

# Manual Handling

– Regulation practices in Denmark and comparable countries



**The Danish Working  
Environment  
Authority 2008**



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## Annex Report

# Chapter 1. Introduction

## Background

In December 2005, the Danish government published a report on new priorities for the working environment until 2010. In the report, the government, at the unanimous recommendation of the social partners, identified four priority working-environment problems:

- Industrial accidents
- Psychological working environment
- Noise
- Musculoskeletal disorders

For the first three of these problems, reduction targets were set at the same time. As regards the last problem, musculoskeletal disorders, it was agreed that further prioritisation of risk factors and setting of reduction targets was to take place by 1 April 2007 on the basis of new recommendations from the social partners. However, the social partners could not reach agreement on a common recommendation, and therefore the process was delayed. In 2007, the government set reduction targets and specific priorities for the efforts.

The target set was a 10 per cent reduction in total absence due to musculoskeletal strain at work. The specific priorities rest on two legs. Firstly, the existing efforts to address musculoskeletal risk factors will continue. Secondly, new approaches are required. A new paradigm is therefore introduced, focusing on preventing absence due to illness and early retirement on account of musculoskeletal disorders, irrespective of whether the disorders were caused by work or by other factors.

As part of the prioritisation process, various analyses have been initiated. One of them looks into preventive practices in relation to musculoskeletal disorders in comparable countries.

## The task

The task is defined in more detail in the background paper to the government's prioritisation:

*“The Danish Working Environment Authority shall map preventive practices in comparable countries. Specifically, this shall be done by writing to equivalent authorities in the Nordic, Northern European and North American countries. Information shall be procured on formal regulation of the area by the authorities, as well as other preventive practices, including involvement of the social partners. The mapping shall be published in a report.”*

Against this background, the Danish Working Environment Authority in December 2007 sent an enquiry to the equivalent authorities in a number of countries (for further details, see Chapter 2). The enquiry contained a letter and an appendix with a number of questions concerning that country's regulatory practice in terms of manual handling of loads and other topics of relevance in connection with regulatory practices (Annex 33).

In addition to compiling a summary of regulatory practices in different countries, the Danish Working Environment Authority has decided to perform a comparative review of the various regulatory practices in relation to those of Denmark. To supplement the responses from the countries in question, knowledge of international and European standards has been included, as well as experience from the Senior Labour Inspectors Committee (SLIC) campaign in 2007 (for further details, see Chapter 3). The aim has been to give as detailed a picture as possible of how Denmark

compares with others in terms of national and international strategies and regulatory practices in relation to manual handling of loads.

## Chapter 2. Method

Data for this report is primarily sourced from a questionnaire survey performed by the Danish Working Environment Authority. In total, 32 countries were contacted by letter to their respective working environment authorities; whenever possible, the national OSH (operational safety and health) research unit was also approached. The letter included an introduction and a brief questionnaire with eight sets of questions, both of which had been translated into English by a translation agency (see Annex 34).

As it was sought to include all comparable countries in the report, a very wide range of countries was selected. This means that letters were sent to all EU member states, as well as Iceland, Norway, the USA, Canada and Australia.

### Countries approached

<input checked="" type="checkbox"/> Australia	<input checked="" type="checkbox"/> Malta
<input checked="" type="checkbox"/> Belgium	<input checked="" type="checkbox"/> Netherlands
<input checked="" type="checkbox"/> Bulgaria	<input checked="" type="checkbox"/> Norway
<input checked="" type="checkbox"/> Canada	<input checked="" type="checkbox"/> Poland
<input checked="" type="checkbox"/> Cyprus	<input checked="" type="checkbox"/> Portugal
<input checked="" type="checkbox"/> Denmark	<input checked="" type="checkbox"/> Romania
<input checked="" type="checkbox"/> Estonia	<input checked="" type="checkbox"/> Slovakia
<input checked="" type="checkbox"/> Finland	<input checked="" type="checkbox"/> Slovenia
<input checked="" type="checkbox"/> France	<input checked="" type="checkbox"/> Spain
<input checked="" type="checkbox"/> Greece	<input checked="" type="checkbox"/> UK
<input checked="" type="checkbox"/> Ireland	<input checked="" type="checkbox"/> Sweden
<input checked="" type="checkbox"/> Iceland	<input checked="" type="checkbox"/> Czech Republic
<input checked="" type="checkbox"/> Italy	<input checked="" type="checkbox"/> Germany
<input checked="" type="checkbox"/> Latvia	<input checked="" type="checkbox"/> Hungary
<input checked="" type="checkbox"/> Lithuania	<input checked="" type="checkbox"/> USA
<input checked="" type="checkbox"/> Luxembourg	<input checked="" type="checkbox"/> Austria

