



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

VENERDÌ, 25 NOVEMBRE 2016 ORE 8.30

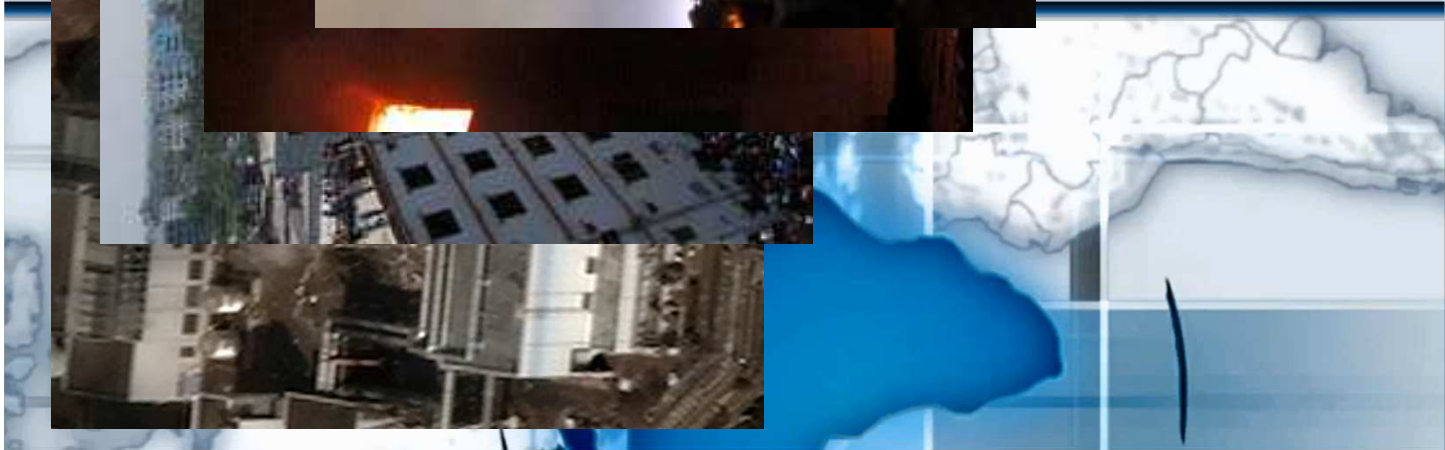
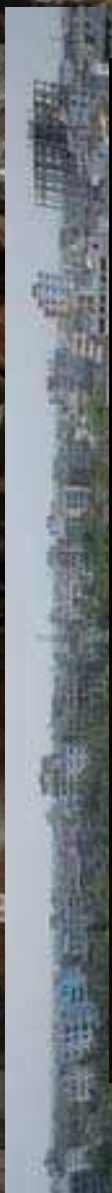
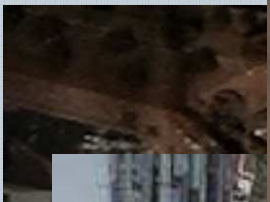
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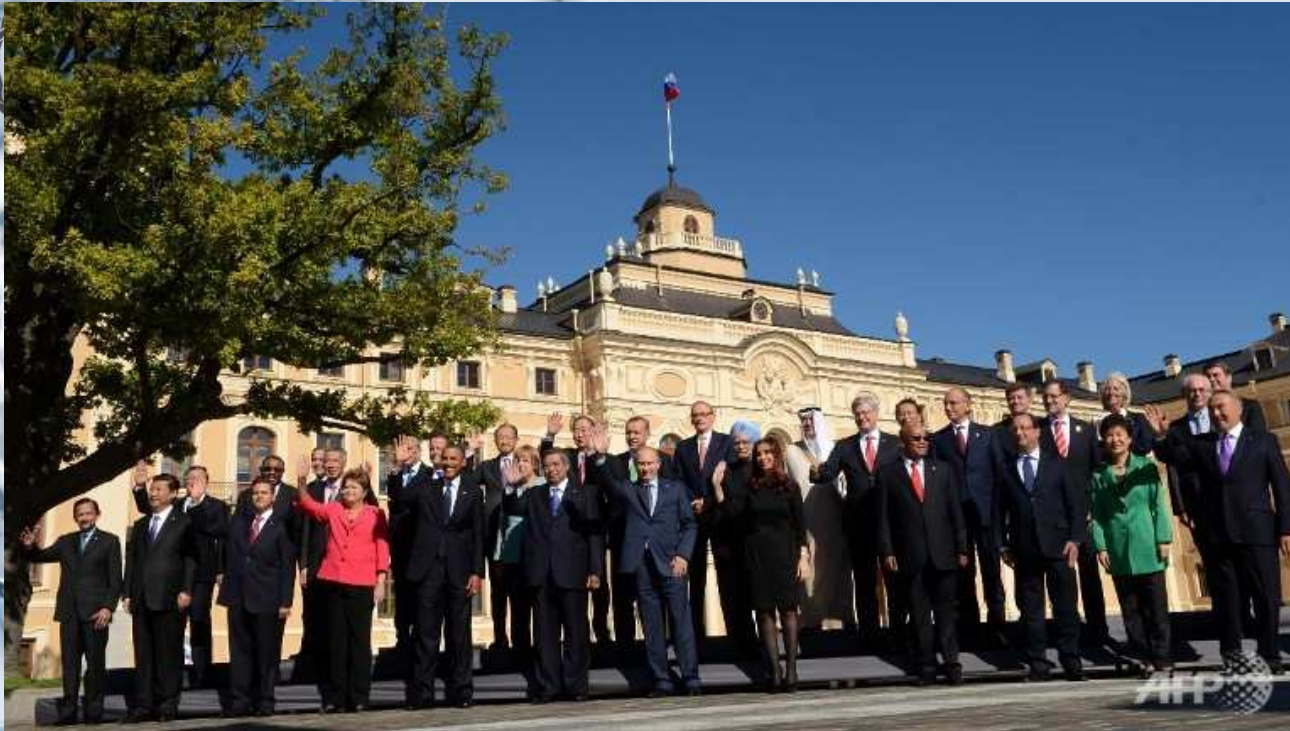
UNIVERSITÀ DEGLI STUDI

VIA SANT'ANTONIO, 5, MILANO



MIKE STONE/REUTERS





G20 LEADERS' DECLARATION

September, 2013

- 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**.....



G20 Leaders' Communiqué Brisbane Summit, 15-16 November 2014

1. Raising global growth to deliver better living standards and quality jobs for people across the world is our highest priority. We welcome stronger growth in some key economies. But the global recovery is slow, uneven and not delivering the jobs needed. The global economy is being held back by a shortfall in demand, while addressing supply constraints is key to lifting potential growth. Risks persist, including in financial markets and from geopolitical tensions. We commit to work in partnership to lift growth, boost economic resilience and strengthen global institutions.
2. We are determined to overcome these challenges and step up our efforts to achieve strong, sustainable and balanced growth, and to create jobs. We are implementing structural reforms to lift growth and private sector activity, recognising that well-functioning markets underpin prosperity. We will ensure our macroeconomic policies are appropriate to support growth, strengthen demand and promote global rebalancing. We will continue to implement fiscal strategies flexibly, taking into account near-term economic conditions, while putting debt as a share of GDP on a sustainable path. Our monetary authorities have committed to support the recovery and address deflationary pressures when needed, consistent with their mandates. We will be mindful of the global impacts of our policies and cooperate to manage spillovers. We stand ready to use all policy levers to underpin confidence and the recovery.
3. This year we set an ambitious goal to lift the G20's GDP by at least an additional two per cent by 2018. Analysis by the IMF-OECD indicates that our commitments, if fully implemented, will deliver 2.1 per cent. This will add more than US\$2 trillion to the global economy and create millions of jobs. Our measures to lift investment, increase trade and competition, and boost employment, along with our macroeconomic policies, will support development and inclusive growth, and help to reduce inequality and poverty.
4. Our actions to boost growth and create quality jobs are set out in the Brisbane Action Plan and in our comprehensive growth strategies. We will monitor and hold each other to account for implementing our commitments, and actual progress towards our growth ambition, informed by analysis from international organisations. We will ensure our growth strategies continue to deliver and will review progress at our next meeting.

Acting together to lift growth and create jobs

5. Tackling global investment and infrastructure shortfalls is crucial to lifting growth, job creation and productivity. We endorse the Global Infrastructure Initiative, a multi-year work programme to lift quality public and private infrastructure investment. Our growth strategies contain major investment initiatives, including actions to strengthen public investment and improve our domestic investment and financing climate, which is essential to attract new private sector finance for investment. We have agreed on a set of voluntary leading practices to promote and prioritise quality investment, particularly in infrastructure. To help match investors with projects, we will address data gaps and improve information on project pipelines. We are working to facilitate long-term financing from institutional investors and to encourage market sources of finance, including transparent securitisation, particularly for small and medium-sized enterprises. We will continue to work with multilateral development banks, and encourage national development banks, to optimise use of their balance sheets to provide additional lending and ensure our work on infrastructure benefits low-income countries.
6. To support implementation of the Initiative, we agree to establish a Global Infrastructure Hub with a four-year mandate. The Hub will contribute to developing a knowledge-sharing platform and network between governments, the private sector, development banks and other international organisations. The Hub will foster collaboration among these groups to improve the functioning and financing of infrastructure markets.
7. To strengthen infrastructure and attract more private sector investment in developing countries, we welcome the launch of the World Bank Group's Global Infrastructure Facility, which will complement our work. We support similar initiatives by other development banks and continued cooperation amongst them.
8. Trade and competition are powerful drivers of growth, increased living standards and job creation. In today's world we don't just trade final products. We work together to make things by importing and exporting components and services. We need policies that take full advantage of global value chains and

10. We are strongly committed to ensure young people are in education, apprenticeships, education and entrepreneurship. We remain focused on unemployment, by strengthening workplace safety and health is a priority. Employment Working Group, to 1

high, by acting to
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G20 Leaders' Communiqué
Antalya Summit, 15-16 November 2015

Introduction

1. We, the Leaders of the G20, met in Antalya on 15-16 November 2015 to determine further collective actions towards achieving strong, sustainable and balanced growth to raise the prosperity of our people. We are firm in our resolve to ensure growth is robust and inclusive, and delivers more and better quality jobs. We recognize that advancing inclusive growth and entrenching confidence require the use of all policy tools and strong engagement with all stakeholders.

