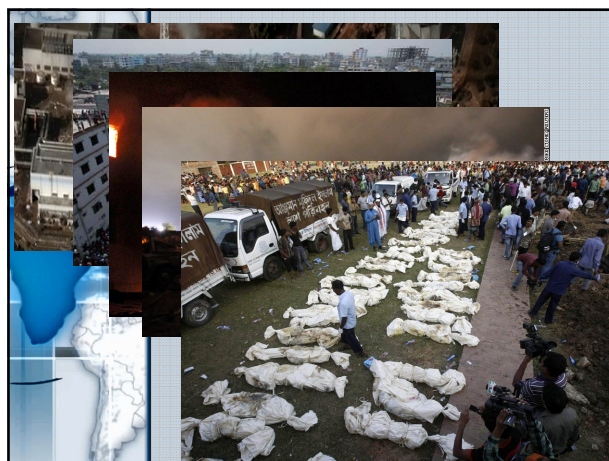


Manual material handling at a global scale: ILO's strategies

Dr Shengli Niu
ILO, Geneva

Seminar
THE NIOSH METHOD FOR MANUAL MATERIAL HANDLING RISK ASSESSMENT
VENERDI, 25 NOVEMBRE 2016 ORE 8.30
AULA PIO XII, PALAZZO SCHUSTER
UNIVERSITÀ DEGLI STUDI
VIA SANT'ANTONIO, 5, MILANO




34.....In addition, given the recurring loss to human life and assets across the world on account of unsafe working places, we direct the Task Force to partner with ILO in consultation with countries, and to consider how the G20 might contribute to safer workplaces.....

3



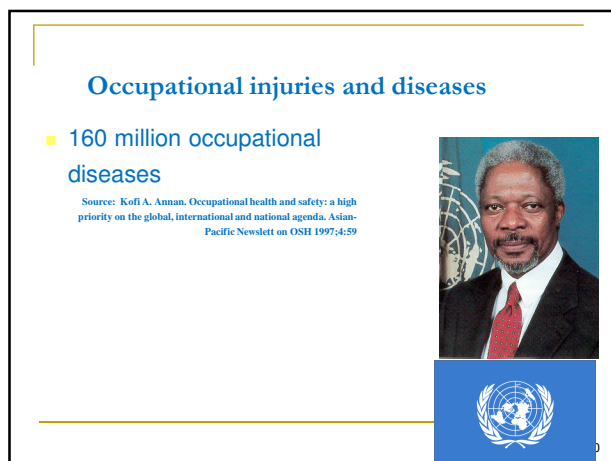
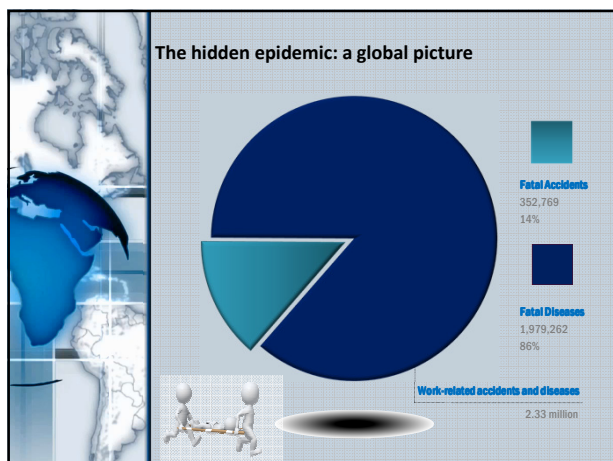
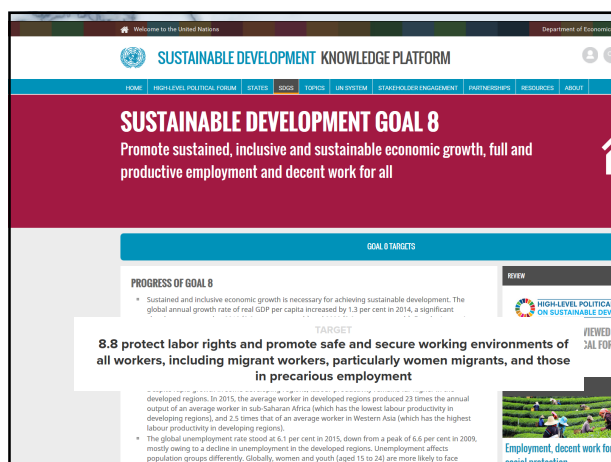
10. We are strongly committed ensure young people are in education, apprenticeships, education and entrepreneurship. We remain firm in our commitment to ensure that no one is left behind, by acting to de investments in and encouraging l and long-term stems. Improving supported by an



7. Unemployment, underemployment and informal jobs are significant sources of inequality in many countries and can undermine the future growth prospects of our economies. We are focused on promoting more and better quality jobs in line with our G20 Framework on Promoting Quality Jobs and on improving and investing in skills through our G20 Skills Strategy. We are determined to support the better integration of our young people into the labour market including through the promotion of entrepreneurship. Building on our previous commitments and taking into account our national circumstances, we agree to the G20 goal of reducing the share of young people who are most at risk of being permanently left behind in the labour market by 15% by 2025 in G20 countries. We ask the OECD and the ILO to assist us in monitoring progress in achieving this goal. We will continue monitoring the implementation of our Employment Plans as well as our goals to reduce gender participation gap and to foster safer and healthier workplaces also within sustainable global supply chains.



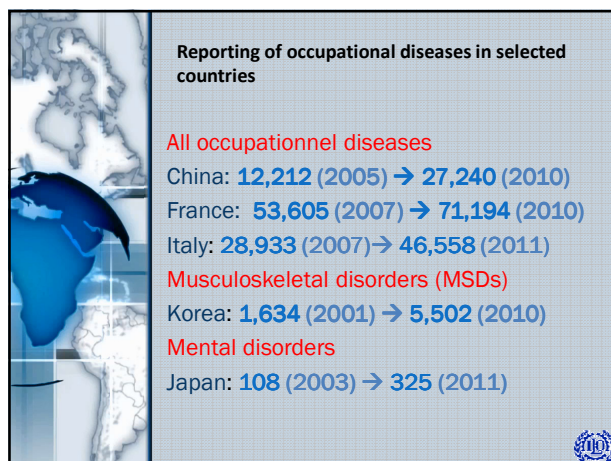
40. Generating quality employment is indispensable for sustainable development and is at the center of the G20's domestic and global agenda. We will work to ensure the benefits from economic growth, globalization and technological innovation are widely shared, creating more and better jobs, reducing inequalities and promoting inclusive labor force participation. We endorse the strategies, action plans and initiatives developed by G20 labor and employment ministers to enhance the growth and development agenda by taking effective actions to address changes in skill needs, support entrepreneurship and employability, foster decent work, ensure safer workplaces including within global supply chains and strengthen social protection systems. We endorse sustainable Wage Policy Principles. We recognize entrepreneurship as an important driver for job creation and economic growth, reinforce our commitments in the G20 Entrepreneurship Action Plan, and welcome China's contribution in the establishment of an Entrepreneurship Research Center on G20 Economies. We also endorse the G20 Initiative to Promote Quality Apprenticeships with policy priorities of increasing the quantity, quality and diversity of apprenticeships. We will further develop the G20 employment plans in 2017 to address these commitments and monitor progress in a systematic and transparent manner in achieving the G20 goals especially on youth employment and female labor participation. We recognize strengthened labor market institutions and policies can support productivity and promote decent work, and therefore higher, sustainable wage growth, in particular for the low-income workers. We recognize the importance of addressing opportunities and challenges brought into the labor market through labor migration as well-managed migration can bring potential benefits to economies and societies.