= have responded

Responses have been received from 30 countries, equivalent to a response rate of approx. 94%. The high response rate ensures a sound and broad-based foundation for comparing Danish regulatory practices in relation to manual handling with those of other countries.

From some countries, two sets of responses have been received. The reason is that, whenever possible, the enquiry was sent to both the working environment authority and the national OSH research unit, as stated above. To keep things simple, this is not stated in the overview of responses, but the responses have been coordinated in connection with the preparation of the report.

The responses from the various countries are compiled in an Annex Report (Annexes 1-30). The responses have not been translated.

### **Methodological considerations**

In connection with any written questionnaire survey there is a risk that the respondents understand the questions differently, which can reduce comparability of results. This risk has been addressed in several ways. Firstly, all countries received the same questionnaire in the same language, English. Secondly, the letter included the names of contacts at the Danish Working Environment Authority who could help to clarify questions or resolve doubts. Finally, the questions related to an issue that can be presumed to be within the respondents' area of expertise, which increases the probability of uniform understanding of the questions. After having reviewed the responses, the Danish Working Environment Authority is of the opinion that they are sufficiently uniform to enable comparison. The Danish questionnaire was completed by ergonomics experts from the Danish Working Environment Authority.

The review of the responses to the questionnaires has drawn on the expertise of this Office in relation to manual handling, as well as European and international standards and the SLIC campaign 2007. This has ensured a broad perspective.

Finally, the report was sent to the National Research Centre for the Working Environment for consultation.

### **Reading guidelines**

The questions in the survey were grouped under a number of headings. These headings have been maintained as chapter headings:

- Chapter 3. Rules, regulations and background documentation
- Chapter 4. Political and other players and prioritisation
- Chapter 5. The supervisory authority and supervision
- Chapter 6. Reactions
- Chapter 7. Involvement of others
- Chapter 8. Appeals and possible sanctions
- Chapter 9. Trends
- Chapter 10. Summary

Each chapter starts with the underlying questions, followed by a brief summary of the main tendencies in the responses received. For details of the responses submitted by each country, see Annexes 1-30. The Annexes also include links to websites containing in-depth information. The Danish evaluation model is included as Annex 31.

For the purpose of this report, manual handling is defined as in Directive 90/269/EEC on minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers. Under the Directive, manual handling of loads shall be taken to mean any transporting or supporting of a load, by one or more workers, including lifting, putting down, pushing, pulling, carrying or moving of a load, which, by reason of its characteristics or of unfavourable ergonomic conditions, involves a risk particularly of back injury to workers.

## Chapter 3. Rules, regulations and background documentation

**Have you rules, guidelines, standards, instructions and/or maximum weight limits for heavy lifting (manual handling)? If these are described on a website, please insert a link to the relevant URL. What background documentation, directives, etc., were used in preparing your rules and guidelines for heavy lifting (manual handling)?**

All 30 countries stated that they do have national OSH legislation, and that it comprises manual handling, among other things. Likewise, all countries have guidelines for assessment of health risks in relation to manual handling. These include descriptions of the risk factors to be taken into account. Most guidelines are only indicative, but in some countries – such as Sweden, Norway, France, Spain, Austria and Canada – they have been incorporated into legislation.

All European countries state that they have based their special rules and/or legislation on Directive 90/269/EEC on minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers. Under the Directive, the employer shall take appropriate organisational measures, or shall use the appropriate means, in particular mechanical equipment, in order to avoid the need for the manual handling of loads by workers.