2. In pursuing our objectives, we have adopted a comprehensive agenda this year around the three pillars of decisive implementation of our past commitments to deliver on our promises, boosting investments as a powerful driver of growth and promoting inclusiveness in our actions so that the benefits of growth are shared by all. We have also enhanced our dialogue with low income developing countries as part of our implementation of this agenda.

Strengthening the Recovery and Lifting the Potential

3. Global economic growth is uneven and continues to fall short of our expectations, despite the positive outlook in some major economies. Risks and uncertainties in financial markets remain, and geopolitical challenges are increasingly becoming a global concern. In addition, a shortfall in global demand and structural problems continue to weigh on actual and potential growth.

4. We will continue to implement sound macroeconomic policies in a cooperative manner to achieve strong, sustainable and balanced growth. Our monetary authorities will continue to ensure

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.

G20 2016
CHINA

二十国集团领导人杭州峰会 G20 HANGZHOU SUMMIT

中国·杭州 2016年9月4-5日

HANGZHOU, CHINA 4-5 SEPTEMBER 2016



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 is 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 Apprenticeship 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 systemic 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.



SUSTAINABLE DEVELOPMENT GOALS



1 NO
POVERTY



2 ZERO
HUNGER



3 GOOD HEALTH
AND WELL-BEING



4 QUALITY
EDUCATION



5 GENDER
EQUALITY



6 CLEAN WATER
AND SANITATION



7 AFFORDABLE AND
CLEAN ENERGY



8 DECENT WORK AND
ECONOMIC GROWTH



9 INDUSTRY, INNOVATION
AND INFRASTRUCTURE



10 REDUCED
INEQUALITIES



11 SUSTAINABLE CITIES
AND COMMUNITIES



12 RESPONSIBLE
CONSUMPTION
AND PRODUCTION



13 CLIMATE
ACTION



14 LIFE
BELOW WATER



15 LIFE
ON LAND



16 PEACE, JUSTICE
AND STRONG
INSTITUTIONS



17 PARTNERSHIPS
FOR THE GOALS



On September 25th 2015, countries adopted a set of goals to **end poverty**, **protect the planet**, and **ensure prosperity for all** as part of a new sustainable development agenda. Each goal has specific targets to be achieved over the next 15 years.



SUSTAINABLE DEVELOPMENT GOAL 8

Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all

GOAL 8 TARGETS

PROGRESS OF GOAL 8

- Sustained and inclusive economic growth is necessary for achieving sustainable development. The global annual growth rate of real GDP per capita increased by 1.3 per cent in 2014, a significant

TARGET

8.8 protect labor rights and promote safe and secure working environments of all workers, including migrant workers, particularly women migrants, and those in precarious employment

developed regions. In 2015, the average worker in developed regions produced 23 times the annual output of an average worker in sub-Saharan Africa (which has the lowest labour productivity in developing regions), and 2.5 times that of an average worker in Western Asia (which has the highest labour productivity in developing regions).

- The global unemployment rate stood at 6.1 per cent in 2015, down from a peak of 6.6 per cent in 2009, mostly owing to a decline in unemployment in the developed regions. Unemployment affects population groups differently. Globally, women and youth (aged 15 to 24) are more likely to face unemployment than men and adults aged 25 and over. In all regions, except Eastern Asia and the

REVIEW



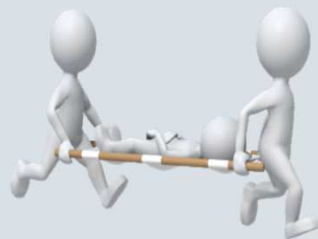
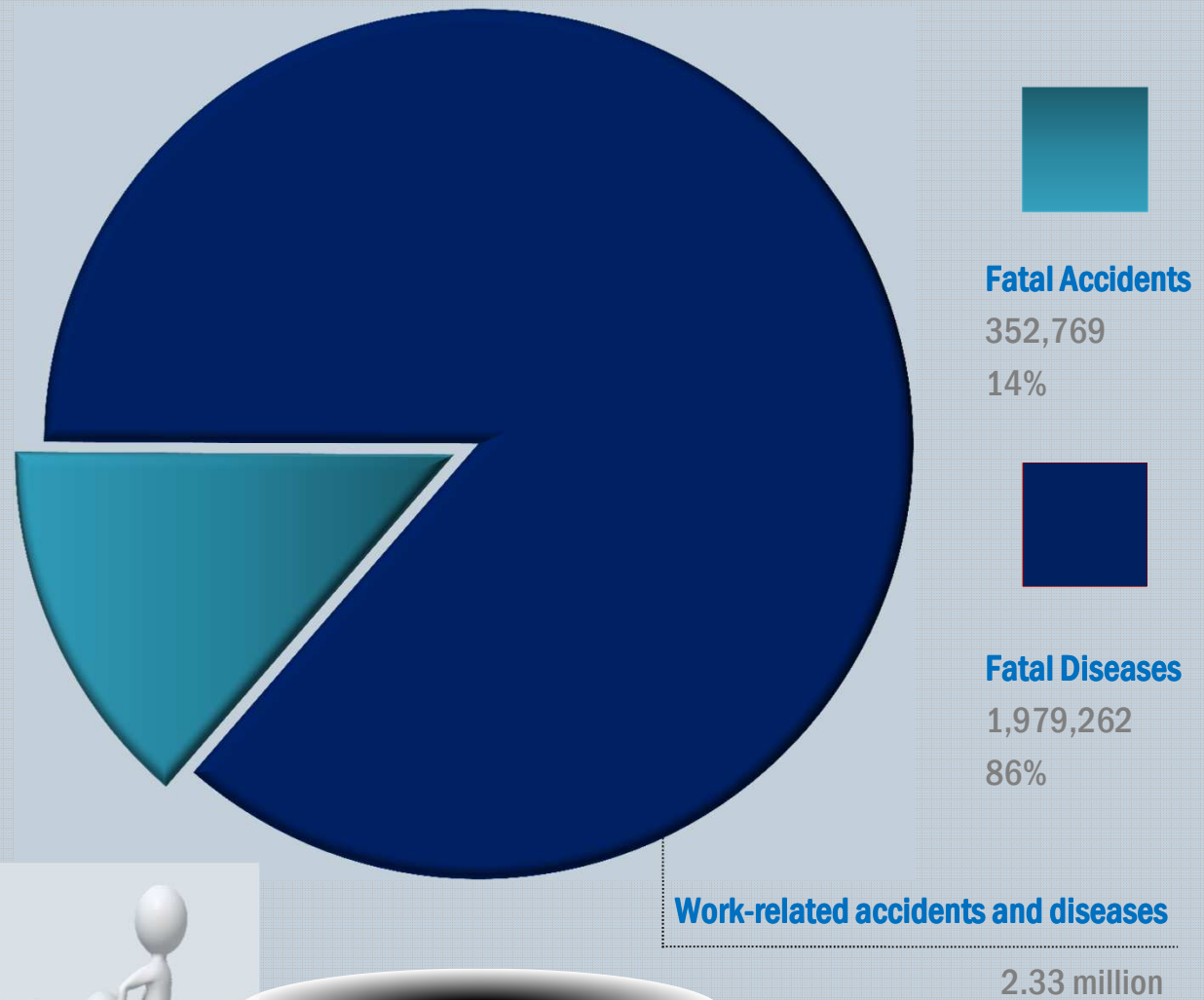
HIGH-LEVEL POLITICAL FORUM ON SUSTAINABLE DEVELOPMENT

VIEWED AT
GLOBAL FORUM



Employment, decent work for a social protection

The hidden epidemic: a global picture



Occupational injuries and diseases

- 160 million occupational diseases

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





Key occupational diseases

China: Pneumoconiosis

23,812 out of 27,240 (2010)

United States: 224,500 reported cases in 2009 and the top three leading diseases are: Skin diseases, hearing loss, respiratory diseases

Argentina: 22,013 reported cases in 2010 and the three leading diseases are: Hearing loss, MSD, respiratory diseases

Asbestos-related diseases:

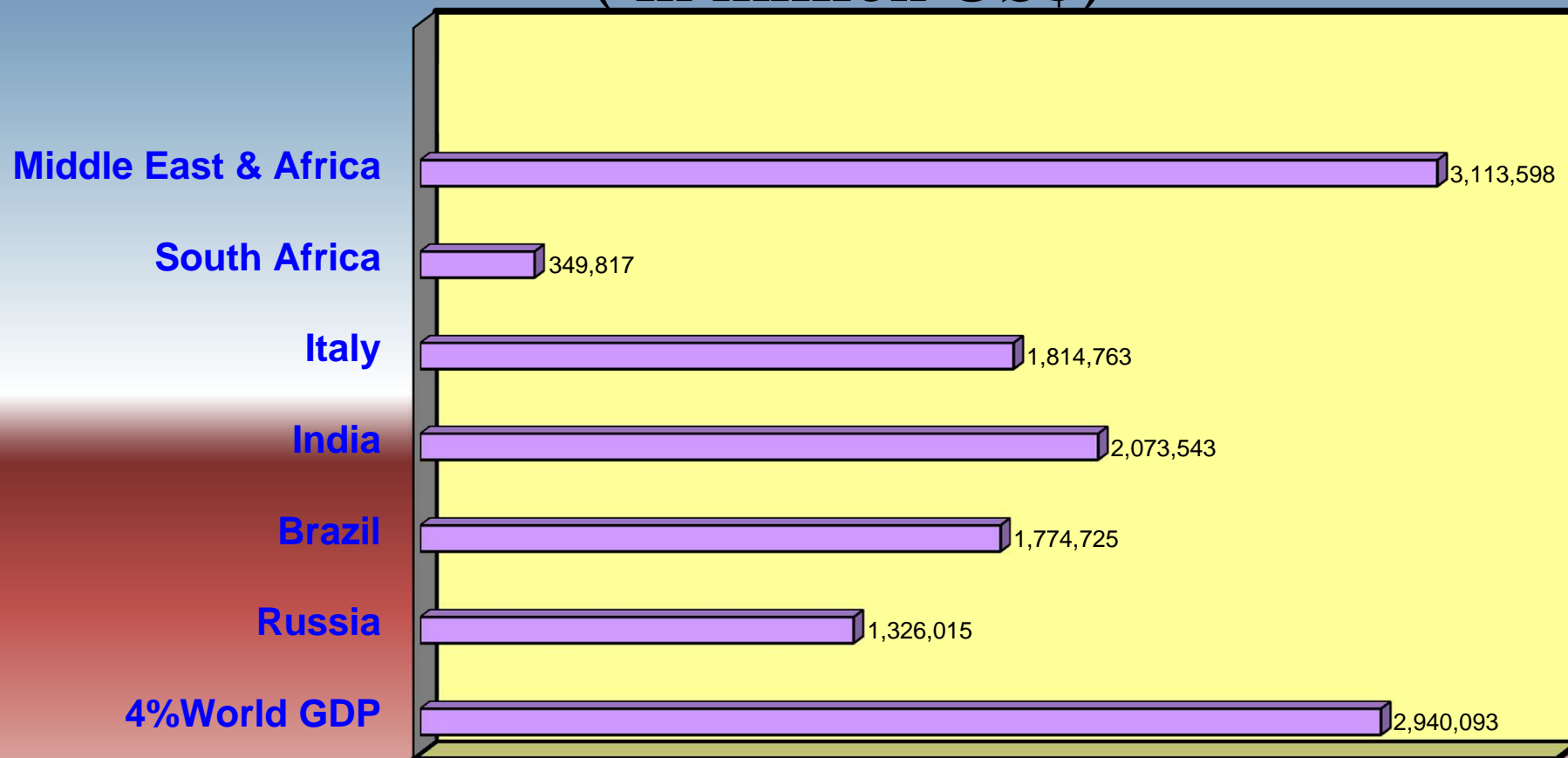
200,000 mesothelioma deaths expected during 1995-2029 in EU