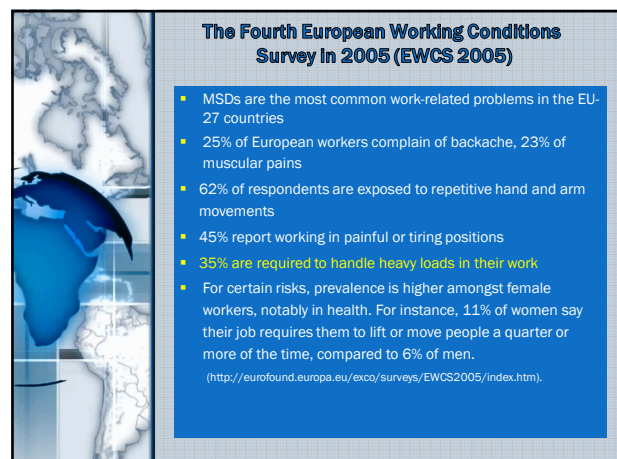
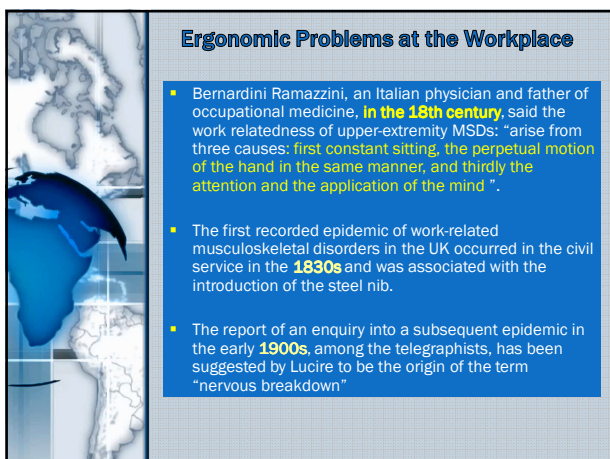
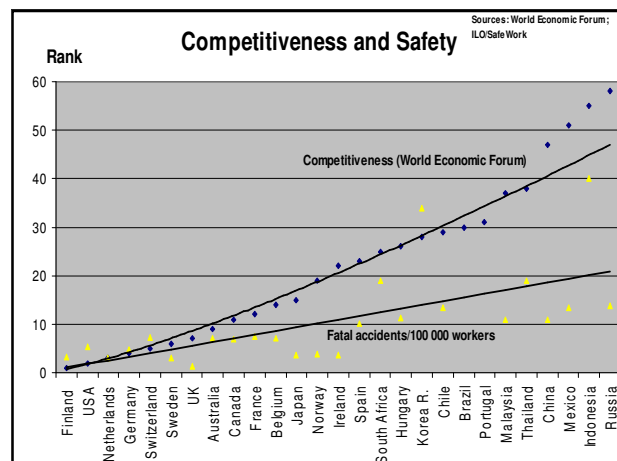
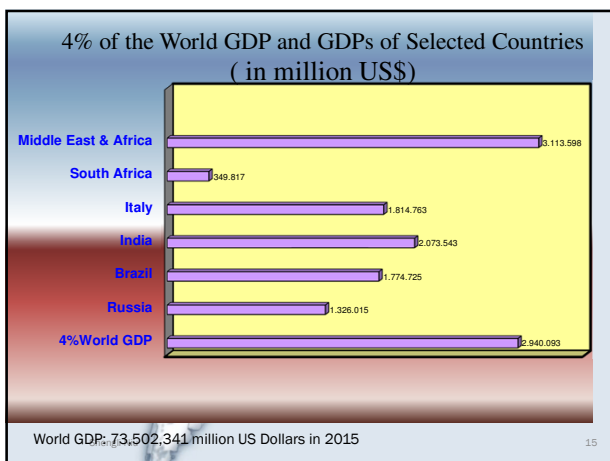
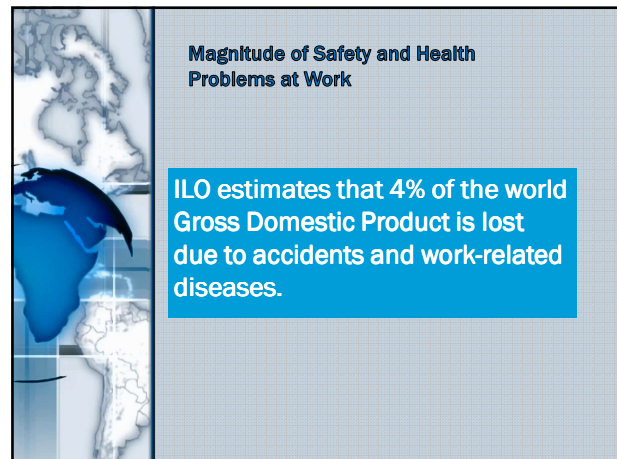
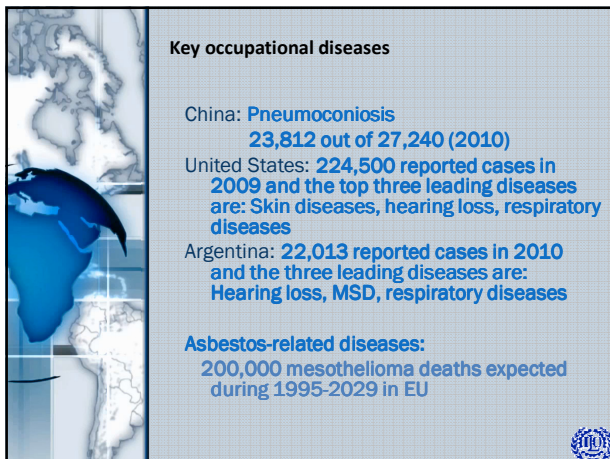


