

# Manufacturing Sector Work Plan 2018-19: Musculoskeletal Disorders in Food Manufacturing

**Open Government status:** Open

**Audience:** FOD Inspectors, Specialist Ergonomists, Occupational Health Inspectors

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## **1. *Inspection programme***

### **1.1 What are we inspecting and why**

The purpose of this inspection programme to all sectors within food manufacturing is to focus on and reduce significant health risks from musculoskeletal disorders (MSDs) caused by manual handling (MH) and repetitive tasks, by ensuring the appropriate controls are in place. MH refers to the transporting or supporting of a load (including the lifting, putting down, pushing, pulling, carrying or moving) by hand or by bodily force.

### **1.2 *What is the extent of the problem***

MSDs are the primary cause of ill-health in all manufacturing sectors comprising 48% of all ill health cases, totalling approximately 1 million working days lost in 2014/15. In food manufacturing, work-related MSDs are particularly prevalent, accounting for approximately 20% of food related accidents annually reported to HSE. Upper Limb Disorders (ULDs) are particularly problematic in food manufacturing, accounting for approximately half of the sector's MSD ill-health. Ill health effects are either:

- acute, such as back-strain from lifting a heavy or awkward load or
- chronic, include backache, sore shoulders or elbows, numb or tingling wrists and hands caused by repetitive work.

Most food manufacturing related musculoskeletal injuries arise from the following activities:

- stacking/unstacking containers (e.g. boxes, crates and sacks).
- moving wheeled racks (e.g. oven racks, roll cages and trolleys).
- packing products (e.g. cheese, biscuits).
- cutting, boning, jointing, trussing and evisceration of meat and poultry.

### **1.3 What must be covered at the inspections**

An assessment of the management arrangements for the control of manual handling MSD risks in accordance with the requirements of the Manual Handling Operations Regulations (MHORs) hierarchy (Avoid, Assess, Reduce), the Management of Health and Safety at Work Regulations and the Workplace (Health, Safety and Welfare) Regulations.

- An assessment of the management arrangements for the control of ULD MSD risks in accordance with the Management of Health and Safety at Work Regulations, the Health and Safety at Work etc. Act and the Workplace (Health, Safety and Welfare) Regulations.  
NB. The MHORs are unlikely to apply to repetitive movements that don't involve transporting or supporting a load.
- A check on whether suitable and sufficient risk assessments have been carried out for tasks involving MH and repetitive movements, where there is a risk of injury. HSE's MSD tools should be used by inspectors to assist them in determining the level of risk:
  - Manual Handling Assessment Charts (MAC Tool) for manual handling consistent load weights
  - Varied Manual Handling Assessment Charts (VMAC) for manual handling varied load weights
  - Risk Assessment for Pushing and Pulling (RAPP) for pushing / pulling loads and
  - Assessment of Repetitive Tasks (ART) for repetitive tasks.HSE's MSD tools or an equivalent can be used by employers to help determine the level of risk.

- **Critical action** – a check that suitable control measures have been provided for MH tasks where MSD risks are significant and the task cannot be avoided e.g. by provision of mechanical handling aids/devices and job/workplace design.
- **Critical action** – a check that suitable control measures have been provided for repetitive tasks where the risk of ULDs is significant and the task cannot be avoided (mechanised) by reducing task risk factors (repetition, duration, force) and changing work organisation (position, environment, rotation).
- A check that relevant employees have been provided with adequate task-specific information, instruction and training on MSD risks from MH or repetitive tasks and the correct use of all control measures (equipment and systems) have been provided.
- Any matters of evident concern (MEC) - see Appendix 5.3.
- Any matters of potential major concern (MPMC) - see Appendix 5.3

#### 1.4 What sectors and topics are we inspecting and when

Sector	Health topic(s)	When
All food manufacture	MSDs	Q4

In addition to inspecting MSDs, the topic of flour dust control will also be covered at the same time when visiting food manufacturing premises which are undertaking baking activities. See separate OG for flour dust - link

Further information on targeting of premises including SIC codes is contained in the Targeting & Intelligence Guide – link.