Where this is not possible, the employer shall take the appropriate organisational or other measures in order to reduce the risk involved in the manual handling of such loads. Annex 1 of the Directive lists the risk factors that are especially to be taken into account. These factors are divided into four groups:

1. Characteristics of the load
  - e.g. whether it is too heavy or too large; unwieldy or difficult to grasp; unstable or has contents likely to shift; positioned in a manner requiring it to be held or manipulated at a distance from the trunk, or with a bending or twisting of the trunk; likely, because of its contours and/or consistency, to result in injury to workers, particularly in the event of a collision.
2. Physical effort required
  - e.g. too strenuous; only achieved by a twisting movement of the trunk; likely to result in a sudden movement of the load; made with the body in an unstable posture.
3. Characteristics of the working environment
  - e.g. there is not enough room, in particular vertically, to carry out the activity; the floor is uneven, thus presenting tripping hazards, or is slippery in relation to the worker's footwear; the place of work or the working environment prevents the handling of loads at a safe height or with good posture by the worker; there are variations in the level of the floor or the working surface, requiring the load to be manipulated on different levels; the floor or foot rest is unstable; the temperature, humidity or ventilation is unsuitable.
4. Requirements of the activity
  - e.g. over-frequent or over-prolonged physical effort involving in particular the spine; an insufficient bodily rest or recovery period; excessive lifting, lowering or carrying distances; an externally controlled rate of work.

The Directive also lists three types of individual risk factors to be taken into account:

- Is the worker physically unsuited to carry out the task in question?

- Is the worker wearing unsuitable clothing, footwear or other personal effects?
- Does the worker lack adequate or appropriate knowledge or training?

Australia operates not only with national OSH legislation, but also a *National Code of Practice: Manual Handling*. The latter provides guidance on how enterprises can comply with statutory requirements. Moreover, in 2007 a National Standard was issued for manual handling, as well as a *National Code of Practice for Prevention of Musculoskeletal Disorders from Performing Manual Tasks at Work*. The *Code of Practice: Manual Handling* does not state specific weight limits, but both weight and the other factors described in the EEC Directive are included into the Australian publication. As regards weight, it is stated that the number of able-bodied adults who can safely perform heavy lifts falls as the load increases. In connection with risk assessment, the inspector must specifically assess the combination of weight and other aspects, as well as individual physical factors.

The USA has no specific rules on manual handling; the area is governed by general OSH legislation. The Occupational Safety and Health Administration (OSHA) has issued four ergonomic guidelines, comprising topics such as lifting heavy loads and moving people. These are guidelines only, and the status of the content is 'information'. The OSHA recommends that enterprises and other OSH players use the *Revised Lifting Equation*, prepared by the National Institute for Occupational Safety and Health (NIOSH). The NIOSH model has been prepared on the basis of a thorough review and documentation based on epidemiological, biomechanical, physiological and psychophysical surveys. The scope of this guideline is limited, in that it relates only to two-handed lifting of easy-to-grasp loads, etc. Consequently, the NIOSH has prepared a supplement to be used for assessing other types of loads. The background material for the NIOSH guide estimates that it covers 99% of male and 75% of female workers.

It is worth noting that practically all international guidelines mentioned in this report are based on the NIOSH model. This applies to e.g. the standards from the European Committee For Standardization (CEN) and the International Organization for Standardization (ISO), as well as the Manual Handling Assessment Charts (MAC) model, which can all be seen as further development of the NIOSH model. The same is true of the Danish and the other Nordic models for assessing manual handling.

### **Elaboration on weight limits**

National weight limits vary considerably, as do the rules on other risk factors to be included quantitatively and qualitatively in the risk assessment of heavy lifting. At the same time, there is a widespread, and increasing, tendency to apply international guidelines in connection with the risk assessment of heavy lifting. For example, many countries – including Finland, France, Latvia, the Czech Republic and Austria – refer to CEN and ISO standards as part of the background to national administrative practices. Particularly the CEN standards from the European Norm (EN) 1005 series, including 1005-2 *Safety of machinery – Human physical performance Part 2: Manual handling of machinery and component parts of machinery*, and ISO standard 11228 Part 1:2003 *Ergonomics – Manual handling – Part 1: Lifting and carrying*. France has previously applied a national standard X 35-109 from April 1989, Acceptable limits for manual handling of loads by one person, as a guideline. This is changing, so that reference is now made to the CEN standard (for further information about the CEN standards, see Annex 32).