Reports of Occupational Diseases in Some Countries

Country	Populations (Millions)	GDP per capita (US\$) World bank	Reported Cases Occupational Diseases	Year
Argentina	40	12,034	22,013	2010
Benin	6.6	1,583	1	2007
Burkina Faso	15.7	1,513	4	2007
China	1,339	9,233	27,240	2010
Cote D'Ivoire	17.5	2,039	11	2009
France	65	36,104	71,194	2010
Italy	60	33,111	46,558	2011
Japan	127	35,178	7,779	2011
Senegal	12.8	1,944	7	2008
Thailand	65	9,820	4,575	2009
UK	61	36,901	8,530	2009
USA	307	49,965	224,500	2009

Shengli Niu





Work-related MSDs

- Musculoskeletal complaints are a major cause of absence because of sickness in developed countries.
- In the United States, work-related MSDs comprise well over half of all reported occupational illnesses (OSHA, 2002). Over half a million cases of musculoskeletal disorders reported annually in the United States.
- In Ireland, injuries due to manual handling account for 33% of all accidents reported to the Health and Safety Authority each year, and nearly 20% of these manual handling accidents take place in the manufacturing sector. 49% of the manual handling injuries in the manufacturing sector occurred when the person was lifting or carrying a load in 2011.

Work-related MSDs

- More than half of all sickness absences lasting longer than two weeks were due to musculoskeletal complaints in Norway in 1998 (Brage S, et al)
- In Sweden, up to 60% of people on early retirement or long term sick leave claimed MSDs as a reason (Swedish National Board on Health and Welfare, 2001).
- Musculoskeletal conditions cause more functional limitations in the adult population in most welfare states than any other group of disorders
- MSDs are a major cause of years lived with disability in all continents and economies (Woolf AD & Pfleger B, 2003)

Cost of Work Related MSDs

- Data from Ireland shows that sprains (41.97%) are the most common injury resulting in a claim. The average employer liability award for 2008 was €32,266.
- The cost of work-related MSDs was estimated to correspond to USD 13 billion in the United States and the US Department of Labour had estimated overall costs at nearly US\$ 100 billion a year when such factors as lost work time, lost productivity and retraining costs are added (NIOSH 1996).
- The cost of MSDs were estimated to have ranged from 2.7% to 5.2% of the gross national product (GNP) in Nordic countries in 1991, at a time when all costs due to illness were estimated to range from 15.8% to 22.2% of the GNP ((Hansen S 2003).

Cost of Work Related MSDs

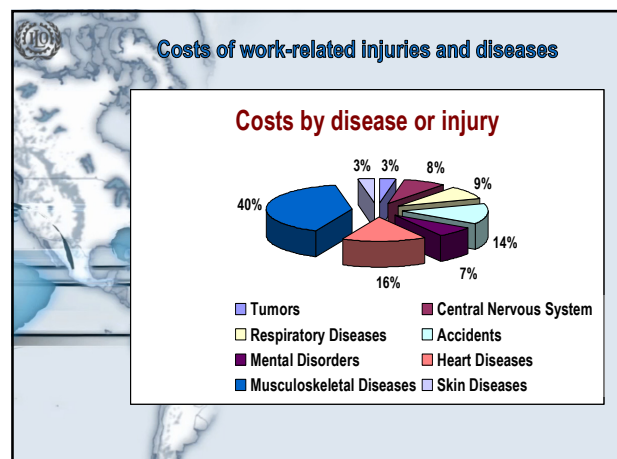
For workers:

- Pain and suffering due to injuries and occupational diseases (including RSI, CTD and RMI)
- Medical care cost
- Lost work time
- Lost future earning and fringe benefits
- Reduced job security and career advancement
- Lost home production and child care
- Home care costs provided by family members
- Adverse effects on family relations
- Lost sense of self-worth and identity
- Adverse effects on social and community relationships
- Adverse effects on recreational activities

Cost of Work Related MSDs

For employers:

- Increased absenteeism & lost working time
- Adverse effects on labour relations
- Higher insurance and compensation costs
- Increased probability of accidents and errors
- Restriction, job transfer and higher turnover of workers
- Scrap and decreased production
- Lawsuits
- Low-quality work
- Less spare capacity to deal with emergencies
- High administrative and personnel costs.



Ergonomic risk factors at the Workplace

Musculoskeletal, nerve and circulatory tissues can be affected by:

- Repeated or forceful efforts
- sustained static loading
- anatomically non-neutral posture
- accelerated movements,
- externally applied compressive forces and
- Peak overload
- Vibration
- Environmental factors

Organization of Work & Social Issues

Psychosocial factors that result from the **organization of work** are considered to have impacts on the development of MSDs

- Working time arrangement, different **work schedules** (day work versus various types of shift work)
- **Transitions in work time arrangements**
- Working **long hours or over time** has been shown to be associated with poor subjective health, more injuries, unhealthy behaviour, and increased morbidity and mortality

Social issues, such as compensation laws and disability system

Psychosocial factors

Psychological job demands, decision latitude and social support are three key measures of psychosocial factors at the workplace affecting workers' health.

High psychological job demands in combination with low decision latitude may not only result in **residual job strain** but also cause chronic adverse health effects such as **cardiovascular diseases** if exposure is prolonged

MSDs

- Exposure to each of these ergonomic factors can cause **MSDs in one or more body regions**.
- The risk is especially noticeable when a job includes exposure to a combination of **two or more of these risk factors**.
- Exposures of **high intensity or long duration** increase the risk of MSDs.
- Work related MSDs may occur even when workers are exposed to an occupational risk factor on an **occasional basis or for a 25% or less of the day**.

MSDs at Work

Ergonomic related injuries and illnesses can be **temporary and may disappear**

- when the individual is removed from work or given an opportunity to rest at work, or
- when the working conditions are improved.

Ergonomic related injuries and illnesses can also be **permanent** if exposures to poor ergonomic working conditions are prolonged

Injuries and diseases caused by adverse ergonomic working conditions

Visual, muscular and psychological disturbances:


- eye strain
- Headaches
- Fatigue
- **musculoskeletal disorders (MSDs)** such as chronic back, neck and shoulder pain, Cumulative Trauma Disorders (CTDs), Repetitive Strain Injuries (RSIs) and Repetitive Motion Injuries (RMIs)
- **psychological tension, anxiety and depression**



Reporting of Work Related MSDs


The reasons for underreporting by employers and by workers likely include:

- Failure to recognize work-relatedness
- Concern about job security
- Workplace incentives for supervisors to discourage reporting
- Employee preference to avoid the workers' compensation system and obtain medical care coverage through private insurance
- Anticipated rejection of the claim
- Self-denial of the injury because of financial need to support for oneself and one's family
- Transfer or leaving of the workers
- Disability retirement.