#### 1.5 Application of the Enforcement Management Model (EMM)

Guidance is available on the application of the [EMM to health risks](#) including MH and repetitive tasks. When using the EMM for decisions on enforcement relating to MSDs, Inspectors should consider:

- **Risk / Consequence:** Failure to adopt appropriate control measures for MH and repetitive tasks can result in the possible risk to an individual (s) of a serious or significant ill health effect. In most cases (apart from the lifting / carrying of extreme load weights where the ill-health effect can be serious) the ill health effect is significant.
- **Benchmark Risk:** The benchmark set is a nil or negligible risk of a serious or significant health effect.

- **Control:** The benchmark can be achieved by applying the MHOR/MHSW hierarchy of control approach (Avoid, Assess, Reduce) for MH and ULD tasks with a risk of injury; then applying a variety of control measures including the provision and use of suitable mechanical handling aids/devices, reducing task risk factors (repetition, duration, force) and changing work organisation (position, environment, rotation) as well as the provision of suitable instruction, information, training.
- **Risk Gap / Initial Enforcement Expectations (IEEs):**

Appendix 5.1 gives IEEs for MH and repetitive tasks assessed using the HSE MSD tools. In concluding on these IEEs, the Manual Handling Operations Regulations, the Management of Health and Safety at Work Regulations and the Workplace (Health, Safety and Welfare) Regulations are classed as established standards.

## 1.6 Background Legal Considerations

The Manual Handling Operations Regulations 1992 (as amended) is the primary legislation used to secure compliance for MH MSD risks. The Management of Health and Safety at Work Regulations 1999 and the Workplace (Health, Safety and Welfare) Regulations 1992 (i.e. suitability of workstation height and condition of floors) are also relevant.

The Management of Health and Safety at Work Regulations 1999 and the Health and Safety at Work etc. Act 1974 is the primary legislation used to secure compliance for repetitive (ULD) MSD risks. The Workplace (Health, Safety and Welfare) Regulations 1992 are also relevant.

## 2. Guidance and Support Available

### Specialist support:

Specialist Ergonomist Hub-Lead - Tim Small ext. 1612.

Specialist Ergonomist - Christopher Quarrie ext. 1904

EPD, Manufacturing and Utilities Unit (MUU), food manufacturing lead - Warren Pennington ext. 3614.

**Note:** When seeking Specialist Ergonomist support it is recommended, where possible, that Inspectors do so having collected suitable video footage of the relevant work task.

### Important Guidance for Inspections:

- [MSD self-learning package for inspectors](#)
- [Assessment of Repetitive Tasks tool \(ART\)](#)
- [Upper Limb Disorders in the Workplace \(HSG60\)](#)

- [Manual Handling Assessment Chart tool \(MAC\) – for consistent load weights](#)
- [Varied Manual Handling Assessment Chart tool \(VMAC\) – for varied load weights](#)
- [Risk Assessment for Pushing and Pulling tool \(RAPP\)](#)
- [Manual Handling: Guidance on the Regulations – L23](#)
- [Moving food and drink: Manual handling solutions for the food and drink industries - 100 case studies \(2000\) \(HSG196\)](#)
- [Roll cages and wheeled racks](#)
- [Conveyor belt workstation design](#)

### 3. **Recording of inspections**

Answers to the following six questions *must* be recorded in the text area of the appropriate 'risk area' under DO IT. Answers should be kept short and succinct but include sufficient information to give a clear understanding of the issues and action taken.

Capturing this information is essential to enable us to effectively analyse the inspection outcomes and impact.

#### Questions

- |   |
|---|
| <ol style="list-style-type: none"> <li>1. What are the processes carried out involving MSD risks (ULD/MH)?</li> <li>2. Are the control measures used, checked and maintained?</li> <li>3. What are the specific control failings?</li> <li>4. Are there any management failings such as training, instruction etc.?</li> <li>5. Was there any SG involvement?</li> <li>6. Was there a Material Breach(es) or Enforcement action taken?</li> </ol> |
|---|

The following structure should be used (including the question number):

- Q1: [answer]  
 Q2: [answer]  
 Q3: [answer]  
 Q4: [answer]  
 Q5: [answer]  
 Q6: [answer]

### 4. **Health and Safety**

HSE health and safety information for visits to food and drink manufacturing premises is [available](#). Inspectors should follow the company's procedures when visiting. General health & safety information for visiting staff is on the [intranet](#).