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.

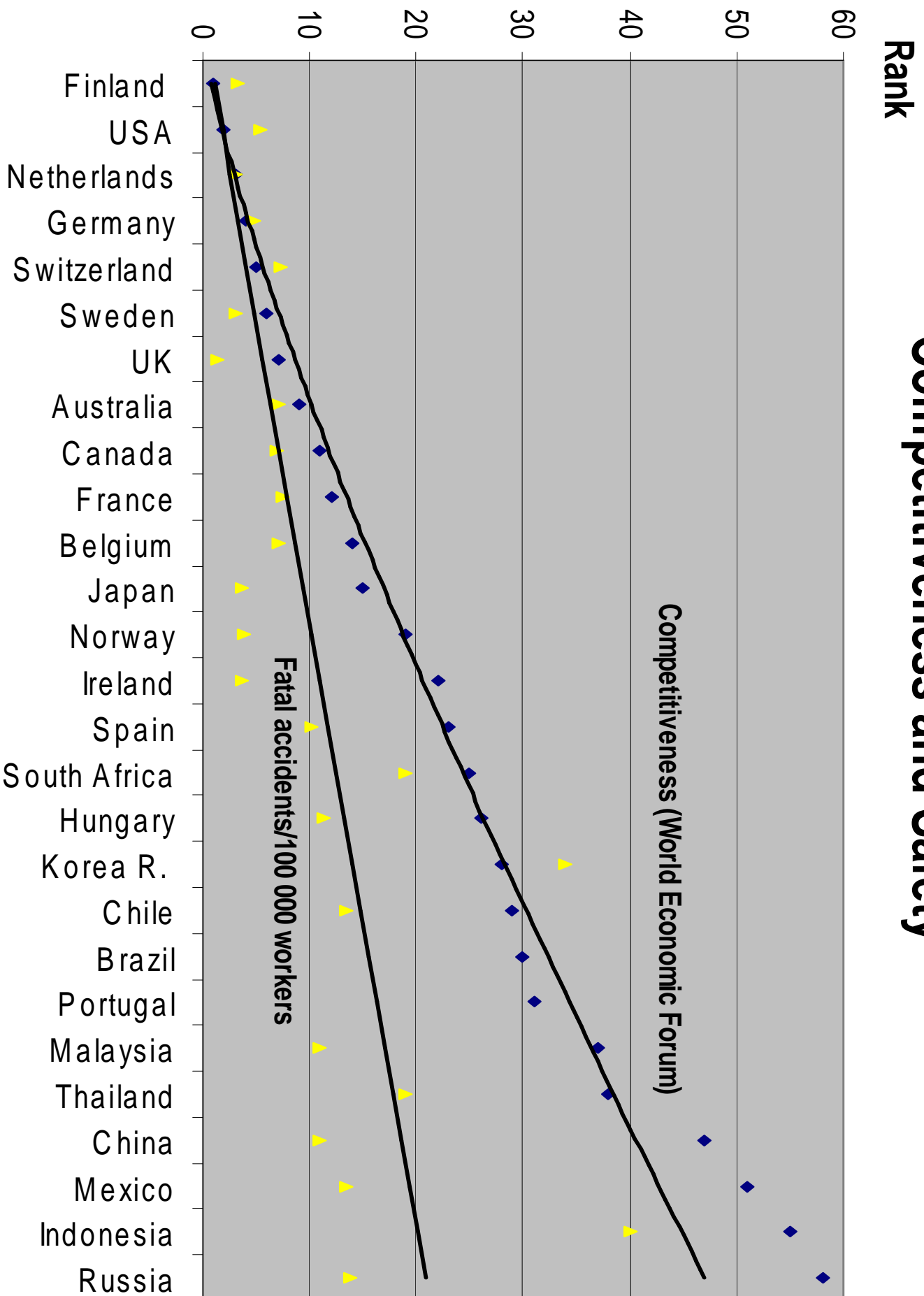
4% of the World GDP and GDPs of Selected Countries (in million US\$)



World GDP: 73,502,341 million US Dollars in 2015

Competitiveness and Safety


Sources : World Economic Forum ;
ILO/SafeWork





Ergonomic Problems at the Workplace

- Bernardino Ramazzini, an Italian physician and father of occupational medicine, **in the 18th century**, said the work relatedness of upper-extremity MSDs: “arise from three causes: **first constant sitting, the perpetual motion of the hand in the same manner, and thirdly the attention and the application of the mind**”.
- The first recorded epidemic of work-related musculoskeletal disorders in the UK occurred in the civil service in the **1830s** and was associated with the introduction of the steel nib.
- The report of an enquiry into a subsequent epidemic in the early **1900s**, among the telegraphists, has been suggested by Lucire to be the origin of the term “nervous breakdown”



The Fourth European Working Conditions Survey in 2005 (EWCS 2005)

- MSDs are the most common work-related problems in the EU-27 countries
- 25% of European workers complain of backache, 23% of muscular pains
- 62% of respondents are exposed to repetitive hand and arm movements
- 45% report working in painful or tiring positions
- 35% are required to handle heavy loads in their work
- For certain risks, prevalence is higher amongst female workers, notably in health. For instance, 11% of women say their job requires them to lift or move people a quarter or more of the time, compared to 6% of men.

(<http://eurofound.europa.eu/exco/surveys/EWCS2005/index.htm>).



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.



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:

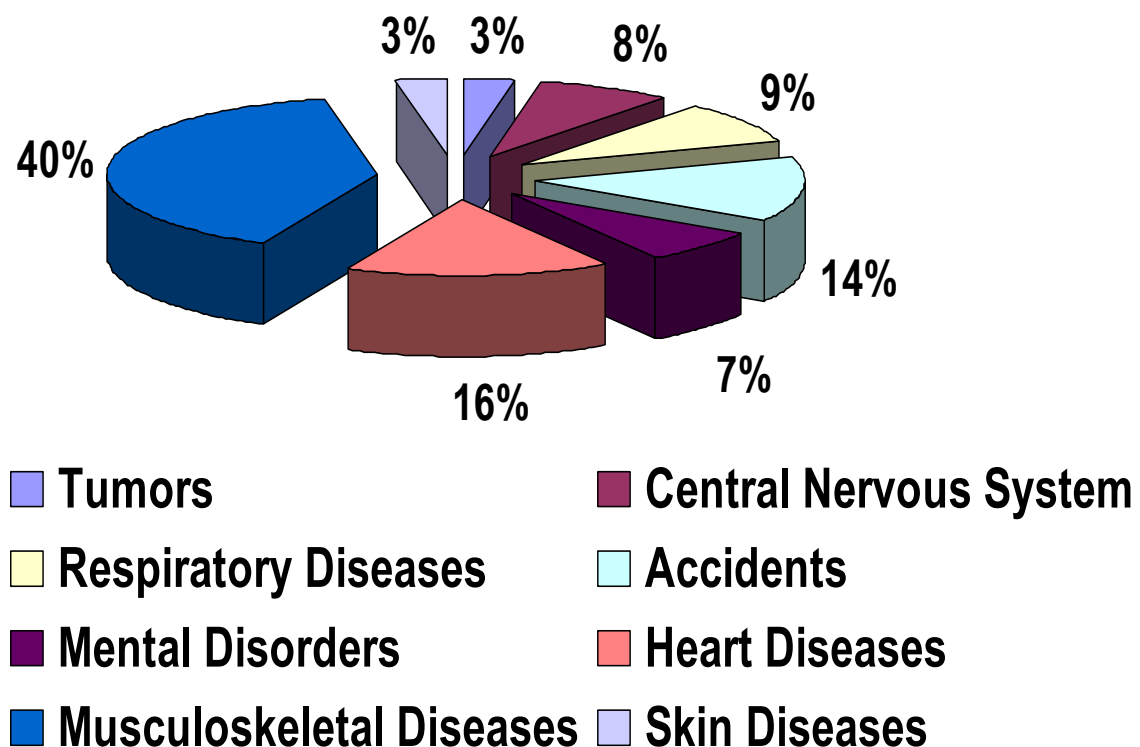
- Increased **absenteeism** & lost working time
- Adverse effects on **labour relations**
- Higher **insurance** and **compensation** costs
- Increased probability of **accidents and errors**
- **Restriction, job transfer** and higher **turnover** of workers
- Scrap and **decreased production**
- **Lawsuits**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





Costs of work-related injuries and diseases

Costs by disease or injury





Ergonomic risk factors at the Workplace

Musculoskeletal, nerve and circulatory tissues can be affected by:

- Stereotyped and repeated or forceful efforts
- sustained static loading
- anatomically non-neutral posture, Postural stress such as prolonged sitting, standing, or awkward position
- accelerated movements,
- externally applied compressive forces and
- Peak overload
- Vibration
- Environmental factors
- Psychosocial factors including psychological stresses, job dissatisfaction



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



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.



