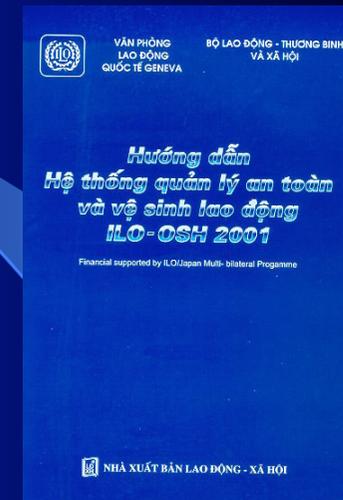
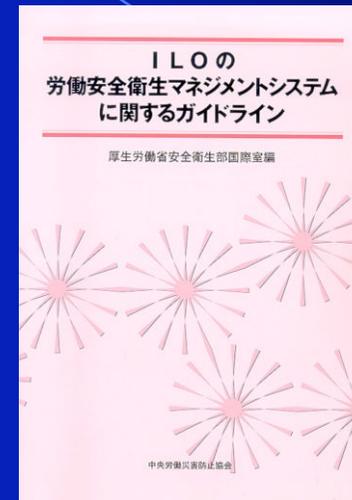
ILO response

- ISO International Workshop 1996
- ILO tripartite experts meeting April 2001
- ILO-OSH 2001
- Compatible with other OSH-MS standards
- Action on 2 levels:
 - National level
 - Organisation level



ILO-OSH 2001 – Translations

- Published in Arabic, Bulgarian, Czech, Chinese, English, Finnish, French, Japanese, Korean, Polish, Russian, Spanish, Thai, Vietnamese
- Translated into Hindi, Hebrew, German, Malay and Portuguese

