European Commission

# Protecting health and safety

## of workers in agriculture, livestock farming, horticulture and forestry

Social Europe

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A non–binding guide to best practice with a view to improving the application of related directives on

# protecting health and safety of workers in agriculture, livestock farming, horticulture and forestry

**European Commission**

Directorate-General for Employment, Social Affairs and Inclusion
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# FOREWORD

*Dear Farmer,*

Agriculture in Europe is faced with increasing challenges and problems. Some of them you cannot control: world economy, climate change, weather extremes, abandonment of rural areas. What you can control is your capacity to work and your ability to overcome the health and safety problems with which you are faced.

It goes without saying that your health and safety and that of your workers, along with a safe environment, are preconditions to running a viable operation. Achieving good health and safety standards in your business requires your systematic effort. It is also your moral and legal responsibility as an employer to ensure that your workers are safe and well.

Health and safety is an issue you can control. You can reduce accidents, ill health and the possibility of loss of property and production. Use this guide to get started.

This guide gives you background information on what health and safety is about, which aspects of your business relate to it, what needs most attention and how to get organised to gain control. Most importantly, it provides you with a tool to identify and assess work hazards: the risk assessment. Some 128 typical hazards are listed for you to consider in your risk assessments: a lot of work has already been done for you — saving you cost, time and effort.

Take some time to consider what this guide suggests, it could save a life.

# CONTENTS

*The appendices numbering below refers to the principal chapter in the guide*

CHAPTER 1:

# Introduction to this guide

*At present, there is no single European-level directive that specifically deals with the protection of the health and safety of workers in all aspects of agriculture, including livestock farming, horticulture and forestry. The Framework Directive (89/391/EEC), however, and several individual directives are applicable in these sectors of activity. It should also be stressed that the particular features of these sectors — such as working in the open air, greenhouses, with heavy machinery, animals, isolation at the place of work, low levels of training, use of chemical and plant-protection products — increase the risks facing the workers, as reflected in an accident rate that is higher than the average for other sectors.*

## 1.1 The purpose of this guide

The aim of this **guide is to give** you practical advice and guidance on **health and safety** in your business.

It is not intended to list your legal obligations nor act as a substitute to any legal requirements you may face. Rather, it will guide you through what you should be aware of, and what should concern you. Suggestions are then made as to how you may achieve a higher degree of safety in your business.

Treat this guide as a tool to help you:

- **become aware** of health and safety issues in your business;
- **find solutions** to health and safety problems;
- **improve working conditions**; and ultimately
- **make the most of your business**.

Remember: even the smallest change can make a big difference

## 1.2 Agriculture — a hazardous industry

**Being a farmer is not an easy job**: **in fact**, **it is one of the most hazardous occupations**. **Agriculture and forestry**, **as an occupation**, **consistently ranks as the third or fourth most hazardous occupation in the European Union**.

That is the knowledge gained through the assessment of accidents and ill health incidents reported to local authorities. Consider how many more accidents, ill health incidents, or even fatalities, continuously occur without being reported … the situation is far worse in reality. As farms are often a combination of workplace and home, children and the elderly are exposed to unnecessary risk and are faced with additional hazardous situations.

## 1.3 The top eight killers in agriculture

What are the most common causes of death in this sector?

- Transportation accidents (being run over or overturning of vehicles)
- Falls from height (from trees, through roofs)
- Being struck by falling or moving objects (machinery, buildings, bales, tree trunks)
- Drowning (in water reservoirs, slurry tanks, grain silos)
- Handling livestock (attacked or crushed by animals, zoonotic diseases)
- Contact with machinery (unguarded moving parts)
- Entrapments (under collapsed structures)
- Electricity (electrocutions)

## 1.4 Scope of this guide

This guide covers:

- **agriculture**
- **horticulture/greenhouse activities**
- **livestock farming**
- **forestry**.

**Micro**, **small and medium-sized holdings in the European Union are all addressed**.

## 1.5 Who this guide is intended for

This guide concerns you if you:

- **are a farmer**
- **are a forestry contractor or work in horticulture**
- **run your own business**
- **are a manager or a worker**.