Prevention of MSDs

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

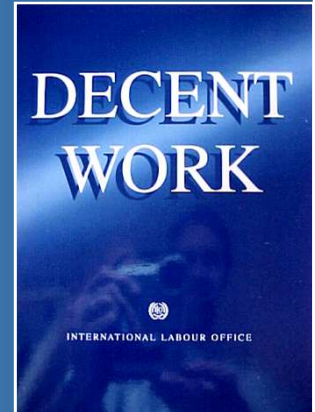
- application of the principles of **ergonomics** in the design of equipment, workstations, products and working methods according to human capabilities and limitations
- **training** of workers
- improving **health surveillance and management systems**
- general **workforce empowerment**
- top management's 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 (Note: Date of coming into force: 10-03-1970.)
Convention: C127
Place: Geneva
Session of the Conference: 51
Date of adoption: 28-06-1967
Subject classification: Physical Hazards, Noise and Vibration
Subject: Occupational Safety and Health
[See the ratifications for this Convention](#)

Display the document in: [French](#) [Spanish](#)
Status: Instrument to be revised

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

R128 Maximum Weight Recommendation, 1967

Recommendation concerning the Maximum Permissible Weight to Be Carried by One Worker
Recommendation: R128
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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:

I. Definition and Scope

1. 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 light loads.

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

NORMLEX Home > Ratification by conventions > Ratifications of C127

Ratifications of C127 - Maximum Weight Convention, 1967 (No. 127)

Date of entry into force: 10 Mar 1970

29 ratifications

■ Denounced: 0

See also

► Countries have not ratified

Display the list by: ☒ Country ☐ Status of convention

Number

Country	Date	Status
Algeria	12 Jun 1969	In Force
Brazil	21 Aug 1970	In Force
Bulgaria	21 Jun 1978	In Force
Chile	03 Nov 1972	In Force
Costa Rica	18 Mar 1972	In Force
Ecuador	10 Mar 1969	In Force
France	31 May 1973	In Force
Guatemala	25 Jul 1983	In Force
Honduras	13 Apr 2012	In Force
Hungary	04 Jan 1994	In Force
India	28 Mar 2010	In Force
Italy	05 May 1971	In Force
Lebanon	01 Jun 1977	In Force
Lithuania	26 Sep 1994	In Force
Luxembourg	08 Apr 2008	In Force
Madagascar	04 Jan 1971	In Force
Malta	09 Jun 1988	In Force
Moldova, Republic of	09 Dec 1997	In Force
Nicaragua	01 Mar 1976	In Force
Panama	19 Jun 1970	In Force
Peru	19 Jun 2008	In Force
Poland	02 May 1973	In Force
Portugal	02 Oct 1985	In Force
Romania	28 Oct 1975	In Force
Spain	07 Jun 1969	In Force
Thailand	26 Feb 1969	In Force
Tunisia	14 Apr 1970	In Force
Turkey	13 Nov 1975	In Force
Venezuela, Bolivarian Republic of	01 Feb 1984	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

Guidelines on occupational safety and health managements systems ILO-OSH 2001



INTERNATIONAL LABOUR OFFICE - GENEVA

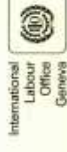
72 OCCUPATIONAL SAFETY AND HEALTH SERIES TECHNICAL AND ETHICAL GUIDELINES FOR WORKERS' HEALTH SURVEILLANCE



INTERNATIONAL LABOUR OFFICE - GENEVA



Recording and notification of occupational accidents and diseases



Protection of workers' personal data





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.

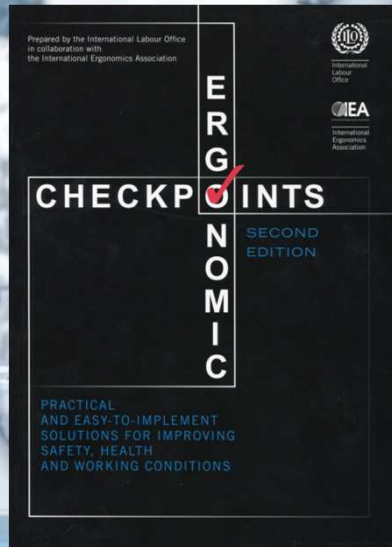
The aim of **ergonomics** is to **optimize, first and foremost, the comfort of the worker**, as well as his or her health, safety and efficiency.

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

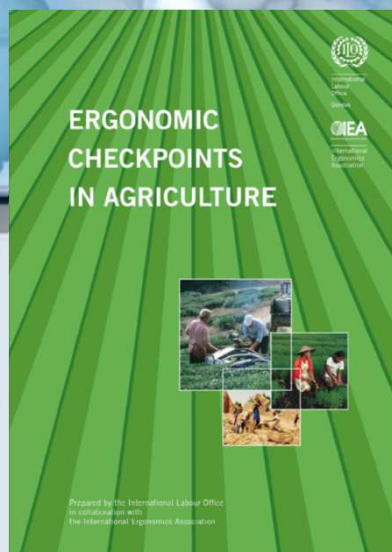
Applying ergonomic principles is **beneficial to both the workers and the employers**.



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**

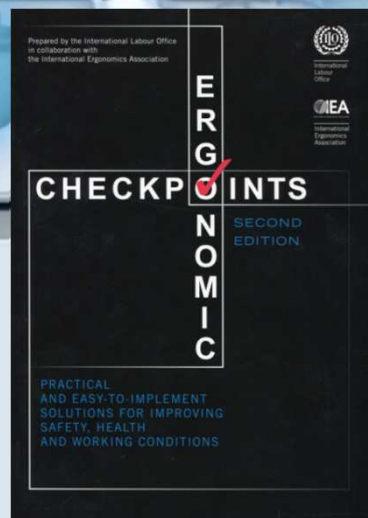




Ergonomic Checkpoints

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



CHECKPOINT 5

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

WHY

Machines and workstations are often installed one after another as production expands, and their existing positions are not necessarily suitable for easy and efficient movement of materials. This can be improved by changing their layout.

Time needed to perform a task can be greatly reduced by reducing the movement of materials. This reduces workers' fatigue, allowing more efficient working.

This is also beneficial for preventing accidents caused by moving materials.

RISKS / SYMPTOMS

- physical energy demand
- repetitive strain
- excessive fatigue
- low back pain
- increased injury rates
- stress-induced disorder

HOW

1. Discuss with workers how the frequency and the distance of moving materials can be reduced by changing the layout of machines and workstations. There could be a better way of moving materials within work areas and between different work areas.
2. Arrange a series of several workstations close to one another to minimize the movement of work items between each workstation.
3. Arrange different departments according to the sequence of work done so that work items coming from one department can be utilized by the next without moving them over a long distance.
4. Combine operations whenever possible in order to reduce the need to move materials between operations.



Figure 5a. Provide stock shelves or racks so that work items coming from one workstation can go directly to the next one.



Figure 5b. Rollers or conveyers can reduce the distance materials have to be moved manually. The height should be such that the work item can be handled without bending the upper body. Make sure there is enough space for the feet and body to get close to the rollers or conveyers.



Figure 5c. (i) and (ii) Provide a layout that allows the worker to move objects from one conveyor to the next while keeping a natural posture. Using a transfer plate and rollers makes it easier to move objects.

CHECKPOINT 6

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

WHY

Moving many materials not only takes a lot of effort, but also often leads to accidents that may injure workers and damage materials. All this can be avoided by using "wheels".

By using carts and other mobile devices the number of trips can be significantly reduced. This means improved efficiency and safety.

Rollers placed one after another along a materials movement line greatly ease the movement of materials because only the pushing and pulling of rollers is needed instead of carrying.

RISKS / SYMPTOMS

- muscular strain
- excessive force
- low back pain
- upper limb disorder

HOW

1. Check movements of materials between storage and work areas and between workstations, especially when these movements of materials are frequent or require a lot of effort. Consider the use of carts or "wheels" to make these movements easier.
2. Design simple pushcarts of appropriate size for carrying materials. Construct such carts using available parts and skills.
3. Provide a line of rollers on which materials can be pushed easily to the next workstation. A 2 m long roller line can be a great help.
4. Use pallets, bins or containers that can be loaded easily onto a pushcart or pushed through on rollers. Design special ones for different products so that products are protected from damage, and are easy to count and inspect.

SOME MORE HINTS

- It is important to have clear transport routes, free from obstacles at all times. Clear transport routes are essential for moving around with a cart.
- Materials can be moved between workstations by conveyers, rollers, gravity chutes, suspended cranes, mobile hoists and other devices. There are many ways to construct such systems at low cost.
- A long, rectangular, mobile frame on which rollers are placed one after another could also be used for loading and unloading trucks.
- Choose wheels of a larger diameter, especially when moving materials a long distance or on uneven surfaces.
- If possible, use rubber wheels or castors to reduce noise.

POINTS TO REMEMBER

Reduce the number of trips between workstations and between storage and work areas by using wheeled transport such as pushcarts, or roller lines.

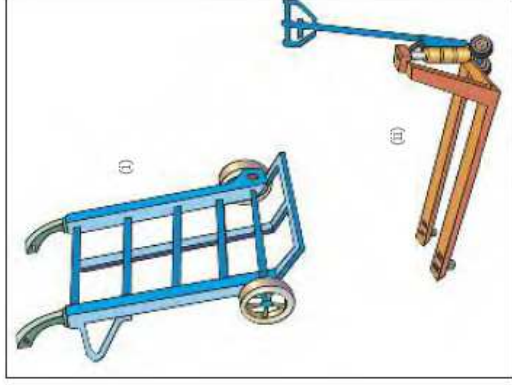


Figure 6a. (i) A heavy-duty sack truck and (ii) a low-lift pallet trolley are reliable, safe and easy to operate. They provide means of carrying heavy loads a short distance with minimum elevation.

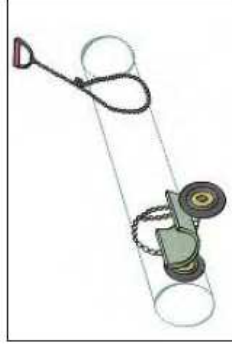


Figure 6b. This small cart enables one worker to move heavy metal bars.



Figure 6c. This barrel-handling device not only makes work much easier but also helps avoid damage.