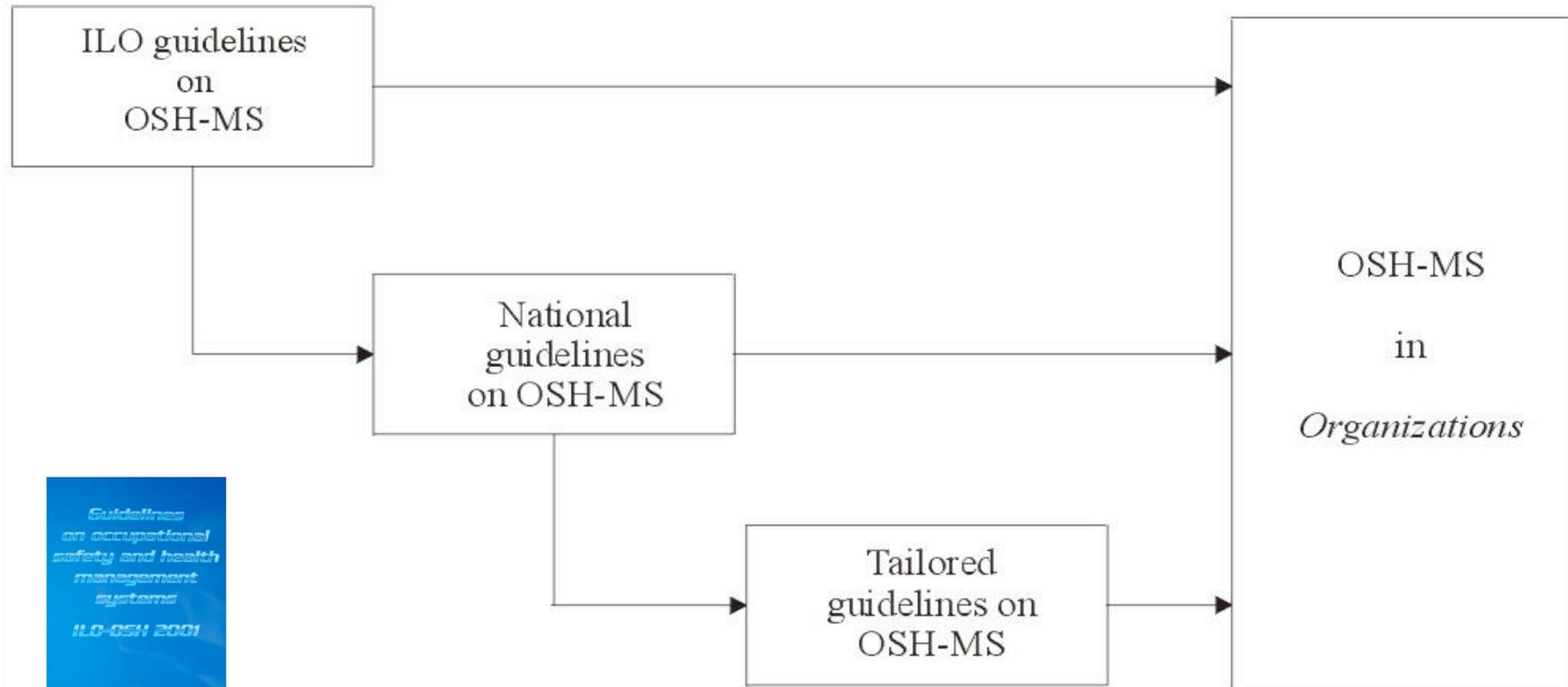


National OSH-MS Framework

- Formulation of a national policy on OSH-MS
- Development of national guidelines (based on ILO-OSH 2001)
- Formulation of tailored guidelines, reflecting the specific conditions and needs of organisations

Elements of the national framework

Elements of the national framework for OSH management systems



OSH-MS in the organisation

- Main elements
 - Policy
 - Organising
 - Planning and implementation
 - Evaluation
 - Action for improvement