Work Related MSDs

The true magnitude of MSDs at the workplace is unknown.



Work Related MSDs


It was predicted that in UK by 2030 there will be a 9 per-cent increase in MSDs, affecting more than 7 million workers and a 5 per-cent rise in the rate of mental illness in the workforce to affect 4.2 million employees (Vaughan-Jones H & Barham L, 2009).

Prevention of MSDs

It has been estimated that at least 50% of all work-related MSDs among the working population could be prevented by appropriate ergonomic job design.


(Snook SH, et al, 1978 & Snook SH, 1987).



Prevention of MSDs

The most effective intervention programmes seem to be those with multiple, coordinated activities, including:

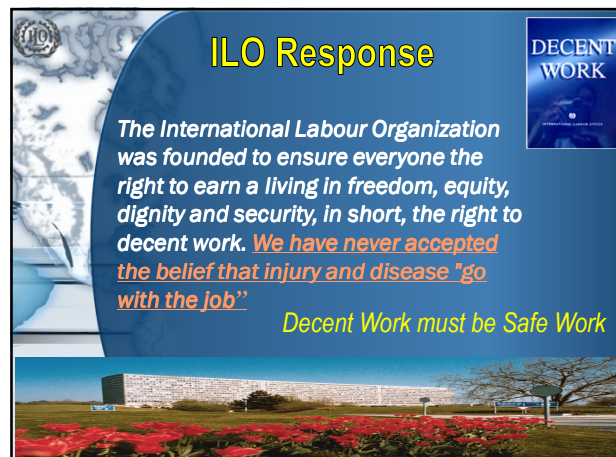
- application of the principles of ergonomics in the design of equipment, workstations, products and working methods according to human capabilities and limitations
- training of workers
- improving health surveillance and management systems
- general workforce empowerment
- top management's active leadership and delegation of decision-making authority regarding occupational safety



ILO Response

The International Labour Organization was founded to ensure everyone the right to earn a living in freedom, equity, dignity and security, in short, the right to decent work. *We have never accepted the belief that injury and disease "go with the job"*

Decent Work must be Safe Work



International Labour Organization



- A tripartite organization
- Member countries: 187
- In 1969 the ILO was awarded the Nobel Peace Prize








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;
- 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

ILO means of action

- Development, promotion and supervision of International Labour Standards
- Development of labour inspection systems
- Development and promotion of Codes of Practice and other instruments
- Knowledge management
- Technical cooperation
- Inter-agency cooperation

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 2016, 189 Conventions, 6 protocols and 204 Recommendations were adopted.
- ✓ Many of these instruments relate to occupational safety and health.




ILO Convention No. 127 & Recommendation No. 128

C127 Maximum Weight Convention, 1967

Convention concerning the Maximum Permissible Weight to be Carried by One Worker (Date of closing sole issue: 10.03.1970)

R128 Maximum Weight Recommendation, 1967

Recommendation concerning the Maximum Permissible Weight to be Carried by One Worker

The General Conference of the International Labour Organisation, Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its Fifty-first Session on 7 June 1967, and Having decided upon the adoption of certain proposals with regard to maximum permissible weight to be carried by one worker, which is the sixth item on the agenda of the session, and Having determined that these proposals shall take the form of a Recommendation supplementing the Maximum Weight Convention, 1967, adopts this twenty-eighth day of June of the year one thousand nine hundred and sixty-seven, the following Recommendation, which may be cited as the Maximum Weight Recommendation, 1967:

1. Definition and Scope

For the purpose of this Recommendation—

(a) the term **manual transport of loads** means any transport in which the weight of the load is wholly borne by one worker; it covers the lifting and putting down of loads;

(b) the term **regular manual transport of loads** means any activity which is continuously or principally devoted to the manual transport of loads, or which normally includes, even though intermittently, the manual transport of loads;

(c) the term **young worker** means a worker under 18 years of age.

2. Except as otherwise provided herein, this Recommendation applies both to regular and to occasional manual transport of loads other than lifting and lowering.

ILO Convention No. 127 & Recommendation No. 128

Convention No. 127 and Recommendation No.128 which specify the international requirements concerning:

- ✓ the manual transport of a load which by reason of its weight is likely to jeopardise a worker's health or safety and
- ✓ the necessary measures needed to protect the workers including women and young workers who are engaged in manual transport of loads other than light loads.

NORMLEX Information System on International Labour Standards

Convention No. 127 - Maximum Weight Convention, 1967 (No. 127)

Date of entry into force: 10 Mar 1970

25 ratifications

See also: Countries have not ratified

Country	Date	Status
Algeria	12 Jun 1969	In Force
Brazil	27 Aug 1970	In Force
Bulgaria	21 Jun 1970	In Force
Chile	20 Jun 1972	In Force
Colombia	10 Mar 1972	In Force
Cuba	10 Mar 1972	In Force
France	11 Mar 1970	In Force
Guatemala	25 Jun 1969	In Force
Honduras	19 Jun 1972	In Force
Hungary	24 Jun 1969	In Force
Italy	20 Jun 1970	In Force
Italy	05 May 1971	In Force
Lebanon	21 Jun 1971	In Force
Libania	20 Jun 1969	In Force
Luxembourg	05 Jun 2006	In Force
Netherlands	01 Jun 1971	In Force
Norway	03 Jun 1969	In Force
Sweden, Republic of	03 Jun 1969	In Force
Switzerland	01 Jun 1970	In Force
Turkey	19 Jun 1970	In Force
Peru	19 Jun 2006	In Force
Poland	03 Jun 1971	In Force
Portugal	02 Jun 1969	In Force
Romania	20 Jun 1971	In Force
Spain	27 Jun 1969	In Force
Spain	20 Jun 1969	In Force
Turkey	14 Jun 1970	In Force
Turkey	13 Jun 1970	In Force
Venezuela, Bolivarian Republic of	01 Jun 1969	In Force

Other Relevant ILO Conventions & Recommendations

- C. 155 & R. 164 on Occupational Safety and Health, 1981
- C. 161 & R. 171 on Occupational Health Services, 1985
- C. 81 & R. 81 on Labour Inspection, 1947
- C. 129 & R. 133 on Labour Inspection (Agriculture), 1969
- C. 187 & R. 197 on Promotional Framework for Occupational Safety and Health, 2006

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.

