

Manufacturing Sector Work Plan 2019-20: Musculoskeletal Disorders in Food and Drink Manufacturing

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Audience: FOD Inspectors, Specialist Ergonomists, Occupational Health Inspectors

Contents

1. Inspection programme	1
1.1 What are we inspecting and why	1
1.2 What is the extent of the problem	1
1.3 What must be covered at the inspections	1
1.4 What sectors and topics are we inspecting and when	2
1.5 Application of the Enforcement Management Model (EMM).....	3
1.6 Background Legal Considerations	3
1.7 Impact evaluation inspections	4
2. Guidance and Support Available	4
3. Recording of inspections.....	5
The following structure should be used (including the question number):.....	5
4. Health and Safety	6
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... 6	
5. Appendices	6
Appendix 5.1: EMM - Initial Enforcement Expectations (IEEs).....	6
Appendix 5.2: Safety Priorities and Matters of Evident Concern (MECs).....	9
Appendix 5.3: Matters of Potential Major Concern (MPMCs).....	9
Appendix 5.4: General References	11

1. *Inspection programme*

1.1 What are we inspecting and why

We are targeting significant health risks from musculoskeletal disorders (MSDs), caused by manual handling (MH) and repetitive tasks, across all food and drink manufacturing sectors, to make a real difference to workers' lives. We will ensure tasks which involve a risk of injury are avoided or where this is not reasonably practicable, appropriate steps are taken to reduce the risk of injury to the lowest level reasonably practicable. 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.

We will deal with the underlying causes of poor risk control i.e. failures in health and safety management arrangements. These include the provision of adequate information, instruction, training and supervision; adequate monitoring arrangements to ensure risk avoidance and risk reduction measures are effective; and adequate competent advice.

1.2 What is the extent of the problem

MSDs are the primary cause of ill health in all manufacturing sectors comprising 40% of ill health cases, totalling approximately 1 million working days lost in 2017/18. In food and drink manufacturing, work-related MSDs are particularly prevalent. Upper Limb Disorders (ULDs) are particularly problematic in food and drink manufacturing, accounting for approximately half of the sector's MSD ill-health. Ill health effects are either:

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

Most food and drink manufacturing related musculoskeletal ill health arises from the following activities:

- stacking/unstacking containers (e.g. kegs, 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 avoidance and reduction** 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 avoidance and reduction** 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 risk reduction 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 risk reduction measures have been provided for repetitive tasks where the risk of ULDs is significant and the task cannot be avoided (mechanised) e.g. 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 on the correct use of all risk reduction measures (equipment and systems).
- 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	Q2
All drink manufacture	MSDs	Q2

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 using or producing flour. [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 avoid or adopt appropriate risk reduction measures for MH and repetitive tasks, which involve a risk of injury, 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 Avoid, Assess, Reduce for MH and ULD tasks with a risk of injury; then applying a variety of control measures, for tasks where it is not reasonably practicable to avoid them, including the provision and use of suitable mechanical handling aids/devices; reducing task risk factors (repetition, duration, force); changing work organisation (position, environment, rotation); 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.

Additionally, apply EMM and enforcement considerations to underlying management issues, particularly in circumstances where widespread poor MSD risk avoidance and reduction OR failure to sustain compliance is evident.

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.

1.7 Impact evaluation inspections

A limited number of visits to food manufacturing sites will be impact evaluation inspections. These visits will be returning to sites inspected during the early stages of the health inspections to find out if compliance has been sustained.

Inspections will be the same as for all others in this OG. There will however be two additional questions to record (see next page) for these inspections.

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, food and drink manufacturing sector 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. 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

1. What are the processes carried out involving MSD risks (ULD/MH)?
2. Are the control measures used, checked and maintained?
3. What are the specific control failings?
4. Are there any management failings such as training, instruction etc.?
5. Was there any SG involvement?
6. Was there a Material Breach(es) or Enforcement action taken?

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

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

For impact evaluation visits the following additional questions must be answered:

7. Has there been sustained compliance in the avoidance and reduction of MSD risks?
8. If not what are the reasons for failing to maintain the avoidance and risk reduction measures for MSDs?