## 1.6 How to use this guide

**This guide is divided into 21 chapters**. **If you are viewing this guide on a computer**, navigate to a chapter simply **by clicking** the relevant chapter heading in the Contents. Each chapter gives information on a specific topic, **highlights typical hazards** and suggests ways to deal with them. As many hazards are dependent on multiple factors or may be approached from more than one perspective (e.g. machinery, vehicles, animals), you will find **cross-references** between chapters guiding you to another section of this guide for further reading.

Good practices are indicated with a green tick, bad practices are shown with a red cross.

**This guide includes**, **amongst other things**, **the following resources**.

1. Examples of hazards you may find in agriculture, horticulture, livestock farming and forestry (**Appendix 4.3: Examples of hazards**)
2. Risk assessment methodologies to help you carry out your own risk assessments (**Chapter 4: Risk assessment**)
3. A glossary to which you can refer for any abbreviations or technical terms (**Appendix 1.1: Glossary**)
4. A reference/bibliography section (**Appendix 1.2: References**)
5. A list of national health and safety bodies (**Appendix 2.1: National health and safety bodies**)

You may either read this guide as a whole in order to become familiar with the various aspects of health and safety or you may choose to refer to specific chapters related to certain activities or topics on which you need assistance.

CHAPTER 2:

# Introduction to health and safety

## 2.1 Definition of health and safety

According to the International Labour Organisation (ILO), **health is the promotion and maintenance of the highest degree of physical**, **mental and social well-being of workers in all occupations**. In other words, it is what keeps you physically and mentally fit and content.

**Safety is freedom from unacceptable risk or harm**. It is, therefore, the achievement of such conditions that minimise as far as possible the likelihood of harm occurring.

## 2.2 Health and safety — a legal obligation

**Health and safety is regulated all over Europe** and is governed by national and European Community law (**http://eur-lex.europa.eu/en/index.htm** and **http://osha.europa.eu/en/legislation/index_html/directives**).

**European Community law sets the minimum requirements** which each Member State adopts or can expand accordingly. A number of European directives have been issued on health and safety dealing with:

- minimum standards for workplaces
- vibration
- electromagnetic fields
- manual handling
- biological, chemical and physical agents
- pregnant workers and young people
- work equipment
- visual display units
- personal protective equipment
- noise
- signs
- asbestos
- mobile sites (construction).

(**Appendix 2.2**: **European health and safety directives**)

Health and safety legislation **aims to improve working conditions**, **reduce work-related accidents and diseases and make workplaces safe and healthy for persons at work**.

Although the underlying concept is the same in all EU Member States, national law and regulations may vary depending on the needs, characteristics and experiences of individual Member States.

## 2.3 National bodies for health and safety

Governmental responsibility related to health and safety lies with the Labour Inspectorate, Health Service or an equivalent body. It is important that you know your own national authority for occupational health and safety. Contact your local office for guidance and for further information on your responsibilities (**Appendix 2.1**: **National health and safety bodies**).

## 2.4 Why you should be concerned with health and safety

You should **actively manage** health and safety because a serious accident or a death on your property may have grave consequences.

Consequences may involve financial **loss** and **suffering to you**, **your family** or to **your workers**.

**As an employer or self-employed person**, you will want to reduce or avoid cost related to:

- medical (including first aid) and pharmaceutical expenses;
- insurance costs;
- legal fees arising from civil actions or criminal proceedings;
- business downtime and closure;
- damage to machinery and infrastructure;
- recruitment and training of new and substitute employees;
- negative publicity and loss of reputation;
- loss of output.

**As an employee or self-employed person** you may have to deal with:

- suffering, pain and injury;
- hospitalisation;
- medical expenses;
- inability to work (temporary or permanent);
- permanent disability;
- loss of financial support for your family.

*Accidents can have serious effects on your ability to work*

CHAPTER 3:

# Organising health and safety

## This chapter deals with:

- Managing health and safety
- Getting to know your legal obligations
- Worker consultation
- Infrastructure upgrading
- Planning an activity
- Reporting health-related issues and accidents

*Based on data compiled by the European Agency for Safety and Health at Work, every three and a half minutes, somebody in the European Union dies from work-related causes, with many of them in agriculture and forestry.*

> Thinking that it won't happen won't make it go away

## 3.1 Managing health and safety

Even though, at the moment, health and safety **may not be** your absolute first priority, **time and money** spent on health and safety **should be seen as an investment and should not be considered wasted**.