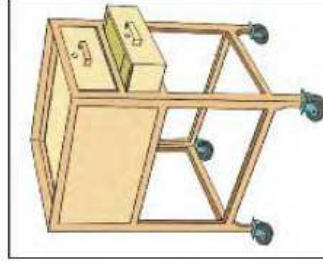


Figure 6e. An easy-to-move tool cart provides orderly storage and protection of tools and instruments.



Figure 6d. A passive conveyor line for moving heavy motor castings at working height.

CHECKPOINT 7

Use mobile storage racks to avoid unnecessary loading and unloading.

WHY

There are usually a large number of items that need to be carried to other workstations or to storage areas. If these items are put on mobile racks and the racks are then moved to the next place, many unnecessary trips can be avoided.

Carrying work items together on mobile racks means fewer materials-handling operations (such as loading and unloading). This helps to reduce damage to work items, minimize accidents, and use workers' energy for productive operations.

Using mobile racks also means easy inventory control and more efficient housekeeping.

RISKS / SYMPTOMS

- muscular strain
- repetitive strain
- physical energy demand
- product damage

HOW

1. Design or purchase racks, containers, stands, etc. that have wheels and foot locks where appropriate. It is then possible to move a number of items at a time. Choose racks that are easy to load and unload.
2. Arrange the workplace layout to allow the smooth movement of wheeled racks between workstations, and between storage and work areas. If necessary, redefine transport routes.
3. When many small items are to be moved, provide adequate space for each item so that all items can be placed neatly on the mobile rack.
4. Consider the use of pallets, containers, trays or bins that can be placed on a mobile rack or a pushcart.
5. Fit wheels to existing stands, racks or workbenches in order to make them mobile and thus avoid unnecessary loading and unloading operations.

6. Consider where to store the racks when not in use so that they are not a hazard or obstruction.

SOME MORE HINTS

- If designing effective mobile racks seems complicated, a good first step may be to design pallets or trays to move several items at the same time. This experience will make it easier to design a rack that is both easy to handle and efficient.
- When many similar racks are used, standardize them. Similarly, when many pallets or containers are used for work items, standardize them so that they can be easily placed on a mobile rack or cart. It is even better if these pallets or containers can be stacked.
- Maintenance of wheels or rollers is very important because it makes pushing and pulling easier.
- It is worth investing in the design of special-purpose mobile racks for particular work items, even though that might require money and effort. Such racks are extremely helpful for improving productivity. The racks enable many items to be placed on the rack by easy handling operations and moved conveniently to other work sites.

POINTS TO REMEMBER

Mobile storage racks are an ideal answer to reducing handling operations and transport time.

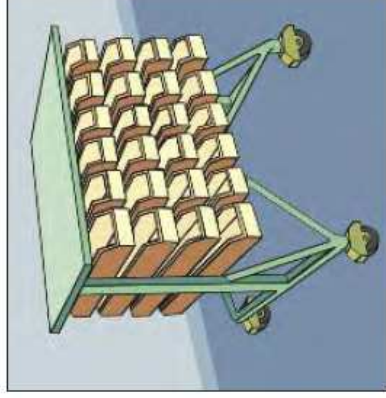


Figure 7a. A mobile bin cart helps to ensure smooth work flow in assembly shops where numerous operations are performed at each workstation.

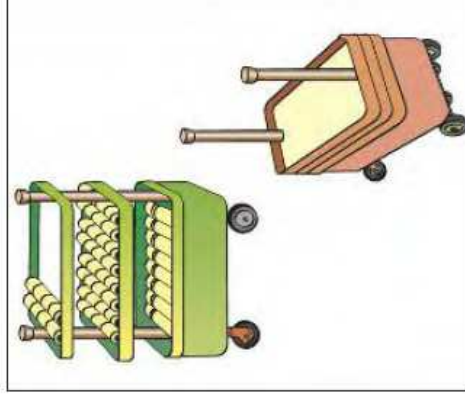


Figure 7b. A tool trolley with adjustable shelves occupies little space, but contributes much to improving the efficiency of motor mechanics and machine or tool repair workers.

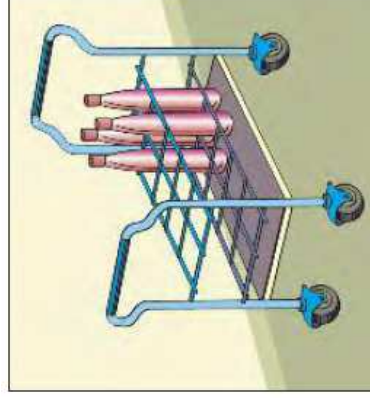


Figure 7c. A rack on wheels specially designed for storage and handling of motorcycle silencers.

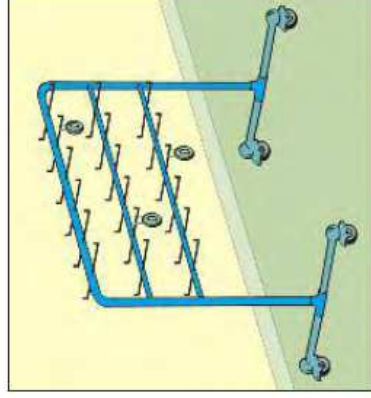


Figure 7d. A flat, two-sided movable rack, a real "space saver" for a small factory with narrow passages, can be successfully used in many types of workplace.

CHECKPOINT 8

Use multi-level shelves or racks near the work area in order to minimize manual transport of materials.

WHY

Placing materials near the workstation, so they are easy to access and at an appropriate height, can save time and energy spent in picking them up.

Multi-level shelves and racks allow better use of space and help to keep things in good order when space available near the work area is limited.

Shelves and racks with space specified for each individual item are excellent for safe storage of materials and semi-finished products, especially fragile ones; this reduces the danger of accidents and fires, and the possibility of damage.

RISKS / SYMPTOMS

- excessive reach
- muscular strain
- excessive force
- product damage

HOW

1. Provide multi-level, open-fronted shelves or racks for various specific items.
2. Make full use of wall space by fitting multi-level shelves or racks to the wall near the work area.
3. Wherever possible, make racks movable by fitting them with wheels.
4. Provide a different, specially arranged place for each kind of material or part so that access to them, as well as their stocking and transport, is easy; use labels or other means to indicate each specific place. Avoid levels that are too high or too low because they can be difficult to reach.

SOME MORE HINTS

- Use lightweight containers and bins for storage of small parts. Front-opening containers and bins make it easy to see and grasp the materials and parts inside.

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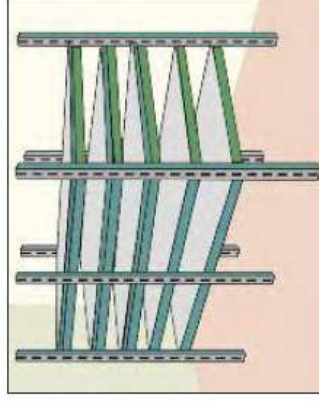


Figure 8a. A multi-level horizontal storage rack for metal sheets or plywood. Remember to keep everything dry, otherwise water tends to spread between the sheets and damage them.

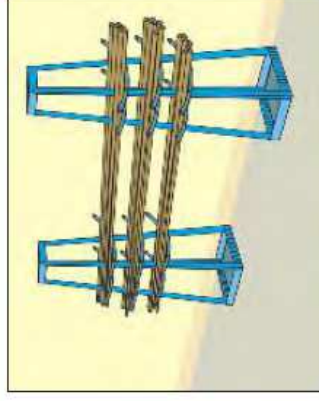


Figure 8b. A horizontal bar rack. This free-standing unit may be used singly to store short pieces, or two of these racks may be placed in line to store long pieces.



Figure 8c. A vertical rack. Metal rods and bars of different profile can be stored efficiently in a limited area or near the job. Tray-type shelves provide room for small pieces.



Figure 8d. Shelving designed to make full use of wall space.

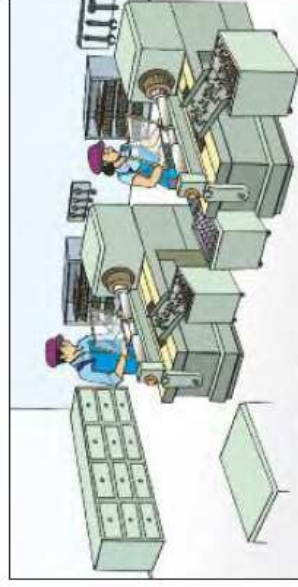


Figure 8e. A shop floor after removal of all unnecessary items. All tools and parts are stored on shelves and racks.

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CHECKPOINT 9

Use mechanical devices for lifting, lowering and moving heavy materials.

WHY

Manual lifting, lowering and moving of heavy materials and work items are some of the major causes of accidents and back injuries associated with materials handling. The best way to prevent these accidents and injuries is to eliminate the manual work by using mechanical devices.

Lifting and carrying heavy objects manually requires skill and takes a lot of time. Select a lifting device that is easy and quick to use.

Introducing mechanical devices to handle heavy materials greatly helps to organize the work flow.

RISKS / SYMPTOMS

- muscular strain
- excessive force
- physical energy demand
- low back pain

HOW

1. Install floor-based lifting devices that use the minimum elevation necessary. Examples are gantries, hydraulic lifting devices, lift tables, hydraulic floor cranes, lever or chain hoists, electric hoists, and conveyers.
2. Overhead cranes and overhead hoists can be used if the workplace structure permits them. However, take into account that these overhead devices can introduce a hazard to the workplace that may result in serious accidents. Floor-based lifting devices are preferable because they require less elevation of materials.
3. Only use lifting machinery that has been tested by the manufacturer or some other competent person, and which has a certificate specifying the safe working load.
4. Make sure that the maximum safe working load is plainly marked and that it is observed.

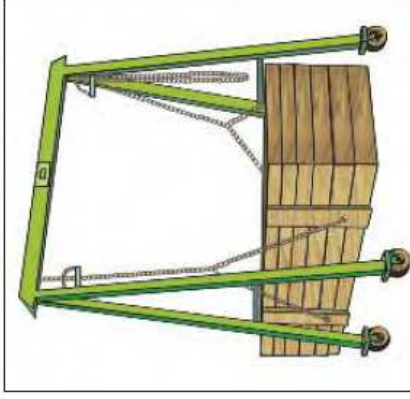


Figure 9a. A portable gantry is reliable, safe and easy to operate for carrying a heavy load a short distance with minimum elevation.