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 (IEEs)

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 purple	Actual risk of serious personal injury PN		
Load weight / frequency is red and hand distance is red	Significant/ Probable/ Substantial IN	Significant/ Probable/ Substantial IN	Significant/ Probable/ Substantial IN
Load weight / frequency is red and hand distance is amber and vertical lift is red	Significant/ Probable/ Substantial IN	N/A	Significant/ Probable/ Substantial IN
Load weight / frequency is red and carry distance is red and any one of asymmetrical torso / load or floor or grip or obstacles is red	N/A	Significant/ Probable/ Substantial IN	Significant/ Probable/ Substantial IN
Load weight / frequency is red and hand distance is amber and vertical lift is amber	Significant/ Possible/ Moderate NOC	N/A	Significant/ Possible/ Moderate NOC

Load weight / frequency is red and any of torso twisting / sideways bending (asymmetrical torso for carry), postural, grip, floor, obstacles, communications / co-ordination or environmental is red	Significant/ Possible/ Moderate NOC	Significant/ Possible/ Moderate NOC	Significant/ Possible/ Moderate NOC
Load weight / frequency is amber and hand distance, vertical lift, torso twisting, or postural constraint is red or amber	Significant/ Possible/ Moderate NOC	Significant/ Possible/ Moderate NOC	Significant/ Possible/ Moderate NOC

Table 2: Applying the RAPP Tool to Pushing / Pulling Tasks

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

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 red or amber 4 risk zones	Significant / Probable / Substantial IN (initially seek Specialist advice)
Score of approximately 22 or more	Significant / Possible / Moderate NOC (initially seek Specialist advice)

Appendix 5.2: Safety Priorities and Matters of Evident Concern (MECs)

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. Inspectors must consider action in relation to MECs at all visits (see [OC18/12](#)).

Appendix 5.3: Matters of Potential Major Concern (MPMCs)

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.

On the following page are food and drink manufacturing examples that could lead to potentially catastrophic events. There are other cross-sector events which are not included here.

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

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

Food Manufacture Matters of Potential Major Concern:	Due to:	Examples of indicative issues:	Existing Guidance:
Fire and explosion.	Ignition of organic dusts and powders (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.	HSG 103 Safe handling of combustible dusts: Precautions against explosions
		Inadequate control of ignition sources in hazardous areas e.g. inadequately designed and maintained vacuum cleaners, ineffective permits for hot work etc.	HSE Web page "Prevention of Dust Explosion in the Food Industry" Appendix 1 - Guidance on the selection of vacuum cleaners for low combustibility organic granules and dusts (e.g. flour)
		Inadequate explosion relief on dust collection units.	INDG370(rev1) Controlling Fire and Explosion Risks in the Workplace
		Inadequate storage and use of flammable liquids.	HSG 51 Safe Storage of Flammable Liquids
			HSG 140 Safe Handling and Use of Flammable Liquids
Exposure to flammable/toxic/corrosive ammonia gas.	Operation of ammonia refrigeration systems.	Inadequate design, construction, inspection, maintenance and operation of ammonia refrigeration systems.	Safe Management of Ammonia Refrigeration Systems. Guidance for Food and Drink Industries and other Workplaces. (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.	Safety of Pressure Systems. ACOP to the Pressure Systems Safety Regulations 2000
		Failure to ensure competent designers, maintenance contractors, operating staff etc.	INDG261 Pressure Systems at Work: A Brief Guide to Safety
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.	HSG 252 A Recipe for Safety: Health and Safety in Food and Drink Manufacture
		Lack of / inadequate safe system of work for necessary confined space entry.	Safe Work in Confined Spaces. ACOP to the Confined Spaces Regulations 1997
	Operation of systems e.g. for animal stunning / killing and blast chilling, using potential oxygen displacing gases such as carbon dioxide and nitrogen.	Inadequate system inspection, examination, maintenance, operation and emergency arrangements	
		Waste gas ventilation systems have not been designed by a competent person and / or are not venting to a safe location.	

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](#)