The money you spend on prevention will be far less than the money you will spend on medical fees, substitute workers, compensation or fines if there is an accident on your premises.

When you **organise your business for health and safety**, you need to know:

- your **legal obligations;**
- how, and to what degree, you will **involve your workers;**
- the acceptable standard of **infrastructure/plant and machinery** for your business and
- how to **plan** and **carry out** your day-to-day work.

*Consult with your workers regularly*

> Be proactive — don't wait for an accident to happen — plan your work

## 3.2 Getting to know your legal obligations

You need to know the law and what is expected of you in terms of health and safety. There may be a number of laws and regulations which are relevant to you, some more obvious than others. Legislation is often revised. You need to be aware of any recent amendments to existing legislation and new regulations or laws. Contact your regulatory authority or your sector association to find out more: initiate and maintain a relationship with them. Make a note of the things you were not aware of previously. This knowledge and the control measures you take will help prevent accidents and illhealth at your enterprise and, where not actually prevented, may save you from legal action against you.

## 3.3 Worker consultation

Even if you run a one-person business and rely on family or casual labour, you **need to consult all workers** on health and safety issues. **Health and safety is about you and your workers working together safely to achieve a common target**: **safe production**.

You and your workforce are therefore on the same side and discussion should not involve argument or conflict. Consultation should involve an **exchange of views** from which you can all benefit. **Listen to your workers**' opinions and problems and ask them to work with you to find solutions.

**Your workforce may be in the best position to identify health and safety issues since they face them on a daily basis**. Involve your workforce in **identifying and assessing hazards**. If your national legislation requires it (and depending on the size of your operation) encourage the **election of safety representatives**, **form safety committees**, organise **meetings** and keep **minutes of what is said**. Make the most of them.

## 3.4 Upgrading infrastructure

**Your premises may require some changes**. If you already know what is needed, make an action plan to implement changes. **If you cannot identify them**, **use this guide**. Through the risk assessment process explained in (**Chapter 4: Risk assessment**), **you will discover what changes need to be made**. **Risk assessment** will result in a '**to do**' **list** including things you need to improve around the site. You will also need to think of matters such as:

- **cleanliness** and **tidiness** of the site;
- **segregation of traffic**, work activities, people and busy areas;
- **signage**;
- **where you employ workers**, **you will need to provide sanitation** and **rest arrangements** depending on the operation; provision of **clean drinking water**, canteens or **lunch and break areas**, **toilets**, **showers** and **changing facilities**, facilities **for pregnant and breastfeeding women**, **communication facilities**, a **smoking** policy;
- **emergency and evacuation** arrangements, first aid, **transport** to medical treatment (should this be necessary).

These and many more subjects will be discussed in coming chapters.

## 3.5 Planning an activity

**All activities need planning**. This need not be formal: before you start work, pause for a moment and think:

- Do I have the **right tools and equipment**?
- What could **go wrong**?
- Is there a **better** and **safer** way to do the task?
- What **actions are necessary before work begins**?
- Do my **workers know** what they are doing?
- Are my **workers competent and properly trained** for the task?

When the job is finished, you should ask yourself:

- Did it all go as planned?
- Can I do something to improve the job in the future?
- Are my workers and I satisfied that we have carried out the work in such a way as to minimise risks to health and safety?

Learn from experience

## 3.6 Reporting health-related issues and accidents

Community **law requires that work-related accidents and incidents of ill health are reported** to the health and safety inspectorates or equivalent national authorities.

Whenever an accident occurs, after caring for the injured, you must:

- **report** the accident to the authorities, as required by national law;
- **investigate** the accident to identify its root causes;
- **record** the accident, as required by national law;
- **register** the accident in a logbook.

It is good practice to register near hits and near misses as well, as these reveal areas prone to accidents.

Reporting accidents and ill health incidents contributes to community knowledge and aids statistical analysis from which conclusions can be drawn. Thus, further specific guidance and control measures can be established for the improvement of workplaces for all.