According to the NIOSH model, the maximum weight that may be lifted is 23 kg, assuming that conditions are optimum. Likewise, the general maximum weight limit for adult workers in CEN standard 1005-2 and ISO standard 11228 is 25 kg. The Australian guideline states that there is a risk of back injury when handling loads exceeding 16 kg. When sitting down, the limit is set at 4.5 kg. In Denmark, the weight limit varies, depending on the proximity of the lift to the body. The maximum weight limit is thus 50 kg for lifts close to the body. Most lifts, however, take place at underarm's length or  $\frac{3}{4}$  arm's length. The maximum weight limit for underarm's length is 30 kg, provided that conditions are optimum.

Many countries and most international models differentiate weight limits depending on individual factors, primarily gender and age. For example Bulgaria, Poland and Slovenia have weight limits of 50-55 kg for men, while the limits vary a little more for women, between 15 and 30 kg for the age group 19-45 years under certain conditions. For younger and older workers, the weight limits are lower, as is also the case in most other countries. In Denmark, this is only the case for workers below the age of 18, and no gender distinction is made.

Some countries and assessment models apply higher weight limits for groups of workers in particularly good physical shape. This is seen in e.g. CEN standard 1005-2 and ISO standard 11228-1, under which specialist worker groups may lift up to 30-40 kg. Likewise, the Spanish assessment model, *Technical Guide for the Evaluation and Prevention of risks associated with Manual Load Handling*, describes that physically well-trained groups may lift up to 40 kg under safe conditions. The Australian *National Code of Practice: Manual Handling* emphasises that up to 55 kg may be lifted if this is within the physical capability of the worker, and that no-one should lift more than 55 kg.

Finally, it should be mentioned that in a few countries, mainly the new European countries, risk assessment of manual handling is primarily based on weight limits. Most countries, including the old European countries and the USA, apply assessment models that also include requirements for quantitative or qualitative reduction in relation to ergonomic risk factors such as repeated lifts (frequency), carrying the load (duration, distance), total weight, reach, work postures, lifting method and height, etc. For example, the NIOSH model includes six quantitative assessment factors beyond weight.

### **SLIC 2007**

Last year, practically all EU member states took part in the SLIC campaign 2007. The objectives of the campaign were:

1. to enhance compliance with Directive 90/269/EEC on manual handling of loads in order to reduce musculoskeletal problems;
2. to improve inspection and communication methods among national environment authorities by comparing existing methods;
3. to achieve greater uniformity in the exercise of authority in relation to manual handling throughout the EU.

The campaign focused on two sectors: transport and healthcare. Key persons from the participating member states were brought together and taught to use the two methods selected for assessment of manual handling, namely Key Item Method (KIM) and Manual Handling Assessment Charts (MAC). Subsequently, the key persons were to teach their local inspectors how to use one of these

methods. It was up to the member states themselves to decide which method to use during the campaign. As a result, considerable awareness of the two assessment methods has been achieved in Europe. In most member states, the methods were used to supplement existing guidelines. In Greece, this was the first time that quantitative guidelines for assessment of manual handling were used in connection with supervision. (See Annex 32.) The KIM and MAC models include many of the same risk factors as Directive 90/269/EEC and the Danish assessment model for risk in connection with manual handling. A common feature of the three assessment models is that weight and reach are important to the overall risk assessment. In the Danish model, only reach and weight are applied quantitatively, while the remaining risk factors (referred to as aggravating factors) are assessed qualitatively by the inspector on a case-by-case basis. In the MAC and KIM models, practically all risk factors are quantitative. This means that the risk assessment of an inspector is based on points given in relation to certain criteria, resulting in an overall score. The KIM model is more detailed in relation to individual factors, e.g. including gender, age, experience and physical capability. The Danish assessment model and the MAC model both take into account lifts by several persons jointly as well as individual lifts; this is not the case with the KIM model, which only addresses lifts performed by one person.