Occupational Safety and Health



Definition of Occupational Health

- The promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations;
- The prevention amongst workers of departures from health caused by their working conditions;
- The protection of workers in their employment from risks resulting from factors adverse to health;
- The placing and maintenance of workers in an occupational environment adapted to their physiological and psychological capabilities.

To summarize, the adaptation of work to the workers and of each worker to his or her job.

Adopted by the Joint ILO/WHO Committee on Occupational Health at its First Session (1950)

Ergonomics and Occupational Health

Ergonomics stresses fitting the job to the worker as compared to the more usual practice of obliging the worker to fit the job.

The aim of ergonomics is to optimize, first and foremost, the comfort of the worker, as well as his or her health, safety and efficiency.

Ergonomics is an essential and integral part of occupational health practice.

Applying ergonomic principles is beneficial to both the workers and the employers.

Ergonomics and Occupational Health

Ergonomics stresses fitting the job to the worker as compared to the more usual practice of obliging the worker to fit the job.

The aim of ergonomics is to optimize, first and foremost, the comfort of the worker, as well as his or her health, safety and efficiency.

Ergonomics is a field which integrates knowledge derived from the human sciences in particular anatomy, physiology and psychology to match jobs, systems, products and environments to the physical and mental abilities and limitations of workers.

Ergonomics is an essential and integral part of occupational health practice.

Applying ergonomic principles, however, is beneficial to both the workers and the employers.

IEA/ILO Collaboration on Ergonomics at Work

1985 International Symposium on Ergonomics in Developing Countries, Jakarta

1988 "Higher Productivity and a Better Place to Work" (ILO)

1991 IEA/ILO project (IEA Technology Transfer Committee)

1991 Geneva Workshop

1993 IEA/ILO Roving Seminars (Indonesia, etc.)

1996 Publication of the Ergonomic Checkpoints (ILO/IEA)

1998- (Translation into many languages)

2004 New IEA/ILO projects

2005 Bali ILO/IES Workshop on the Ergonomic Checkpoints 2nd Edition

2007 Kuala Lumpur ILO/IEA Workshop on the Ergonomic Checkpoints in Agriculture

2010 Publication of the 2nd Edition of the IEA/ILO Ergonomic Checkpoints

2012 Publication of the Ergonomic Checkpoints in Agriculture

Ergonomic Checkpoints

The practical guides of the checkpoints extends to all the main ergonomic issues which include:

- **Materials storage and handling**
- **Hand tools**
- **Machine safety**
- **Workstation design**
- **Lighting**
- **Premises**
- **Control of hazardous substances and agents**
- **Welfare facilities, and**
- **Work organization**

Ergonomic Checkpoints

CHECKPOINT 5

Improve the layout of the work area so that the need to move materials is reduced.

WHY

Materials and workstations are often installed one after another in a haphazard way. This results in a cluttered and inefficient layout. This can be improved by changing the layout of the work area.

RISKS / SYMPTOMS

- Physical fatigue
- Repetitive strain
- Low productivity
- Increased injury risk
- Increased material damage

HOW


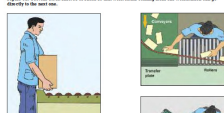
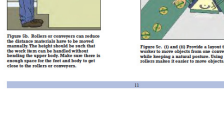
1. Discuss with workers how the frequency and the distance of moving materials can be reduced by changing the layout of materials and workstations. There should be a logical way of moving materials with work areas and between different work areas.
2. Arrange a series of several workstations close to the material to minimize the movement of work items between different workstations.
3. Arrange different departments according to the sequence of work steps so that work items coming from one department can be delivered to the next without moving them over a long distance.
4. Check the sequence of work steps in order to reduce the need to move materials between departments.

SOME MORE HINTS

- Use pallets or a bank of work items so that multiple items moving from one workstation can be moved easily to the next workstation or work area.
- Discuss the transport routes and what material is moving the layout of the work area.
- A bank of work items can be used to reduce the movement of work items. For example, because of different changes in order to produce several different products in a production line.

POINTS TO REMEMBER

According to the need to move materials for improving the layout of the work area in the next step to reduce time and effort and increase productivity.

Ergonomic Checkpoints

CHECKPOINT 6

Use carts, hand trucks and other wheeled devices or rollers when moving materials.

WHY

Moving heavy materials can only take a lot of effort, but also this leads to a risk of injury. This can be reduced by using carts, hand trucks and other wheeled devices or rollers when moving materials. This can be improved by using carts, hand trucks and other wheeled devices or rollers when moving materials.

RISKS / SYMPTOMS

- Physical fatigue
- Repetitive strain
- Low productivity
- Increased injury risk
- Increased material damage

HOW


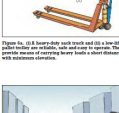

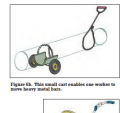

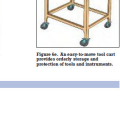
1. Check the movement of materials between different work areas and between workstations, especially when these movements of materials are frequent or regular. Consider the use of carts or rollers to make these movements easier.
2. Design simple carts or rollers of appropriate size for carrying materials. Check each cart or roller for suitable parts and size.
3. Provide a clear and safe path for materials to be moved away from the work area. A clear path is needed for the cart or roller.
4. Use pallets, bins or containers that can be loaded and unloaded with a pallet fork or a similar device. Design simple carts or rollers for different products so that materials can be moved from storage, and can be used to count and inspect.

SOME MORE HINTS

- It is important to have other transport routes than those used at the time. Other transport routes are needed for moving material with a cart.
- Materials can be moved between workstations by containers, bins, gravity chutes, suspended rollers, mobile bins and other devices. There are many ways to control each material at the end.
- A long irregular roller can be used to move material on a floor or on a roller. This can be used for loading and unloading a truck.
- Choose wheels of a larger diameter, especially when moving materials a long distance or on uneven surfaces.
- Remember, use rubber wheels or rollers to reduce noise.

POINTS TO REMEMBER

Reduce the number of the materials and between storage and work area by using wheeled transport with a cart or roller.

[illegible]

Ergonomics checklist

Material storage and handling

CHECKPOINT 8

Does work equipment or tools have the right weight in order to minimise manual transport of materials?

WHY

Having control over the weight of the items that are used to move and/or an appropriate height can save time and developing speed at picking things up can save time. A small weight and a small distance to reach better use of the muscles and less risk of injury or damage when lifting or carrying items. The weight of the items should be defined and tools with ergonomics specified for the task should be used. The weight of the items should be defined and tools with ergonomics specified for the task should be used. The weight of the items should be defined and tools with ergonomics specified for the task should be used.