CHAPTER 4:

# Risk assessment

## This chapter deals with:

- Steps in carrying out risk assessment
- Assessment of hazards to determine the risk level
- Determination of preventive and protective measures
- Taking action
- Monitoring and reviewing
- Record keeping
- Getting you started
- A case study

## 4.1 What is risk assessment?

In order to ensure a safe and healthy working environment, you must **start by carrying out a risk assessment**. Risk assessment **forms the basis for managing health and safety and it is one of your legal obligations**.

Risk assessment is the **process of evaluating the health and safety risks from workplace hazards to you**, **your workers and any family members**. It is a systematic examination of all aspects of the work undertaken to consider:

- what could cause injury or harm;
- whether the hazards could be eliminated; and, if not
- which preventive or protective measures are or should be in place to control the risk (European Agency for Health and Safety at Work: **http://osha.europa.eu/en**).

**Risk assessment should be set out in writing**.

### Assessment of hazards

| | | Severity | | |
|---|---|---|---|---|
| | | HIGH | MEDIUM | LOW |
| Likelihood | HIGH | High risk | Substantial risk | Moderate risk |
| | MEDIUM | Substantial risk | Moderate risk | Minimal risk |
| | LOW | Moderate risk | Minimal risk | Trivial risk |

### Interpretation of results

| Risk rating | Remedial action and timescale |
|---|---|
| 16-25 High | STOP activity until measures are taken and the level of risk has been reduced (consult further specialist resources) |
| 10-15 Substantial | Make the situation safe within a week — meanwhile, take temporary measures |
| 7-9 Moderate | Make the situation safe within a month |
| 4-6 Minimal | Make the situation safe within a year |
| 1-3 Trivial | Continue implementing current protective and preventive measures — keep under review |

## 4.2 Steps in carrying out risk assessment

There are five basic steps to carrying out risk assessment:

STEP 1 Identification and recording of hazards

STEP 2 Assessment of hazards to determine the risk level

STEP 3 Determination of preventive and protective measures

STEP 4 Taking action

STEP 5 Monitoring and reviewing.

> You need to know what may cause harm to YOU and YOUR WORKERS in order to deal with it

## STEP 1 Identification and recording of hazards

You need to **identify all possible hazards** within your operation **and those at risk**. You need to ensure that you **consider every factor** and **aspect** of your business.

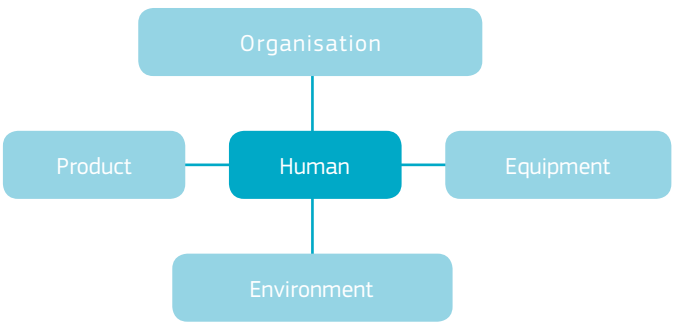
**Hazard is what has potential to cause harm** which means anything from damage to property, minor injuries and minor health problems to injuries resulting in disability, ill health, or even death.

In order to avoid omitting hazards or focusing on an aspect of your business at the expense of another the **HEEPO Concept** (Human, Equipment, Environment, Product, and Organisation) helps you to see the whole picture of your operation.

Think about all of the following factors in relation to your enterprise.

- **Human:** lack of physical or mental capacity, lack of knowledge or skills, lack of competence, right attitude or behaviour.
- **Equipment**: machines, hand tools, software and hardware, tables or chairs.
- **Environment**: light, noise, climate, temperature, vibrations, air quality or dust.
- **Product**: dangerous substances, heavy loads and sharp or warm objects.
- **Organisation**: workplace layout, tasks, working hours, breaks, shift systems, training, systems of work, communication, teamwork, contact with visitors, social support or autonomy (European Agency for Safety and Health at Work).