## Chapter 4. Political and other players and prioritisation

**Do you involve employers' and employees' organisations in the regulation and setting of practice in connection with heavy lifting, and if so, in what areas (e.g., when drafting laws and guidelines)? Do the employers' and employees' organisations undertake their own independent campaigns and activities?**

Practically all responding countries – except the Czech Republic and Estonia – state that employer and employee organisations are involved or consulted in the drafting of rules and preparation of official guidelines. In a minority of countries, the social partners themselves initiate and implement activities to prevent injury and disorders related to manual handling.

Since 2002, the USA has applied a method whereby the public, particularly the social partners, are involved in the drafting of guidelines. The OSHA announces the start of the preparation of a guideline and potential stakeholders are encouraged to submit written comments within 60 days. The OSHA offers to arrange a meeting within 30 days if this is of interest.

**Are enterprises, the general public and others informed about the rules and practice in connection with heavy lifting (manual handling), and if so, by whom? Is it your impression that, in general, there is knowledge in enterprises of current rules, instructions and practice?**

Nearly all of the countries have launched various activities to inform enterprises and the general public of applicable OSH rules and administrative practices. Many also have focus on good practices, e.g. by highlighting specific examples of good workplace solutions.

All countries have websites where OSH legislation, guidelines/brochures and other material is freely accessible. Often, the national working environment authorities arrange courses, seminars, workshops and other activities to increase awareness of legislation and guidelines. In a number of countries, the media (TV, radio and newspapers) are also used to disseminate information about the working environment. The countries participating in the SLIC campaigns also use the campaign materials – information materials, press releases, etc. – to inform the public about the initiatives. All working environment authorities provide information on rules and practices in connection with supervision and visits to enterprises. In addition, many countries have a research or consultancy body in the area, which informs enterprises and other relevant players and arranges courses, seminars, conferences, etc. Finally, it is not unusual for the social partners to initiate various forms of national information activities.

Only few countries have considered how many people are actually aware of legislation and information material. In Sweden, a survey showed that enterprises are familiar with the materials but that awareness is lower among the individual employees.

**Have musculoskeletal disorders and/or heavy lifting (manual handling) been designated as priority health and safety issues?**

Musculoskeletal disorders are a priority area in all countries except Slovenia, which continues to focus mainly on preventing accidents. The primary reason stated for prioritising musculoskeletal disorders is that such disorders result in a very large number of illnesses that reduce workers' fitness for work. This has high costs for employees, enterprises and society in general. Secondly, many countries state that they are following up EU campaigns launched by the European Agency for Safety and Health at Work.

In 2007, the Agency, in cooperation with local Focal Points, conducted a campaign aimed at reducing musculoskeletal disorders in the EU. The campaign was part of the annual European Week for Safety and Health at Work. The 2007 slogan was 'lighten the load'.

In 2007, nearly all countries also conducted activities in connection with the European SLIC campaign (for further details, see Chapter 3). The SLIC campaign continues in 2008, with focus on building and construction and retail trade. The KIM and MAC models are also used in connection with SLIC 2008.

## Chapter 5. The supervisory authority and supervision

**The organisation of the supervisory authority in the musculoskeletal area – how many inspectors work in this area? How many have the qualifications/training to assess lifting and manual handling at workplaces? Is there any systematic training of inspectors in assessing and reacting to lifting and manual handling?**

All countries have inspectors who can assess manual handling. In most cases, the inspectors are generalists, as a minimum capable of performing general assessments. This is part of the general supervision, which is based on the safety activities and workplace assessments of the individual enterprise. In connection with complex assessments of manual handling, where multiple factors must be taken in account, the task is often undertaken or supervised by a limited number of inspectors who have received special training or have special competencies. In a few countries, such as Malta, Slovakia and Slovenia, assessments of manual handling are primarily undertaken by specific inspectors with the relevant training/background. Thanks to the SLIC campaign 2007, a substantially higher number of European inspectors have been trained in assessment of manual handling using the KIM and MAC models.