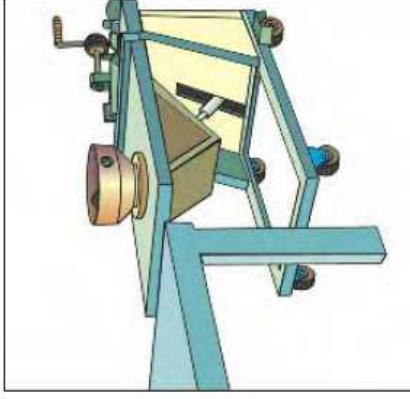


Figure 9b. A manually powered device for lifting heavy castings to working level.

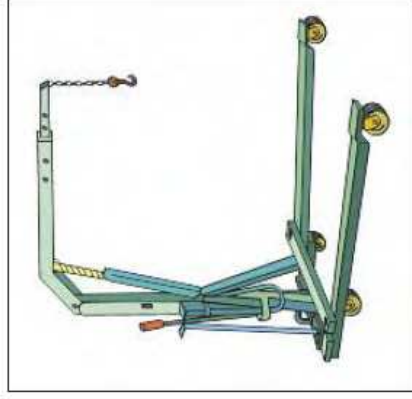


Figure 9c. A manually powered hydraulic floor crane with a telescopic boom.



Figure 9d. Make sure that the maximum safe working load is plainly marked.

CHECKPOINT 10

Reduce manual handling of materials by using conveyers, hoists and other mechanical means of transport.

WHY

Manual handling of materials, including stocking, loading and unloading, does not add any value or profit. By replacing it with mechanical means, workers can use their time for productive work. This is true for both heavy objects, and light and small objects.

Repetitive manual handling of materials leads to bad working postures and frequent awkward movements. This may cause muscle and joint problems, resulting in poor productivity. Using equipment instead of manual handling greatly reduces fatigue and the risk of injury.

Mechanical transport of materials greatly improves productivity and so makes it possible to organize a better work flow.

RISKS / SYMPTOMS

- excessive force
- muscular strain
- repetitive strain
- physical energy demand

HOW

1. Check materials-handling operations to see which of them can be replaced by mechanical means.
2. Use manually powered devices, such as hydraulic lift tables, hydraulic floor cranes, or lever or chain hoists. These are easier to maintain than power-driven devices.
3. Where manually powered devices cannot deal properly with heavy materials, use power-driven devices such as electrical or hydraulic lifts, conveyers or suspension lines. These devices often make it possible to organize automatic transport of materials to the next workstation.
4. If a mechanical mover is impractical, use a gravity chute for light materials and an inclined roller conveyer for heavy materials. The force of gravity takes care of moving the materials.

5. Train workers in safe procedures for using the mechanical means of transport. Also make sure there is enough space for safe operations.
6. Make sure that the dangers presented by new mechanical devices are evaluated properly and that adequate countermeasures are taken.

SOME MORE HINTS

- Use mechanical devices that can be easily operated by different workers for different handling tasks. This facilitates use of the devices.
- Install the mechanical devices so that manual work prior or subsequent to mechanical handling is easy, e.g. so that the worker need not lift or lower the materials any further.
- Use a pushcart or trolley whereby the materials can be brought to the stocking or unloading point at the right height. If appropriate, consider the use of a special stand or platform of the right size and correct height placed near each machine. Materials carried to the machine can be easily stocked on such a stand or platform.
- Transport and supply of toxic or dusty material require special attention. Do not transfer materials to areas where workers are eating.
- Learn from good examples already in use on similar machines. There should be many simple and practical ideas.

POINTS TO REMEMBER

By using mechanical means of transport, the worker's productive hands and energy are released from handling materials and made available for profitable and safer tasks.

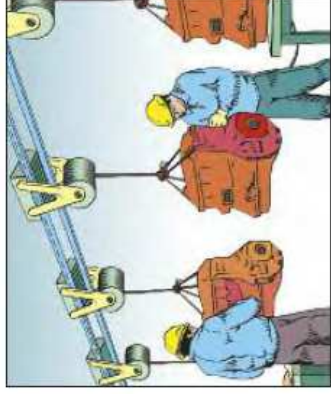


Figure 10a. Mechanical transport of materials can both eliminate manual work and improve work height and working posture.

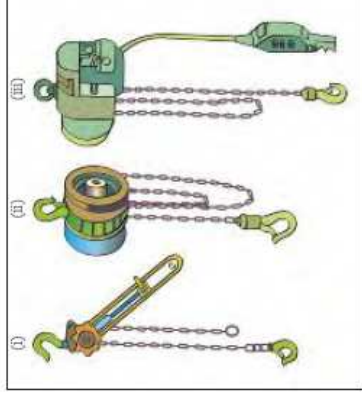


Figure 10b. (i) A lever hoist is simple to operate and extremely versatile. (ii) A chain hoist with a self-activating load brake. (iii) An electric chain hoist with butterfly control switch for efficient handling of lighter loads.



Figure 10c. Reduce manual handling of materials by using conveyers.

CHECKPOINT 11

Instead of carrying heavy weights, divide them into smaller lightweight packages, containers or trays.

WHY

Carrying heavy items is strenuous and dangerous. Divide heavy loads into smaller objects whenever possible. Half the load carried by each arm gives good balance, allowing the worker to continue longer with less fatigue. A one-sided load can cause injuries and back, shoulder and neck disorders.

The fatigue from carrying lightweight packages is much less than the fatigue from carrying heavy weights. The worker's productivity is improved by carrying lighter packages.

The risk of back injuries is also greatly reduced by using light instead of heavy packages.

RISKS / SYMPTOMS

- muscular strain
- excessive force
- low back pain

HOW

1. Check all manually lifted or carried weights to see if there is a possibility of dividing them into smaller loads.
2. Divide heavy loads into lighter packages, containers or trays, considering the maximum weight with which the worker is comfortable. For example, two packages of 10 kg each are far better than one package of 20 kg.
3. When loads are divided into smaller packages, this may mean increased movements and more trips to carry the same total amount. Therefore be sure that packages are not too small, and that effective means of moving or carrying these smaller packages are used.
4. Use carts, trolleys, mobile racks or hand-trucks to carry multiple packages at a time. This is in line with the idea of dividing heavy packages into

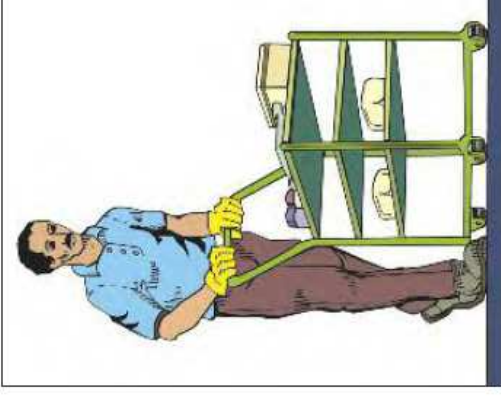


Figure 11a. Divide heavy packages into smaller lightweight ones.

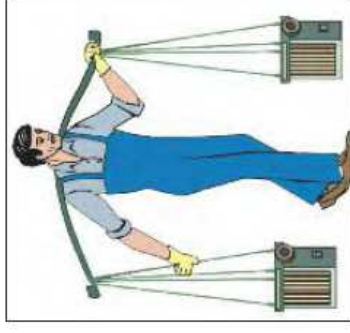


Figure 11c. A yoke or a similar device is useful for carrying two separate loads for some distance while keeping balance and minimizing the lifting or lowering work.

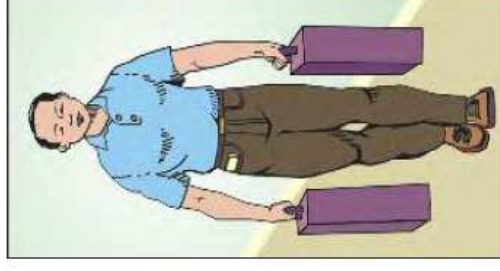


Figure 11b. Divide heavy items into smaller objects whenever possible.

CHECKPOINT 12

Provide handholds, grips or good holding points for all packages and containers.

WHY

Carrying loads is much easier and quicker if they can be grasped easily and firmly.

With good grips there is less chance of dropping the loads, and thus damage to materials is prevented.

Good hand grips also provide a clear forward view.

Good handholds reduce fatigue, because there is less bending of the body and less muscle power required to hold the load.

— Packaging should be designed to simplify manual handling (for example, in lightweight packages) and to provide grips or good holding points. Slippery package surfaces should always be avoided.

— Be aware that the worker may be wearing gloves. Grips or handholds must be easily grasped by gloved hands.

POINTS TO REMEMBER

Fitting handholds on boxes and containers is a very simple measure to improve materials handling.

RISKS / SYMPTOMS

- muscular strain
- hand/arm injury
- upper limb disorder

HOW

1. Cut out handholds in boxes, trays and containers so that they can be comfortably carried by hand.
2. Use packages that have a grip or good holding points for carrying
3. Ask suppliers and subcontractors to deliver goods in boxes or containers with handholds or 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 or grip, locate it so that the centre of gravity of the load is close to the worker's body.

SOME MORE HINTS

- Make it a rule to order boxes, trays and containers that have handholds or grips.
- Consider putting the handhold at an angle by which the box or container can be carried with the wrist in a comfortable, straight position.

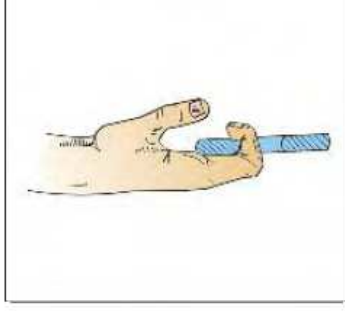
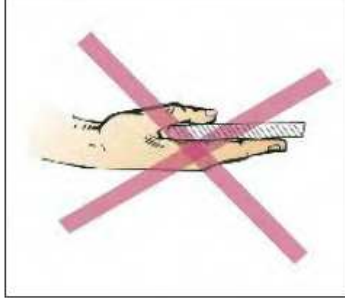


Figure 12a. Handholds should be cut out so as to allow the container to be gripped by bent fingers. This can greatly reduce the force needed to hold the container.