RISKS / SYMPTOMS

- repetitive strain
- muscular fatigue
- excessive force
- physical discomfort

HOW

1. Provide work space above shoulder height or below for various specific items.
2. Make full use of the space for the most likely items to be used so that the time to move the items is reduced.
3. Whenever possible, make items available for lifting from the floor.
4. Provide a different, especially arranged place for items with a different weight or shape, size or use, for example, as well as work involving and transport, handle, use, use or other methods to make the items available. Avoid items that are too high or too low because they are too difficult to reach.

SOME MORE HINTS

- The lightweight containers and tools for storage of small parts. For example, containers and tools should be in one group for material and parts only.

The plates or trays with individual spaces for each specific item for easy storage were common and efficient.

Flow boards or meltable foam in wall height or in a new arrangement for the weight range of transport, above high and low hanging work areas at least at one end.

When combining lifting above head height on a platform step or platform ladder Airtel carrying boxes, the height from the floor to the top of the platform step or platform ladder should be related to the reach of the user to the platform step or platform ladder.

POINTS TO REMEMBER

Small metal shelves and racks are always used in material storage and are a great deal of time and money. That is a simple and proven way of reducing distance to material and of reducing problems.

Figure 8-1. Multi-level horizontal storage rack for small parts. A platform step is used to reach the top level. The rack is placed between the plates and storage bins.

Figure 8-2. Horizontal storage rack. This rack is used to store small parts. The rack is placed in the wall to save space.

Figure 8-3. Vertical storage rack. Small parts and tools are stored in the rack. The rack is placed in the wall to save space.

Figure 8-4. Storage designed to make full use of wall space. The rack is placed in the wall to save space.

Figure 8-5. Workbench after the storage rack and platform step are placed in the wall and on the wall.

Equipment

Material storage and handling

CHECKPOINT 9

Use the material below to identify, inspecting and naming storage materials

WHY

Material lifting, lowering and moving is done by materials and work before or after the major reasons of construction and build process associated with construction. Lifting and lowering is a process that is used to move materials to a location to be used in the construction process. It is important to understand the importance of a safe lifting and lowering process by using the correct equipment.

Lifting and lowering heavy loads is usually done by materials and work before or after the major reasons of construction and build process associated with construction.

Identifying material storage and handling materials is important to ensure the safety of the work.

RISKS / SYMPTOMS

- 1. material falls
- 2. instability from
- 3. load shift
- 4. load shift

HOW

1. Load heavy items (lifting materials) that are the material storage and handling equipment are used to move materials from one location to another. It is important to ensure the safety of the work by using the correct equipment. It is important to ensure the safety of the work by using the correct equipment. It is important to ensure the safety of the work by using the correct equipment.
2. Overhead crane and overhead hoist can be used if the equipment is designed for this purpose. It is important to ensure the safety of the work by using the correct equipment. It is important to ensure the safety of the work by using the correct equipment. It is important to ensure the safety of the work by using the correct equipment.
3. Only use lifting machinery that has been tested by a competent person and is in good working order. It is important to ensure the safety of the work by using the correct equipment. It is important to ensure the safety of the work by using the correct equipment. It is important to ensure the safety of the work by using the correct equipment.
4. Make sure that the material used for lifting is in good working order and is in good working order.

5. Make sure that the equipment is properly inspected and maintained (lifting equipment, crane, rope and other lifting gear).

SOME MORE HINTS

Material lifting of heavy loads should be controlled as a task used to ensure the safety of the work by using the correct equipment. It is important to ensure the safety of the work by using the correct equipment.

Lifting heavy loads is usually done by materials and work before or after the major reasons of construction and build process associated with construction. Lifting and lowering is a process that is used to move materials to a location to be used in the construction process. It is important to understand the importance of a safe lifting and lowering process by using the correct equipment.

POINTS TO REMEMBER

Use the correct equipment for the task.

Identifying material storage and handling materials is important to ensure the safety of the work.

Figure 9.1. Portable crane to lift loads, used to move materials from one location to another.

Figure 9.2. Material handling device to lift loads, used to move materials from one location to another.

Figure 9.3. Material handling device to lift loads, used to move materials from one location to another.

Figure 9.4. Material handling device to lift loads, used to move materials from one location to another.

[illegible][illegible]

Ergonomics checklist

Materials storage and handling

CHECKPOINT 12

Consider materials layout and storage conditions for all packages and containers

WHY

Choosing levels for each aisle and container if they can be grouped 4-6 ft high is best.
When using a pallet fork, be sure chains of dropping the loads and not dragging the load are avoided. Close hand grip the aisle provides a clear forward view.
“First In, First Out” is the best practice. There is less bending of the low back and less muscle power required to load the aisle.

RISKS / SYMPTOMS

- maintain aisle
- hazardous loading
- lower back disorder

HOW

1. Cut out handholds in boxes, trays and containers so that they can be comfortably grasped by hand
2. Use packages that have a grip or grab-handling points for carrying
3. Ask employees and subcontractors to deliver goods in boxes or containers with handholds at grips
4. Locate handholds so that the load can be carried in front of the body
5. When a load is carried by means of one handhold on the grip, avoid lift that the weight of goods is behind the body

SOME MORE HINTS

- Make it a rule to color code boxes, trays and containers that are loaded for the aisle
- Consider putting the handhold at an angle with the box or container so an employee will reach the weight in a comfortable, straight position

- Packaging should be designed to simply manual handling for materials to be transported and organized when a grip handle is used. Heavy packages include sturdy straps for being gripped.
- Do not use the worker rest on working gloves. Good handholds that the work gripped for the aisle.

POINTS TO REMEMBER

- fitting handholds in boxes and containers is a very simple measure to improve aisle handling

Figure 10. Handholds should be set up so that the container be gripped by hand. Figure 10a shows the box the work wanted to hold the container.


Figure 10b. When a handhold is set up inside. Good handholds so that the box or container can be carried in front of the body.

34



Recognition of Occupational MSDs


- Diseases caused by work have to be **discovered** and their victims be properly **treated and compensated**.
- **Preventive and protective measures** must be taken at the workplace.
- Definition of occupational diseases is usually set out in **legislation**.



Definition of occupational diseases

Paragraph 6(1) of ILO Recommendation concerning Employment Injury benefits, 1964 (No. 121) defines occupational diseases as follows:

Each Member should, under prescribed conditions, regard diseases known to arise out of the exposure to substances and dangerous conditions in process, trades or occupations as occupational diseases.