The Czech Republic operates with two kinds of manual handling inspectors, from the working environment authority and Public Health Protection, respectively.

Most countries have systematic training programmes for new inspectors, as well as ad-hoc courses as required. In a few countries, e.g. Latvia and Greece, it is possible to supplement this training with university-level courses that include topics such as assessment of manual handling using various methods.

**When are inspections carried out? For example, systematically in connection with campaigns, or after complaints?**

Most countries carry out inspections in accordance with an overall plan, often a strategy for one or more years and/or prioritisation of specific issues or industries. In addition, inspections are carried out in connection with campaigns initiated by e.g. the EU, OSHA or SLIC.

In practically all countries, inspectors visit enterprises in response to complaints and reported accidents and work-related illnesses.

## Chapter 6. Reactions

**Are reactions issued concerning lifting, and what forms do such reactions take? For example, improvement notices, prohibition notices, guidance notes, etc.? How many reactions/improvement notices concerning heavy lifting are issued?**

In all countries, the supervisory authorities require that enterprises observe legislation. The reaction to non-observance varies somewhat. In addition to guidance notes, improvement notices and prohibition notices, authorities also operate with warnings, information and fines. In some countries, such as Slovakia and Finland, guidance notes and warnings are initially given; improvement notices and fines are given in connection with repeated violations or non-compliance. In Canada, the employer signs a commitment to resolve the OSH problems, and direct improvement notices are only issued if there is deemed to be an imminent risk for employees. Very few countries have stated the number of reactions, and consequently this has not been included in the review. SLIC campaign end-reporting to the Dutch project holders shows that supervisory inspections were carried out in all of the countries and that many reactions were issued by way of improvement notices, guidance notes or warnings and, in a few cases, prohibition notices.

**When a reaction is issued or problems are found in connection with heavy lifting at an enterprise, do you supply information on how the problem can be solved, and if so, what methods are acceptable? For example, use of equipment, different organisation of the work, instruction of employees, etc.?**

It is customary for the inspector to advise or guide the enterprise on measures to observe legislation. In most cases, the enterprise is responsible for identifying and resolving the problem. This means that the inspector may provide information about how a similar problem has been resolved elsewhere or point to a possible technical or organisational solution, but it is up to the enterprise itself to choose the solution, always provided that legislative requirements are observed.

## Chapter 7. Involvement of others

**Are enterprises obliged, or can they be obliged, to use a consultant to help find a solution to health and safety problems? Have you external consultants or something similar?**

Most countries respond that it is the responsibility of the enterprises to resolve the problems and that they are free to use external consultants as required. A model like the Danish one, which involves mandatory use of authorised consultants in connection with certain improvement notices,

is seen in only a few other countries, e.g. Iceland and Malta. In Sweden, a consultant must be used if the enterprise does not have the necessary competencies to resolve the problem.

In a number of countries, e.g. Hungary, Austria, Slovenia, Finland, Poland and Romania, it is a requirement that enterprises employ or attach OSH professionals or others who can perform risk assessments. In some countries, such as Hungary, Slovakia and Greece, this requirement depends on the size of the enterprise. For example, in Hungary it is mandatory for enterprises above a certain size to have employees with OSH competencies and for small enterprises to have an OSH consultant attached. In Greece, enterprises with more than one employee must have a safety technician employed, and if there are more than 50 employees, an occupational health physician must be attached. Norway states that certain industries are subject to an arrangement that corresponds to the former obligation to establish an occupational health service unit in Denmark.

**Are there any requirements concerning employee involvement (participatory ergonomics), and when?**

Most of the countries state that OSH legislation includes a general requirement to consult/involve employees in OSH activities. In many cases, it is a requirement that employees are involved in various workplace assessments. Moreover, employees must be informed and instructed in connection with the start-up and performance of manual handling.

## Chapter 8. Appeals and possible sanctions

**How do enterprises respond to improvement notices/reactions? Can they complain to an appeal body? What weight is attached to a decision on an appeal? Who is represented in the appeal body?**

Not all countries provide exhaustive responses to these questions; some merely state that it is possible to complain, without indicating who is represented in the appeal body. Many countries say that enterprises are generally positive to reactions and make the necessary changes.