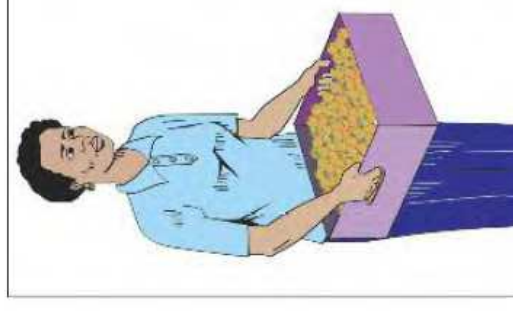


Figure 12b. Cut-out handholds are very useful. Locate these handholds so that the box or container can be carried in front of the body.

CHECKPOINT 13

Move materials horizontally at the same working height.

WHY

Pushing and pulling are less strenuous and safer than lifting and lowering materials, particularly heavy items.

Horizontal movement of heavy materials is more efficient and allows better control of work, because the work requires less force and the worker does not need to move the weight of the body.

Pushing and pulling at appropriate height, rather than lifting, helps prevent back injuries.

RISKS / SYMPTOMS

- repetitive strain
- muscular strain
- low back pain

HOW

1. When materials are moved from one workstation to another, move these materials at the working height. For example, move between work surfaces of the same level.
2. If large items are placed on the floor, use a yoke, sack, hand-truck or low-level pallet trolley to carry them with minimum elevation.
3. Use transport systems which mean that materials can be moved without a change of height. Examples include a passive conveyor line (using rollers placed at the same level), a mobile work-stand or trolley that is of the same height as the work tables, or suspension of materials that move at the same level.
4. Match the height of the vehicle bed to that of the loading area, so that loading and unloading can be done with minimum height differences.
5. Ensure there is enough space for the feeding and unloading positions at the machine so that gliding or sliding of heavy, repeatedly handled objects can be done easily. Note that an even and non-slippery floor surface is important for efficient and safe work.

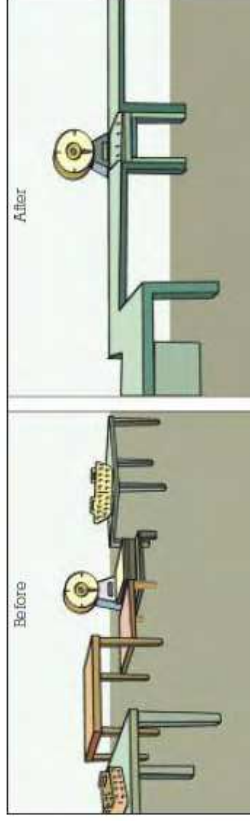


Figure 13a. Eliminate height differences of work surfaces.

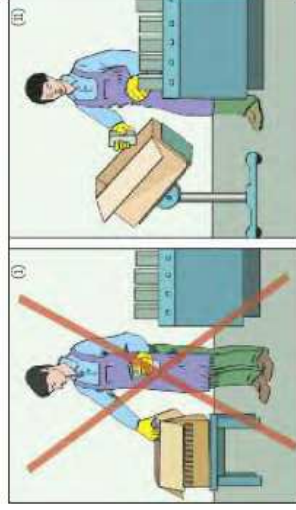


Figure 13b. (i) and (ii) Minimize lifting and lowering movements.



Figure 13c. Push and pull heavy materials instead of raising and lowering them.

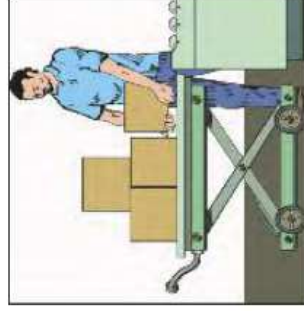


Figure 13d. Move materials along surfaces of the same height.

CHECKPOINT 14

Eliminate tasks that require bending or twisting while handling materials.

WHY

Bending or twisting of the body is an unstable movement. The worker spends more time and becomes more fatigued than when doing a similar amount of work without bending or twisting.

Bending and twisting of the body is one of the major sources of back injuries, and neck and shoulder disorders.

RISKS / SYMPTOMS

- muscular strain
- low back pain
- slips, trips or stumbles
- excessive reach

HOW

1. Change the positions of materials or semi-products so that the handling work is done in front of the worker, without bending the body.
2. Improve the working space for doing handling work so that the worker can adopt stable foot positions without bending or twisting.
3. Use mechanical means to bring the work items to the front of the worker. The worker should be able to remove the work item and replace the finished item without being forced into an awkward posture.
4. Change the working height (e.g. by changing the height of the work table or feeding point) so that the worker can handle the work item without bending the body.

SOME MORE HINTS

- Avoid manual handling and carrying of heavy objects whenever possible. Bending or twisting while dealing with heavy objects is particularly harmful.

- Sometimes standing workers bend their body because they cannot get close enough to the work item owing to a lack of knee or foot clearance. Make sure that workers have enough clearance for their knees and feet.

- Avoid a combination of carrying while performing other tasks at the same time, as this is often the reason why the worker bends or twists the body. Rearrange the work so that the carrying task is the only task performed at that time.

POINTS TO REMEMBER

Back injury resulting from bending or twisting while handling a heavy load can cost you a great deal, as you may lose a productive skilled worker for quite a long period.



Figure 14a. (i) and (ii) Minimize the distance between the worker and the work item.

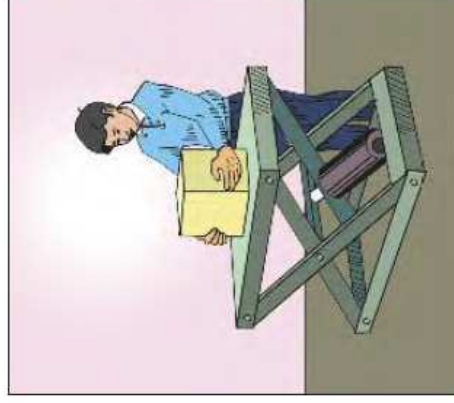


Figure 14b. Adjustable-height 'scissor lift'.

CHECKPOINT 15

Keep objects close to the body when manually handling materials

WHY

Carrying an object close to the body minimizes forward bending movements, thus reducing the risk of back injury, and neck and shoulder disorders.

By holding objects close to the body, carrying is easier and can provide a good forward view. This increases efficiency and reduces accidents.

Bending or twisting of the body is an unstable movement. The worker spends more time and becomes more fatigued than when doing a similar amount of work without bending or twisting.

Bending and twisting of the body is one of the major sources of back injuries, and neck and shoulder disorders.

RISKS / SYMPTOMS

- muscular strain
- low back pain
- product damage
- slips, trips or stumbles

HOW

1. Provide handles, grips or good holding points for the load carried. Approach the load as closely as possible and hold it firmly and near the body. Use secure, stable foot positions.
2. If manual lifting of a heavy load is unavoidable, try to share the load by having two or more people carry it together.
3. When lifting or lowering of a heavy load is involved, do this slowly in front of the body. Use the muscle power of the legs (not the back) and keep the back straight.
4. While carrying, keep the load near the waist. It is often useful to provide adequate aprons, as they minimize the risk of injuries from uneven or sharp parts of the loads.

5. Organize carrying work so that it is done with minimal raising or lowering of the carried objects. For example, carry materials from a work surface to another work surface of the same height, or avoid putting materials on the floor by using stands or platforms of appropriate height.
6. When the load is heavy, consider the possibility of dividing it into smaller weights. If this is not possible, ask two or more people to carry the load, or use transport devices.
7. Change the working height (e.g. by changing the height of the work table or feeding point) so that the worker can handle the work item without bending the body.

SOME MORE HINTS

- While the weight of the load should not be large, using pallets, trays or containers to carry small items can reduce the number of trips. Wherever possible, it is preferable to use pushcarts and other mobile devices.
- Consider physical differences between different workers. Make sure that the weight and the frequency of loads are not excessive for the workers concerned.
- Sometimes standing workers bend their body because they cannot get close enough to the work item owing to a lack of knee or foot clearance. Make sure that workers have enough clearance for their knees and feet.
- The worker may prefer to carry a load on the shoulder, the head or the back depending on size and weight or local custom. Try to find alternative means of carrying, such as using an easy-to-carry container or a rucksack.
- Provide appropriate work clothes if there are frequent carrying tasks.

POINTS TO REMEMBER

When manual carrying of objects is unavoidable, lift and carry the object close to the body. This reduces fatigue and the risk of injury.



Figure 15a. Do manual lifting or lowering of a heavy load in front of the body, with the back kept straight and with stable feet positions, and use the power of the legs.

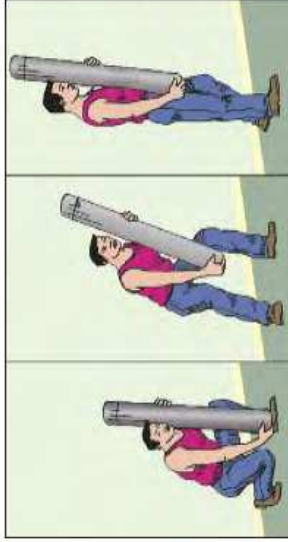


Figure 15b. A long heavy object can be lifted using the power of the legs by keeping the object as close to the body as possible.



Figure 15c. Handling grips adapted to the particular object carried can help.



Figure 15d. Lifting of heavy loads from a platform in front of the body while using the power of the legs. Lifting from a platform is better than lifting from the floor.

CHECKPOINT 16

Combine heavy lifting with physically lighter tasks to avoid injury and fatigue and to increase efficiency.

— Alternating tasks is often far less tiring, and thus improves the worker's motivation and productivity.

POINTS TO REMEMBER

Avoid repeated heavy lifting all the time. Combine heavy lifting with lighter tasks in order to reduce fatigue and increase efficiency.

WHY

Manual lifting of heavy loads is tiring and a major cause of back injuries. If this cannot be replaced by the use of a wheeled device or mechanical transport, it is better to combine the heavy lifting with lighter tasks. The idea is to avoid concentrating unfavourably heavy tasks on a few workers.

Combining heavy lifting with lighter tasks reduces fatigue, as well as the risk of back injuries. This helps increase a worker's overall productivity.

If workers are trained to perform multiple tasks, it is much easier to find a substitute worker in the case of absence of one worker due to illness or leave.