The HEEPO Concept




**Walk around** your site and observe:

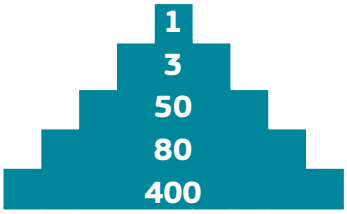
- workers' good and bad practices;
- safe and dangerous (unmaintained) machinery and equipment;
- hazardous locations;
- unstable or soft earth;
- holes and severe slopes in the ground;
- structural weaknesses or damage;
- points of access by the public;
- people at risk (workers, suppliers, subcontractors, visitors, your family);
- chemicals and the way they are stored and handled;
- vehicles and vehicle movement.

**Think about your sites and think about work activities**
(**Appendix 4.5**: **Hazardous activities**).

- You may need to **break complicated activities down** into simpler tasks in order to identify hazards in more detail.
- Discuss possible **hazards with those working at your site**. People involved in the activities may be best able to recognise the hazards and suggest solutions. 'People' include your paid workers, your suppliers and subcontractors, and may also include your family.
- In identifying the hazards, do not consider only your mainstream activities. Always **have in mind support activities** such as maintenance work, cleaning and preparation activities, stock counts, borehole drilling: work that may only occur once in a while but may be even more hazardous because of its infrequency.
- Consider **activities taking place outside your premises** such as the transportation of crops and livestock.
- If **workers and their families are living on the premises** or if the farm is your family's residence, pay particular attention to their safety and health, and daily needs.
- If your site is **visited by schools**, **tourists or shoppers**, remember that they are even more vulnerable since they are not familiar with the site and you are responsible for their safety.
- **Children**, **pregnant women**, **the elderly** and anyone with a health condition will be at greater risk and may have special needs.
- **Migrant workers and seasonal staff** should not be overlooked.

Think of problems and incidents, and their consequences, which have occurred in the past.

## The accident triangle




*For every fatal accident, 400 near misses have preceded it and have been overlooked.*

Source: Tye/Pearson (1974/75)

**Statistically**, **near misses and near hits come back as accidents**. Learn from past experience, yours and/or that of your colleagues and neighbours.

In **Appendix 4.1**: **Risk assessment instruction**, there are pointers on what questions to ask and what to consider in order to identify hazards. In **Appendix 4.2** you can find a template risk assessment form which you can use for recording hazards and in **Appendix 4.3** you can find examples of hazards you can consider in your risk assessment.

## Recording of hazards

Once you have identified hazards:

- **make a list** of them; and
- **number** them.

Listing hazards helps you to:

- **avoid omissions**;
- **avoid repetition**;
- **proceed with the risk assessment**.

Ask yourself 'What could go wrong?'

## Step 2 Assessment of hazards to determine the risk level

Once you have listed the hazards, you need to assess them to determine the risk level. Risk depends on several factors such as the:

- **likelihood** (probability) of the hazard occurring;
- **severity** of the impact once the hazard has occurred;
- **frequency** and duration of exposure to the hazard;
- **population** — the number of people exposed.

For practical purposes, it is common practice to consider **two** of these factors (assessment parameters): **likelihood** and **severity**.

**Likelihood (or probability) is the chance that harm will occur**. It is affected by the safety measures and precautions already in place. For example, if the barn loft is equipped with a handrail, the likelihood of falling is decreased.

**Severity represents the magnitude of the outcome** (injury, ill health, loss, damage). It is affected by the nature of the hazard. Record the possible consequences of a hazard to enable you to determine severity. For example, falls from height automatically constitute high severity as they may result in death.

The **combination** of the selected factors determines the risk. In **Appendix 4.4**, two risk assessment models are presented.

### Risk of injury from a tractor overturning ranges depending on the protection (available to the driver)

**Risk assessment is not difficult**. We carry out risk assessment, mentally, every time we cross a road. We all know that crossing a countryside road involves different risks to crossing a busy city street.

Tractor with no protection for the operator

High risk

Tractor with rollover protection bars

Medium risk

Tractor with cabin

Low risk

## Step 3 Determination of preventive and protective measures

Risk level determines the urgency of measures to be taken, as demonstrated in **Appendix 4.4**: **Risk assessment models**.