Enterprises are able to complain about/appeal a reaction in all countries. In many countries, the first appeal body is a higher administrative level within the national working environment authority. A decision by this body can usually be appealed to a higher level (ministry or government) or to an external body, usually an administrative court. Only a small number of countries, e.g. Canada, the USA and Austria, state that the first-level appeal body is an independent body, like the Danish Working Environment Appeals Board. In Sweden, appeals may be made to the government.

**If improvement notices/reactions are ignored, or compliance is incomplete, what form of follow-up is undertaken?**

Most working environment authorities follow up improvement notices by way of control visits. The most frequent response to non-compliance with improvement notices is to impose sanctions, in most cases fines. In a few countries, including Romania, Norway, Latvia and Denmark, a prison sentence is also an option. In Romania it is also possible to recommend that an enterprise is stripped of its license to operate in the event of repeated non-compliance.

## Chapter 9. Trends

**Is there a rising or falling trend in instances of:**

- **heavy lifting at enterprises?**
- **injuries and illnesses related to heavy lifting?**
- **absence due to injury or illness related to lifting work?**

The way the individual countries compile their data varies, as does the information content of the data. Moreover, some countries state that they lack data for injuries reported, work-related illnesses and/or absence due to lifting-related illness.

Many countries say that they have seen a positive trend, with increasing use of mechanical equipment for heavy manual handling. Nevertheless, the responses do not show a clear downward trend in the number of injuries and illnesses in connection with manual handling. Some countries even report a rising trend.

Overall, it should be noted that musculoskeletal disorders constitute a serious and increasing problem in Europe. This is seen from data in the reports *Work-related musculoskeletal disorders: Back to work report* and *Work-related musculoskeletal disorders: Prevention report*, issued by the European Agency for Safety and Health at Work in 2007 and 2008, respectively.

## Chapter 10. Summary

### Legislation and assessment of manual handling

All responding countries have legislation in place that enables the supervisory authority to react to manual handling that is assessed to constitute an OSH risk. The USA is the only country that does not have specific legislation on manual handling. The European countries, including Denmark, have all implemented Directive 90/269/EEC on manual handling in their national legislation. This also applies to countries that are not EU member states. The Australian *National Code of Practice: Manual Handling* is in many respects similar to European legislation.

All countries have guidelines for risk assessment of manual handling. Such guidelines may be integrated into legislation. Most of the guidelines outline administrative practices, provide information, or refer to national/international standards or models for assessment of manual handling, such as the MAC and KIM models that are used in the SLIC campaigns. Many assessment models, including the Danish one, are based on NIOSH mapping in the 1980s and 1990s and are further developments of the NIOSH assessment model.

The guidelines often combine weight limits and other risk factors, including frequency, reach, transport distance, weight, duration of lift and individual factors such as gender and age. Some countries focus more on weight limits and less on combinations of factors. This is the case in some of the new EU member states, while the old member states and the USA tend to focus more on risk factors and combinations thereof.

Risk assessments of manual handling generally take into account the worker's gender and age. In Denmark, age is only considered in connection with young people under the age of 18, for whom lower weight limits apply. In many other countries, special attention is also paid to older workers. Some countries and assessment models apply higher weight limits for groups of workers in particularly good physical shape. This is seen in e.g. CEN standard 1005-2 and ISO standard 11228-1, under which the general weight limit of 25 kg is raised to 30-40 kg for specialist worker groups. It differs from country to country whether the risk factors are applied qualitatively to a subjective assessment of a lifting situation or quantitatively as numbers to be inserted into calculation models, resulting in a 'yes' or 'no' to whether a given lifting situation is acceptable. In the Danish assessment model, weight and reach are the only quantitative measures. The remaining risk factors are qualitative and are assessed by the inspector on a case-by-case basis.