Definition of occupational diseases

The Protocol of 2002 to the Occupational Safety and Health Convention, 1981 (No.155) specifies -

occupational diseases as any disease contracted as a result of an exposure to risk factors arising from work activities.



90th Session of the International Labour Conference, June 2002, Geneva


Recommendation No. 194

Recommendation concerning the List of Occupational Diseases and the Recording and Notification of Occupational Accidents and Diseases.



New ILO List of Occupational Diseases

- ILO is the **only UN Agency** international list of occupational diseases
- It is designed to **assist** countries in the **recording, prevention and compensation** of occupational diseases
- For the first time, **mental and behavioural disorders** have been **included**



INTERNATIONAL LABOUR CONFERENCE


Recommendation 194

Recommendation concerning the List of Occupational Diseases and the Recording and Notification of Occupational Accidents and Diseases

The General Conference of the International Labour Organization,
Having been convened at Geneva by the Governing Body of the International Labour Office, and having met in its 90th Session on 3 June 2002, and
Noting the provisions of the Occupational Safety and Health Convention and Recommendation, 1981, and the Occupational Health Services Convention and Recommendation, 1985, and
Noting also the list of occupational diseases as amended in 1980 appended to the Employment Injury Benefits Convention, 1964, and
Having regard to the need to strengthen identification, recording and notification procedures for occupational accidents and diseases, with the aim of identifying their causes, establishing preventive measures, promoting the harmonization of recording and notification systems, and improving the compensation process in the case of occupational accidents and occupational diseases, and
Having regard to the need for a simplified procedure for updating a list of occupational diseases, and
Having decided upon the adoption of certain proposals with regard to the recording and notification of occupational accidents and diseases, and to the regular review and updating of a list of occupational diseases, which is the fifth item on the agenda of the session, and
Having determined that these proposals shall take the form of a Recommendation,
adopts this twentieth day of June of the year two thousand and two the following Recommendation, which may be cited as the List of Occupational Diseases Recommendation, 2002.

ILO List of Occupational Diseases

(revised 2010)



ANNEX List of occupational diseases ¹ (revised 2010)	
1. Occupational diseases caused by exposure to agents arising from work activities	
Diseases caused by chemical agents	
1.1.1	Diseases caused by benzene or its compounds
1.1.2	Diseases caused by cadmium or its compounds
1.1.3	Diseases caused by phosphorus or its compounds
1.1.4	Diseases caused by chromium or its compounds
1.1.5	Diseases caused by manganese or its compounds
1.1.6	Diseases caused by arsenic or its compounds
1.1.7	Diseases caused by mercury or its compounds
1.1.8	Diseases caused by lead or its compounds
1.1.9	Diseases caused by fluorine or its compounds
1.1.10	Diseases caused by sulphur dioxide
1.1.11	Diseases caused by halogen derivatives of aliphatic or aromatic hydrocarbons
1.1.12	Diseases caused by boranes or its homologues
1.1.13	Diseases caused by nitryl and amino derivatives of borane or its homologues
1.1.14	Diseases caused by cyanogen or other nitrile and esters
1.1.15	Diseases caused by acetaldehyde, glycols or ketones
1.1.16	Diseases caused by isocyanates like carbon dioxide, hydrogen sulfide, hydrogen cyanide or its derivatives
1.1.17	Diseases caused by antracene
1.1.18	Diseases caused by oxides of nitrogen
1.1.19	Diseases caused by cyanides or its compounds
1.1.20	Diseases caused by antimony or its compounds
1.1.21	Diseases caused by mercury
1.1.22	Diseases caused by mineral acids
1.1.23	Diseases caused by pharmaceutical agents
1.1.24	Diseases caused by nickel or its compounds
1.1.25	Diseases caused by lead or its compounds
1.1.26	Diseases caused by copper or its compounds
1.1.27	Diseases caused by selenium or its compounds
1.1.28	Diseases caused by arsenic or its compounds
1.1.29	Diseases caused by tellurium or its compounds
1.1.30	Diseases caused by bismuth or its compounds
1.1.31	Diseases caused by zinc or its compounds
1.1.32	Diseases caused by cobalt or its compounds
1.1.33	Diseases caused by nickel or its compounds
1.1.34	Diseases caused by antimony
1.1.35	Diseases caused by tungsten
1.1.36	Diseases caused by pesticides
<small>(In the application of this list the degree and type of exposure and the work or occupation involving a particular kind of exposure should be taken into account where appropriate.)</small>	
1.1.37	Diseases caused by sulphur oxides
1.1.38	Diseases caused by organic solvents
1.1.39	Diseases caused by latex or latex-containing products
1.1.40	Diseases caused by chlorine
1.1.41	Diseases caused by other chemical agents at work not mentioned in the preceding items where a direct link is established scientifically, or determined by methods appropriate to national conditions and practice, between the exposure to these chemical agents arising from work activities and the diseases contracted by the worker
1.2. Diseases caused by physical agents	
1.2.1	Hearing impairment caused by noise
1.2.2	Diseases caused by abnormal vibrations of muscles, tendons, bones, joints, peripheral blood vessels or peripheral nerves
1.2.3	Diseases caused by compressed or decompressed air
1.2.4	Diseases caused by ionizing radiations
1.2.5	Diseases caused by optical radiation, visible light, infrared radiation including laser
1.2.6	Diseases caused by exposure to extreme temperatures
1.2.7	Diseases caused by other physical agents at work not mentioned in the preceding items where a direct link is established scientifically, or determined by methods appropriate to national conditions and practice, between the exposure to these physical agents arising from work activities and the diseases contracted by the worker
1.3. Biological agents and infectious or parasitic diseases	
1.3.1	Breast cancer
1.3.2	Hydatid cysts
1.3.3	Human immunodeficiency virus (HIV)
1.3.4	Leishen
1.3.5	Tuberculosis
1.3.6	Toxic or inflammatory syndromes associated with bacterial or fungal contaminants
1.3.7	Asbestos
1.3.8	Leptospirosis
1.3.9	Diseases caused by other biological agents at work not mentioned in the preceding items where a direct link is established scientifically, or determined by methods appropriate to national conditions and practice, between the exposure to these biological agents arising from work activities and the diseases contracted by the worker
2. Occupational diseases by target agent systems	
2.1. Respiratory diseases	
2.1.1	Phenocopies caused by chronic mineral dust (silica, asbestos, talc, etc.)
2.1.2	Silicosis
2.1.3	Phenocopies caused by non-fibrogenic mineral dust
2.1.4	Siderosis
2.1.5	Brucellosis
2.1.6	Brucellosis (diseases caused by dust of cotton, hemp, sisal or sugar cane (bagassier))