## 5. Appendices

### Appendix 5.1: EMM - Initial Enforcement Expectations

**Table 1: Applying the MAC Tool to Lifting / Carrying Tasks**

Assessment Chart Result	Mac Chart Type		
	Lifting	Carrying	Team Handling
	EMM Consequence/Likelihood/ <i>Risk Gap</i> & IEE		
Load weight frequency is <b>purple</b>	Actual risk of serious personal injury PN		
Load weight / frequency is <b>red</b> and hand distance is <b>red</b>	Significant/ Probable/ Substantial <b>IN</b>	Significant/ Probable/ Substantial <b>IN</b>	Significant/ Probable/ Substantial <b>IN</b>
Load weight / frequency is <b>red</b> and hand distance is <b>amber</b> and vertical lift is <b>red</b>	Significant/ Probable/ Substantial <b>IN</b>	<b>N/A</b>	Significant/ Probable/ Substantial <b>IN</b>
Load weight / frequency is <b>red</b> and carry distance is <b>red</b> and any one of asymmetrical torso / load <b>or</b> floor <b>or</b> grip <b>or</b> obstacles is <b>red</b>	<b>N/A</b>	Significant/ Probable/ Substantial <b>IN</b>	Significant/ Probable/ Substantial <b>IN</b>
Load weight / frequency is <b>red</b> and hand distance is <b>amber</b> and vertical lift is <b>amber</b>	Significant/ Possible/ Moderate <b>NOC</b>	<b>N/A</b>	Significant/ Possible/ Moderate <b>NOC</b>
Load weight / frequency is <b>red</b> and any of torso twisting / sideways bending (asymmetrical torso for carry), postural, grip, floor, obstacles, communications / co-ordination or environmental is <b>red</b>	Significant/ Possible/ Moderate <b>NOC</b>	Significant/ Possible/ Moderate <b>NOC</b>	Significant/ Possible/ Moderate <b>NOC</b>

Load weight / frequency is <b>amber</b> and hand distance, vertical lift, torso twisting, or postural constraint is <b>red</b> or <b>amber</b>	Significant/ Possible/ Moderate <b>NOC</b>	Significant/ Possible/ Moderate <b>NOC</b>	Significant/ Possible/ Moderate <b>NOC</b>
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**Table 2: Applying the RAPP Tool to Pushing / Pulling Tasks**

Circumstances	Assessment Chart Result	EMM Consequence / Likelihood / Risk Gap & IEE
<b>Wheeled Operations</b>	Weights within <b>purple zone</b>	(Actual risk of serious personal injury) <b>PN</b>
	<b>Very high</b> weights in addition to any <b>red</b> in A6 (condition of equipment) or A7 (floor surface) or A8 (obstacles on route)	Significant / Probable / Substantial <b>IN</b>
	<b>High</b> weights in addition to any <b>red</b> in A6 (condition of equipment) or A7 (floor surface) or A8 (obstacles on route)	Significant / Possible / Moderate <b>NOC</b>
	<b>Amber</b> weights in addition to any <b>red</b> in A6 (condition of equipment) or A7 (floor surface) or A8 (obstacles on route)	<b>For IEE seek Specialist advice</b>
<b>Non-Wheeled Operations</b>	For any <b>red</b> and <b>amber</b> scores	Inspectors should question as to why mechanical aids are not being used or any particular problems exist with the task. <b>For IEE seek Specialist advice.</b>

**Table 3: Applying the ART Tool to Repetitive Tasks**

Assessment Chart Result	EMM Consequence / Likelihood / Risk Gap & IEE
Score of approximately 30 or more and hand force is in the <b>red</b> or <b>amber 4</b> risk zones	Significant / Probable / Substantial

	<b>IN (initially seek Specialist advice)</b>
Score of approximately 22 or more	Significant / Possible / Moderate <b>NOC (initially seek Specialist advice)</b>

## Appendix 5.2: Safety Priorities

The [Manufacturing Sector Plan](#) details HSEs' safety priorities for the Manufacturing Sector. These safety issues are the most common causes of safety-related deaths and serious injuries in the Sector. They are:

- The movement and storage of heavy loads.
- Maintenance activities: including issues of access (fall from height) and machinery intervention.