**Identify the measures** to be taken to reduce the risk as far as possible. **Appendix 4.3** includes suggested preventive measures associated with every hazard. In deciding the measures, bear in mind the general principles of prevention:

1. **mitigation of risks in the following order**:
   (a) elimination of the source of hazard;
   (b) replacement of the source of hazard;
   (c) reduction of hazards stemming from the source;
   (d) isolation of the source of hazard;
   (e) protection of personnel using PPE or other equipment;
2. **minimisation of human error**; and
3. **health surveillance**.

Assign **people with responsibility** for implementing the control measures and set a **time frame** for completion.

## Step 4 Taking action

**Implement the measures** decided as planned. **Regularly check** with the assigned people as to the progress achieved. Ensure that problems which cannot be permanently solved immediately are temporarily addressed until the final solution is possible.

Risk of injury while operating a chainsaw depends on the characteristics of the chainsaw and the personal protective equipment available.

Untrained chainsaw user without personal protective equipment

High risk

Trained chainsaw user with full personal protective equipment

Low risk

## Step 5 Monitoring and reviewing

Remember that **you cannot eliminate all hazards** but you can keep them under control. **Residual risk** is the risk remaining after appropriate control measures have been taken. After the control measures are implemented, a hazard needs to be reassessed in light of the new circumstances. The likelihood of the hazard occurring now will probably be decreased due to the measures taken. Severity will remain the same, since if the hazard does occur, the consequences do not change.

**Where does this end**? **It doesn't**. It must be regularly reviewed and monitored. As people change, facilities wear out, equipment and machinery are replaced, accessories are added to vehicles and technology progresses, and you will **need to keep risk assessments updated**. Some hazards will automatically disappear if their source has been removed (e.g. if you replace an old tractor with a modern one). However, new hazards may be created. Hazards may change with the seasons. What might be safe in summer may be dangerous in winter (e.g. slippery surfaces, pest infestation). **You need to keep up with current developments**. Review and reassess potential hazards and risks after every major change. There will always be something to be aware of as long as you have people performing an activity, no matter how simple or complicated.

## 4.3 Record keeping

Keep records of written risk assessments. They are useful for:

- assessing the hazards you have identified and determining the risks and the control measures;
- passing information and knowledge to people concerned;
- assessing the training needs of your workers where training is identified as a control measure;
- assessing from time to time whether the necessary control measures are being implemented;
- providing evidence to the authorities;
- providing evidence of due diligence in legal hearings;
- recording new hazards if circumstances change.

**Appendix 4.2: Risk assessment form** provides an empty worksheet on which you can write down the hazards. The Interactive risk assessment accompanying this guide enables you to complete the risk assessment, save it electronically and develop a record of risk assessments completed.

## 4.4 Getting started!

To get started with your risk assessment:

- use the template Risk assessment form (**Appendix 4.2**);
- select the activity from the list of activities (**Appendix 4.5**);
- select hazards from the list of examples of hazards (**Appendix 4.3**), tick them off and copy them along with their consequences, and suggested control measures;
- assess the hazards based on the qualitative model suggested in **Appendix 4.4**;
- select from the suggested control measures and assign a person responsible for implementing them and set a time plan for their completion;
- only complete the residual risk assessment after the control measures have been implemented.

This guide is accompanied by a **CD to help you create your own electronic risk assessment**.

**Some 128 hazards** have already been assessed to create an initial database. By choosing the 'My farm/My business' option you will be able to:

- select your sector (optional);
- select the **activity** you want to assess;
- view the relevant **hazards** from the list of 128 hazards provided;
- choose those applicable to your situation;
- make any **amendments** you consider necessary (e.g. to the likelihood rating, to the control measures to be taken);
- add any **new** hazards or new activities;
- **compile your own** summary sheet.

On completion, save your work before proceeding to another activity. This tool enables you to prepare risk assessments for as many activities as you want.

You can also **view and consider** the **128 assessed hazards**:

- **by sector** — agriculture, forestry, horticulture, livestock farming;
- **by source of hazard** — equipment and machinery, tools, vehicles, infrastructure, fieldwork, forestry work, hazardous substances, livestock, workforce, visitors;
- **by risk rating** — trivial, minimal, moderate, substantial, high.