RISKS / SYMPTOMS

- muscular strain
- low back pain
- repetitive strain

HOW

1. Reorganize job assignments so that workers who perform heavy lifting tasks perform lighter tasks as well.
2. Introduce job rotation and group work in order to prevent biased concentration of strenuous tasks on selected workers. This is easily done by forming a multi-member team.
3. For similarly strenuous tasks, consider job assignments so that these strenuous tasks can be shared by a group of people on a rotating basis.

SOME MORE HINTS

— Physically demanding tasks such as heavy lifting always require frequent breaks. Allow sufficient breaks for recovery from fatigue and for better productivity. Requiring frequent breaks as part of the work schedule may give you an impetus to combine the heavy tasks with lighter tasks.



Figure 16. (i) Combine physically heavy work with lighter work. (ii) This reduces fatigue and increases efficiency.

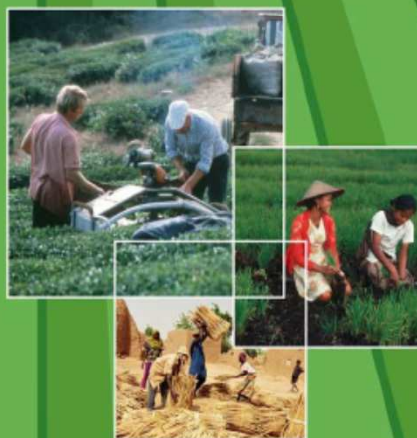
ERGONOMIC CHECKPOINTS IN AGRICULTURE



International
Labour
Office
Geneva



International
Ergonomics
Association



Prepared by the International Labour Office
in collaboration with
the International Ergonomics Association

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CHECKPOINT 7

Instead of carrying heavy weights, divide them into smaller, lightweight sacks and packages.

WHY

Farmers often have to carry various heavy items during their work. This is strenuous, and can often be dangerous. If these heavy items are divided into smaller loads, the carrying work is both easier and safer.

Fatigue from carrying packages is reduced for lightweight packages than for heavy weights. Farmers can thus save energy and do more productive work by using smaller packages.

By using light packages instead of heavy packages, the risk of low-back injuries is also greatly reduced.

HOW

1. Divide heavy loads into lighter packages, containers or trays, considering the maximum weight that is easy for farmers to carry. For example, two packages of 10 kg each are much better than one package of 20 kg.
2. Dividing loads into smaller amounts may mean increased movements and more trips for carrying the same total amount. Therefore make sure that loads are not too small. Use effective means of moving or carrying these smaller loads, such as rollers or carts.
3. The use of push-carts, trolleys or mobile racks can help save time. For manual transport, a cart can usually transport more loads with less effort. Manual loading and unloading is much easier for smaller and lighter loads.

WAYS TO PROMOTE COOPERATION

Try to get everyone to use the same types and sizes of container, basket or tray for carrying materials or farm products. As people get accustomed to using these, it will make the use of carts and hand-trucks easier. Encourage people to exchange good examples.

SOME MORE HINTS

- Make available an adequate number of reusable containers, trays and baskets; these facilitate the transport of loads, and help save money.
- When loads are divided or smaller containers are used, try to use labels so as to make it easy to distinguish the different loads or containers.

POINTS TO REMEMBER

A lighter weight is a safer weight. Divide heavy packages into lighter ones to ensure safety and increase productivity.



Figure 7a. Put farm products in smaller bags with firm handles. Sharing the weight with both arms makes your work more comfortable.



Figure 7b. Using a pannier with firm handgrips, two persons can carry heavier loads.



Figure 7c. It is always better to use smaller packages. Loading and unloading may require more trips, but fatigue will be reduced.



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**.

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;

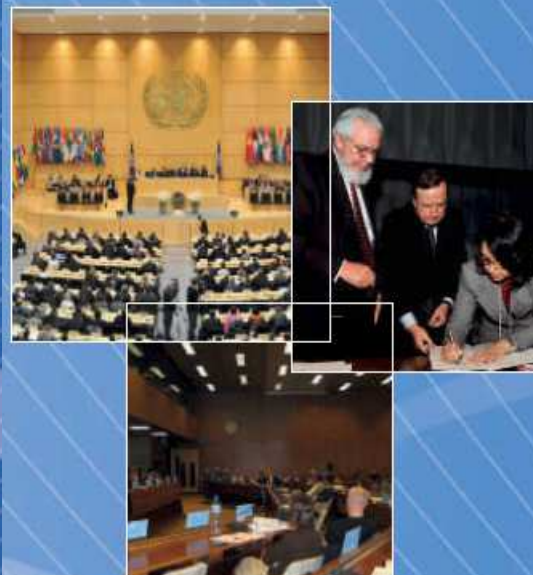
adopts this twentieth day of June of the year two thousand and two the following Recommendation, which may be cited as the List of Occupational Diseases Recommendation, 2002.



International
Labour
Organization

ILO List of Occupational Diseases

(revised 2010)



List of occupational diseases ¹ (revised 2010)

1. **Occupational diseases caused by exposure to agents arising from work activities**
 - 1.1. **Diseases caused by chemical agents**
 - 1.1.1. Diseases caused by beryllium 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 carbon disulfide
 - 1.1.11. Diseases caused by halogen derivatives of aliphatic or aromatic hydrocarbons
 - 1.1.12. Diseases caused by benzene or its homologues
 - 1.1.13. Diseases caused by nitro- and amino-derivatives of benzene or its homologues
 - 1.1.14. Diseases caused by nitroglycerine or other nitric acid esters
 - 1.1.15. Diseases caused by alcohols, glycols or ketones
 - 1.1.16. Diseases caused by asphyxiants like carbon monoxide, hydrogen sulfide, hydrogen cyanide or its derivatives
 - 1.1.17. Diseases caused by acrylonitrile
 - 1.1.18. Diseases caused by oxides of nitrogen
 - 1.1.19. Diseases caused by vanadium or its compounds
 - 1.1.20. Diseases caused by antimony or its compounds
 - 1.1.21. Diseases caused by hexane
 - 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 thallium or its compounds
 - 1.1.26. Diseases caused by osmium or its compounds
 - 1.1.27. Diseases caused by selenium or its compounds
 - 1.1.28. Diseases caused by copper or its compounds
 - 1.1.29. Diseases caused by platinum or its compounds
 - 1.1.30. Diseases caused by tin or its compounds
 - 1.1.31. Diseases caused by zinc or its compounds
 - 1.1.32. Diseases caused by phosgene
 - 1.1.33. Diseases caused by corneal irritants like benzoinone
 - 1.1.34. Diseases caused by ammonia
 - 1.1.35. Diseases caused by isocyanates
 - 1.1.36. Diseases caused by pesticides

¹ In the application of this list the degree and type of exposure and the work or occupation involving a particular risk of exposure should be taken into account when appropriate.

- 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 disease(s) contracted by the worker

Diseases caused by physical agents

- 1.2. Hearing impairment caused by noise
- 1.2.1. Diseases caused by vibration (disorders of muscles, tendons, bones, joints, peripheral blood vessels or peripheral nerves)
- 1.2.2. Diseases caused by compressed or decompressed air
- 1.2.3. Diseases caused by ionizing radiations
- 1.2.4. Diseases caused by optical (ultraviolet, visible light, infrared) radiations including laser
- 1.2.5. Diseases caused by exposure to extreme temperatures
- 1.2.6. 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 disease(s) contracted by the worker

Biological agents and infectious or parasitic diseases

- 1.3. Brucellosis
- 1.3.1. Hepatitis viruses
- 1.3.2. Human immunodeficiency virus (HIV)
- 1.3.3. Tetanus
- 1.3.4. Tuberculosis
- 1.3.5. Toxic or inflammatory syndromes associated with bacterial or fungal contaminants
- 1.3.6. Anthrax
- 1.3.7. Leptospirosis
- 1.3.8. 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 disease(s) contracted by the worker
- 1.3.9.

2. Occupational diseases by target organ systems

Respiratory diseases

- 2.1. Pneumoconioses caused by fibrogenic mineral dust (silicosis, anthraco-silicosis, asbestosis)
- 2.1.1. Silicotuberculosis
- 2.1.2. Pneumoconioses caused by non-fibrogenic mineral dust
- 2.1.3. Siderosis
- 2.1.4. Bronchopulmonary diseases caused by hard-metal dust
- 2.1.5. Bronchopulmonary diseases caused by dust of cotton (byssinosis), flax, hemp, sisal or sugar cane (bagassosis)
- 2.1.6.

- 2.1.7. Asthma caused by recognized sensitizing agents or irritants inherent to the work process
2.1.8. Etrinsic allergic alveolitis caused by the inhalation of organic dusts or microbially

3.
3.1. Occupational cancer
Cancer caused by the following agents

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

practice, between the exposure to risk factors arising from work activities and the musculoskeletal disorder(s) contracted by the worker

2.4. Mental and behavioural disorders

- 2.4.1. Post-traumatic stress disorder
- 2.4.2. Other mental or behavioural disorders not mentioned in the preceding item 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



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



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;



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





Occupational Safety and Health

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- International Chemical Safety Cards
- OSH Series (e.g. List of occupational diseases (revised 2010), Radiation protection of workers)
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- ▶ International Hazard Datasheets on Occupations (HDO) - [pdf 4831KB]
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Occupational Safety and Health (OSH)

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Global Database on Occupational Safety and Health Legislation

The ILO Global Database on Occupational Safety and Health Legislation (LEGOSH) provides a picture of the regulatory framework of the main elements of OSH legislation, including OSH management and administration, employers' duties and obligations, workers' rights and duties, OSH inspection and enforcement, among others. LEGOSH classification structure is based on a comprehensive set of 11 themes which follows and captures the main part of the key ILO standards such as the ILO Convention No. 155 on Occupational Safety and Health (1981) and the Recommendation N°164, Convention No. 187 on the Promotional framework for occupational safety and health (2006), the Labour Inspection Convention C081 and other technical Conventions as benchmarks.

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2. Conduct customized research on a specific country;
3. Compare the legislation of several countries or regions on a particular subject;
4. Perform searches by text;
5. Link to national and regional OSH institutions websites, OSH databases and other relevant sources of OSH legislation, policies and information;
6. Relate to the relevant comments of the ILO Committee of Experts on the Application of Conventions and Recommendations (CEACR);

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Thank you!

Dr. Shengli Niu

Senior Specialist on Occupational Health

LABADMIN/OSH

International Labour Office

niu@ilo.org

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