Examples of maintenance tasks which historically have not been adequately managed (pertinent to the food sector) include the maintenance of vehicle mounted refrigeration units (fall from height), and attempted work on potentially fragile cold store roofs.

Although these safety priorities are not a specific focus of this inspection programme, visiting staff should be aware that these issues may well manifest as MECs.

## Appendix 5.3: Examples of Matters of Evident Concern (MEC) & Potential Major Concern (MPMC)

Inspectors must consider action in relation to Matters of Evident Concern (MEC) or Matters of Potential Major Concern (MPMC) at all visits (see [OC18/12](#)).

Recent events, including multiple fatalities from a wood dust explosion and a number of fatalities involving explosions and fires involving solvents, have reinforced the importance of taking action on the management systems to prevent catastrophic events. OC18/12 explains the actions required and gives examples of the issues to consider that could lead to catastrophic events.

Below are food industry examples that could lead to potentially catastrophic events. There are other potential events across the food manufacturing industry that are not included here. See OC18/12 for more details.

Inspectors should discuss with Process Safety Inspectors if further assistance is required.

Food Manufacture Potential Catastrophic Event:	Due to:	Examples of indicative issues:	Existing Guidance:
Fire and explosion.	Ignition of combustible dusty and powdered substances (e.g. flour, custard/milk powder, sugar etc.), flammable gases (e.g. oven fuel) and liquids (e.g. flavourings, cooking oils etc.)	Inadequate control/release of combustible substances and flammable liquids/gases.	<a href="#">HSG 103 Safe handling of combustible dusts: Precautions against explosions</a>
		Inadequate control of ignition sources in hazardous areas e.g. inadequately designed and maintained vacuum cleaners, ineffective permits for hot work etc.	<a href="#">HSE Web page "Prevention of Dust Explosion in the Food Industry"</a>  <a href="#">Appendix 1 - Guidance on the selection of vacuum cleaners for low combustibility organic granules and dusts (e.g. flour)</a>
		Inadequate explosion relief on dust collection units.	<a href="#">INDG370(rev1) Controlling Fire and Explosion Risks in the Workplace</a>
		Inadequate storage and use of flammable liquids.	<a href="#">HSG 51 Safe Storage of Flammable Liquids</a>  <a href="#">HSG 140 Safe Handling and Use of Flammable Liquids</a>
Exposure to flammable/toxic/corrosive ammonia gas.	Operation of ammonia refrigeration systems.	Inadequate systems of inspection, examination, maintenance and operation of ammonia refrigeration systems.	<a href="#">Safe Management of Ammonia Refrigeration Systems. Guidance for Food and Drink Industries and other Workplaces.</a> (The document is also available at Trim Reference: 2016/253710)
		Inadequate emergency procedures (and rehearsal of such) to limit the effect of leakage if one occurs.	<a href="#">Safety of Pressure Systems. ACOP to the Pressure Systems Safety Regulations 2000</a>
		Failure to ensure competent designers, maintenance contractors, operating staff etc.	<a href="#">INDG261 Pressure Systems at Work: A Brief Guide to Safety</a>
Exposure to oxygen deficient atmospheres; exposure to noxious gases; engulfment (solids / liquids).	Entry into a confined space / silos	Need to enter confined space has not been designed-out.	<a href="#">HSG 252 A Recipe for Safety: Health and Safety in Food and Drink Manufacture</a>
		Lack of / inadequate safe system of work for necessary confined space entry.	<a href="#">Safe Work in Confined Spaces. ACOP to the Confined Spaces Regulations 1997</a>  <a href="#">INDG258(rev1) Safe Work in Confined Spaces: A Guide to Working Safely.</a>

## Appendix 5.4: General References

### MSD Guidance: Website links

- [Musculoskeletal disorders](#)
- [Upper Limb Disorders \(ULDs\)](#)
- [Back pain](#)
- [Health and Safety Executive website - Lower limb disorders](#)

### Website links

- [Food and drink manufacture](#)
- [Bakery products](#)
- [Meat/poultry processing](#)
- [Dairy processing](#)
- [Chilled and frozen products](#)
- [Fruit and vegetables](#)

### Publications

- [A Recipe for Safety HSG252](#)
- [Are you making the best use of lifting and handling aids](#)
- [Manual handling at work: A brief guide](#)