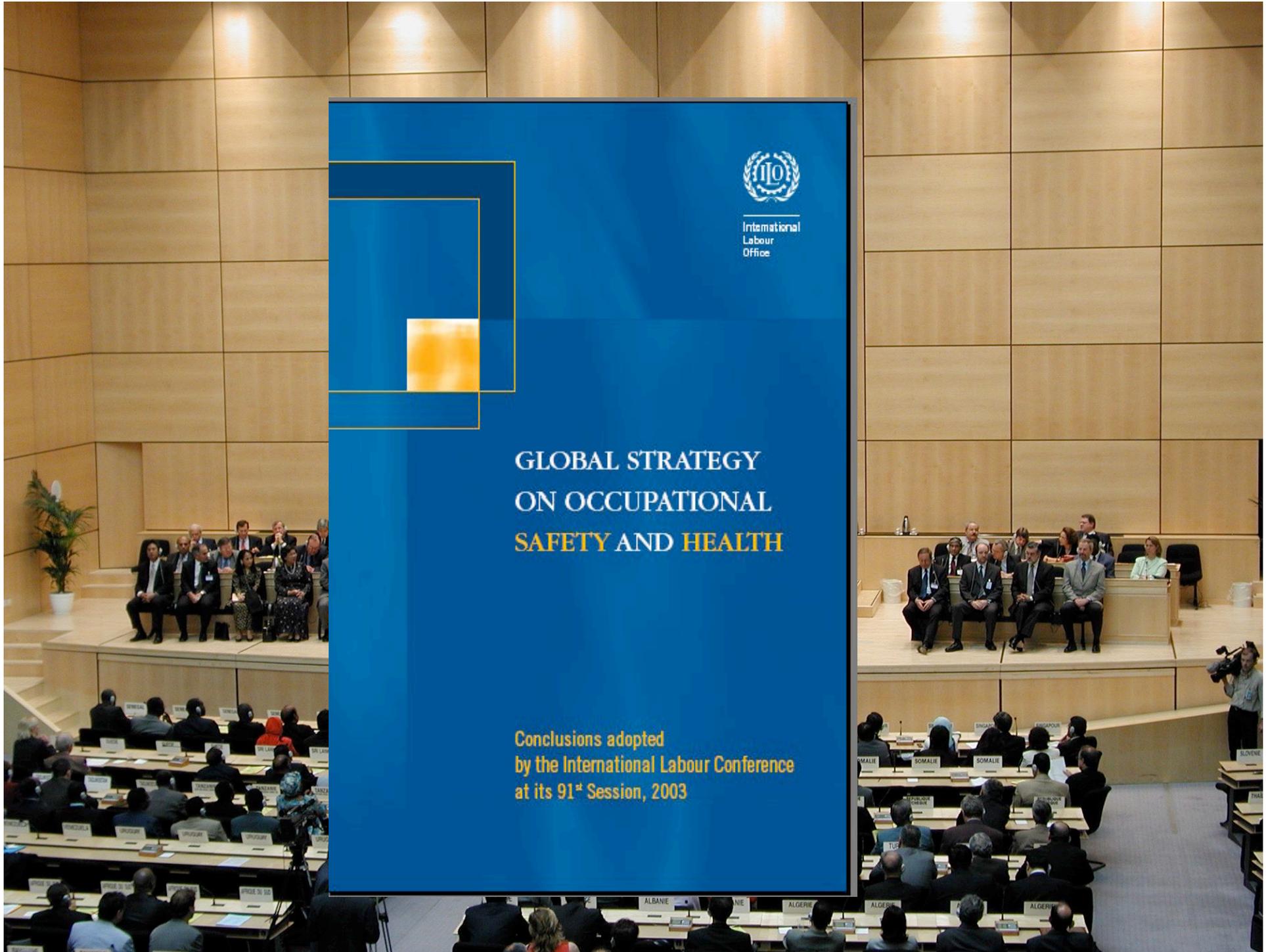




International
Labour
Office

GLOBAL STRATEGY ON OCCUPATIONAL SAFETY AND HEALTH

Conclusions adopted
by the International Labour Conference
at its 91st Session, 2003



Major Challenges

- **Increases general awareness on OSH**
- **Effective national OSH system**
- **High level political commitment**
- **Priority to be given to OSH at international, national and enterprise levels**

Fundamentals for Global Strategy

- **Building and maintenance of Safety Culture**
- **Integrated approach to OSH**
- **Concept of OSH Management Systems**
- **Active participation of**
 - *Government*
 - *Employers*
 - *Workers*

Global Strategy and Action Plan

- **Building and maintenance of a preventative safety and health culture**
- right to safe and healthy work environment
- principle of prevention
- a systems approach

- **Toolbox**
 1. Promotion, awareness raising and advocacy
 2. ILO instruments: standards, codes, guides
 3. Technical assistance and cooperation
 4. Knowledge development, management and dissemination
 5. International Collaboration

Strategic Approach for Strengthening of National OSH Systems through National Programme

National OSH Programme

- Promote Safety Culture
- Strengthen OSH System
- Targeted action:
Construction, SME's, Agriculture etc.

OCCUPATIONAL SAFETY & HEALTH SYSTEM

PROMOTION
ADVOCACY

LEGISLATION

INSPECTION

KNOWLEDGE,
SUPPORT
SERVICES

ILO Conventions/Recommendations/Codes/Guides
should be used as the basis for
programme formulation and System improvements

NATIONAL TRIPARTITE ADVISORY BODY



International Action Plan on ORP

– ACTION PLAN ON ORP

- Action 12 : Promotion of a holistic approach to workplace safety
- Interagency Cooperation (IAEA/ILO/WHO/???)
- Involvement of stakeholders
- Output: International guidelines jointly published by IAEA/ILO/???

International Action Plan on ORP

- Status of Action 12

- Steering Committee Meeting January 2006
 - Need to review the background of the action
- Working document produced
- Meeting ILO-IAEA on 21 August 2006
- Terms of reference fixed

- Next steps

- Identification of experts (RR and Non RR)
- Consultancy meeting → draft guidelines
- Production of the final version



Thank you!