2.1.7	Asbestos caused by inorganic silicate agents or asbestos in the work process
2.1.8	Asbestos caused by organic silicate agents or asbestos in the work process
2.3. Musculoskeletal disorders	
2.3.1.	Radial styloid tenosynovitis due to repetitive movements, forceful exertions and extreme postures of the wrist
2.3.2.	Chronic tenosynovitis of hand and wrist due to repetitive movements, forceful exertions and extreme postures of the wrist
2.3.3.	Olecranon bursitis due to prolonged pressure of the elbow region
2.3.4.	Prepatellar bursitis due to prolonged stay in kneeling position
2.3.5.	Epicondylitis due to repetitive forceful work
2.3.6.	Meniscus lesions following extended periods of work in a kneeling or squatting position
2.3.7.	Carpal tunnel syndrome due to extended periods of repetitive forceful work, work involving vibration, extreme postures of the wrist, or a combination of the three
2.3.8.	Other musculoskeletal disorders not mentioned in the preceding items where a direct link is established scientifically, or determined by methods appropriate to national conditions and practice, between the exposure to risk factors arising from work activities and the musculoskeletal disorder(s) contracted by the worker
<small>(In the application of this list the degree and type of exposure and the work or occupation involving a particular kind of exposure should be taken into account where appropriate.)</small>	
2.4.	Non-neural tissue disease
2.4.1.	Non-neural tissue disease
2.4.2.	Other mental or behavioural disorders not mentioned in the preceding items where a direct link is established scientifically, or determined by methods appropriate to national conditions and practice, between the exposure to risk factors arising from work activities and the mental and behavioural disorder(s) contracted by the worker
3. Occupational cancer	
3.1.	Cancer caused by the following agents



**INTERNATIONAL GUIDANCE
NOTES ON THE DIAGNOSTIC
CRITERIA FOR OCCUPATIONAL
DISEASES
(DRAFT)**



Dr. J. K. K. K.

Dr. D. Simon

**Occupational MSDs Included in the National Lists of
Occupational Diseases**

Occupational MSDs have been recognized by a number of countries e.g.:

- > Algeria
- > Australia
- > Bangladesh
- > Belgium
- > Canada
- > China
- > Colombia
- > Denmark
- > Finland
- > France
- > Italy
- > Japan
- > Republic of Korea
- > Latvia
- > Lithuania
- > Luxembourg
- > Malaysia
- > Poland
- > Portugal
- > Spain
- > Switzerland
- > United Kingdom
- > European schedule of occupational diseases 2003.

**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.**

**Aim of Occupational Health defined
by
ILO/WHO**

- ✓ **Prevention**
- ✓ **Protection**
- ✓ **Promotion**
- ✓ **Adaptation**

Basic Principles in Occupational Safety and Health

- ✓ Responsibilities of the employer
- ✓ Role of the competent authority
- ✓ Basic workers' rights

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;

Global Strategy on Occupational Safety and Health Adopted at the 91st Session of the International Labour Conference in 2003

The Global Strategy:

- reaffirmed the importance for all countries to **apply international labour standards on occupational safety and health**
- requested the ILO to give highest **priority** to the development of new instruments in the areas of **ergonomics** and biological hazards.

(http://www.ilo.org/public/english/protection/safework/globstrat_e.pdf)

World Day for Safety and Health at Work

- 28 April every year
- Events at national/enterprise levels
- Theme of the 2013 World Day
Prevention of Occupational Diseases
- Theme of the 2014 World Day
Safety and Health in the Use of Chemicals

ILO Programme on OSH Global Action for Prevention

The new program has four main objectives:

- Building effective regulation of workplace risks through sound OSH legislative frameworks;
- Strengthening knowledge for prevention through capacity building in the area of data collection and analysis for strategy-making purposes;
- Developing effective dialogue for improved safety and health at work among governments, employers and workers organizations; and
- Improving financing modalities for national OSH systems to achieve secure and sustainable funding, including through economic incentives for compliance and investment in prevention as well as linkage with employee injury insurance schemes

e-OSH: Electronic library on occupational safety and health

DVD, 2013 edition. Everything you want to know about safety and health at work in two clicks.

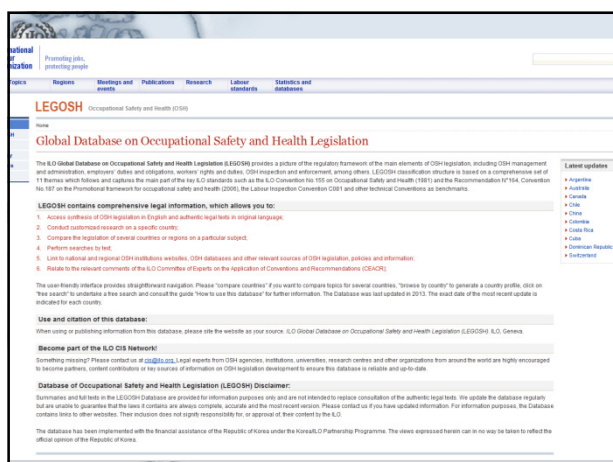
Reference: 2227-43403050

e-OSH gives you quick access to the following content:

- Conventions and recommendations
- Codes of practice
- ILO Encyclopaedia
- International Chemical Safety Cards
- OSH Series (e.g. List of occupational diseases (revised 2010), Radiation protection of workers)
- Reports of the World Day and World Congress on Safety and Health at Work
- Training materials and videos

System requirements:

1. Windows PC (Windows XP and above)
2. DVD Reader
3. Monitor resolution of minimum 1024 x 768
4. Adobe Acrobat Reader
5. Internet browser (Internet Explorer or Firefox or Google Chrome)



The screenshot shows the LEGOSH (Global Database on Occupational Safety and Health Legislation) website. The header includes the ILO logo and navigation tabs: Topics, Regions, Meetings and events, Publications, Research, Labour standards, and Statistics and databases. The main content area is titled "LEGOSH Occupational Safety and Health (OSH)" and includes a search bar. Below the search bar, there is a section titled "Global Database on Occupational Safety and Health Legislation" with a brief description of the database's purpose. A list of "LEGOSH contains comprehensive legal information, which allows you to:" is provided, followed by a list of "Latest updates" with links to various countries and regions. At the bottom, there is a "Use and citation of this database" section and a "Become part of the ILO OSH Network" section.



Thank you!

Dr. Shengli Niu
 Senior Specialist on Occupational Health
 LABADMIN/OSH
 International Labour Office
 niu@ilo.org
 www.ilo.org/safework

The slide features a background image of a world map with a blue and white color scheme. A small inset image in the bottom right corner shows a modern building with a glass facade.