As several factors are often included in a country's risk assessment of manual handling, it can be difficult to make general comments on the individual weight limits. The overall impression is that the weight limits in the Danish assessment model are slightly above the average level. This assessment is based on the weight limit of 30 kg for underarm's length, while the maximum weight in the NIOSH model is 23 kg and the general weight limit in CEN standard 1005-2 and ISO standard 11228 is 25 kg. In the Danish assessment model, many of the risk factors included are qualitative, and individual factors are almost non-existent. Apart from that, the risk factors applied in the Danish model are also found in many of the other national and international assessment models. The reason is that the risk factors are listed in Directive 90/269/EEC.

### Prioritisation of musculoskeletal disorders

Like Denmark, most of the other countries have musculoskeletal disorders, or certain aspects thereof, as a priority area. A number of countries have given priority to musculoskeletal disorders

e.g. because this is a priority area for the EU and the European Agency for Safety and Health at Work. This allows them to join European campaigns and benefit from e.g. shared background and training material, press releases, etc. Another significant reason is that musculoskeletal disorders are an extensive and increasing problem, with considerable consequences for society.

### **The supervisory system**

All responding countries state that they have inspectors who can perform assessments of manual handling. Some of the countries primarily have generalists, and perhaps a few experts to deal with more complex issues. Other countries have specifically trained inspectors to handle ergonomic issues and assessments. In general, new inspectors are trained to assess manual handling. In many cases, supplementary courses are offered, as well as various types of further training in which manual handling is included as a topic. In all EU member states that have participated in the SLIC campaigns a number of inspectors have received (further) training in assessment of manual handling using either the KIM or the MAC model (for further details, see Chapter 3). In Denmark, new inspectors are trained in assessment of manual handling as part of their basic training. In addition, competencies are developed via on-the-job training, course and theme days for experienced inspectors. Finally, representatives of the inspectors and of the Working Environment Authority's Working Environment Advisory Centre participate in relevant national and international conferences.

Most countries carry out supervision on the same basis as Denmark, i.e. general or preventive inspections, inspections in connection with special efforts and campaigns, and inspections following complaints and serious accidents. The possible reactions by the inspectors to OSH issues within an enterprise are also similar; in most cases they comprise guidance notes, improvement notices or prohibition notices, but also warnings and more general information. In Denmark, the most frequently used reaction is an improvement notice, but this varies from country to country. In 2007, the Danish Working Environment Authority issued 1981 reactions related to manual handling. Very few countries have stated the number of reactions, and consequently this has not been included in the review.

### **Consultancy and employee involvement**

In most countries it is voluntary for enterprises to use consultants, provided that they possess the necessary competencies to resolve OSH issues in-house. Many countries emphasise that the use of a consultant does not release the employer from the obligation to resolve the problems; this is also the case for Denmark. Only few countries have made it mandatory for enterprises to attach OSH consultants, either for enterprises above a certain size or within specific industries. According to our information, Denmark, Iceland and Malta are the only countries where use of an authorised consultant to comply with improvement notices in certain areas can be made mandatory.

In all countries, it is a general requirement of OSH legislation that employees must be consulted and/or involved in OSH activities.

### **Complaints and non-compliance**

In all countries, enterprises may appeal an improvement notice; in most cases there are several levels of appeal. In a number of countries the first appeal body is the administrative layer of the national working environment authority, while the second appeal body is a court of some kind. A few countries have appeal bodies corresponding to the Danish Working Environment Appeals Board. The latter comprises representatives of employer and employee organisations and may also have external experts attached (but without voting rights).

If enterprises do not comply with the reaction of the national working environment authority and observe OSH legislation, all countries state that sanctions are possible. In most cases these would be fines, but in a few countries prison sentences are also an option. This corresponds to the situation in Denmark.

### **Trends**

In general, the countries experience that enterprises are becoming better at using mechanical equipment instead of manual handling. This is also the case in Denmark.

Lack of data and diverging developments in the various countries make it difficult to point to specific trends in the number of reported injuries, work-related illnesses and/or absence due to lifting-related illness. Nor is it possible to relate trends to e.g. choice of risk-assessment model for manual handling.

For Europe, there is a general upward trend in the number of workers with musculoskeletal disorders.