## My risk assessment

Follow these instructions to access the CD.

**If you are using Excel version 2003**:
- click 'OK' when asked for the password;
- click 'OK' at the next window warning;
- click 'Enable macros' when prompted.

**If you are using Excel version 2007**:
- open the spreadsheet: you will see a security warning in the top left corner that '**Macros are disabled**';
- click '**Options**' next to the warning and select '**Enable this option**';
- click '**OK**'; if your computer has high security protection, the macros may not function and you will have to decrease the protection.

# Case study

*A six-year-old grandson was visiting his grandparents during the summer holidays. He always loved going to the field with his granddad who would leave him to wander around the farm, sit on the tractor, gather potatoes or play with his grandma's chickens and rabbits. Out of sight of his grandparents as he was playing by the pond, he slipped, fell in the pond, and drowned. The pond was not fenced.*

## What should the farmer have done?

The farmer should have carried out a simple risk assessment of his site to determine:

## What could go wrong?

- drowning in the pond;
- entanglement in moving parts of machinery;
- accident involving tractor or other vehicles or equipment;
- consumption of inedible/harmful substances;
- falls from height while climbing.

## What is the likelihood of any of these happening?

**High**, taking into account:

- the child's curiosity;
- his unfamiliarity with the site;
- lack of supervision.

## What are the possible consequences (severity)?

- injury, death.

## What control measures should the farmer have taken to reduce the risks?

He should have:

- fenced the pond and other hazardous areas;
- spoken to the child about farm hazards and set out some simple rules;
- not left the child unattended on the farm.

CHAPTER 5:

# Planning

This chapter deals with:

- Organising and scheduling work
- Organising a task
- A case study

## 5.1 Importance of planning

Planning is a critical element in ensuring the safety and health of people at work. Getting the planning right is the first step towards making sure the job is carried out safely. Effective planning helps you anticipate risks and prevent accidents. It highlights what needs to be done before work starts and can help reduce stress and avoid last minute problems, which often result in poor solutions, taking chances and unnecessary haste: all common causes of accidents.

## 5.2 Organise and schedule your work

**Organise** your work in terms of human resources, equipment, facilities and site characteristics.

**Schedule** work to accommodate the external factors you cannot control (e.g. weather, seasonality, availability of labour, some site characteristics, and congestion on public roads).

**Human resources**

Think of the:

- competencies required for the work;
- availability of suitable workers;
- working hours;
- job rotation;
- rest breaks;
- meal breaks.

**Equipment**

- identify the equipment needed (tools, machinery and personal protective equipment);
- ensure the equipment is suitable and available;
- check its good operating condition, maintenance, licensing and relevant certificates;
- arrange for its safe transportation to the site;
- arrange for operator availability/licensing.

**Facilities**

Make arrangements for:

- clean drinking water;
- toilet and sanitation facilities;
- meals;
- facilities for taking meals and rest breaks;
- changing and drying facilities;
- transport arrangements;
- telecommunications.

**Site characteristics**

Clarify issues:

- Is the site fixed?
- Are workers required to relocate frequently?
- Is the landscape familiar to the entire workforce?
- Are there potentially hazardous landscape features (e.g. cliffs, disused quarries, severe slopes, rivers, ponds, lakes, mud and/or landslide history, broken terrain, shooting ranges, campsites)?
- Is the site easily accessible?
- Are there potentially harmful plants or dangerous wildlife (dense vegetation, wild animals, insects, snakes, etc.)?

**Schedule** your work taking into account:

- weather conditions that may impair activities (e.g. temperature extremes, wind speed,visibility, rainy/ stormy weather, sun radiation);
- the daylight hours available and the optimum time of day or night to complete the work;
- seasonality (e.g. planting, harvesting, hunting season, breeding and mating season for livestock or wild animals).

**Plan** for emergencies:

- What type of emergency situations might you face? (e.g. a person lost, injured, becoming ill, a storm, a landslide, a fire.)
- How will you deal with the situation?
- How will you ensure emergency communication?
- How will you ensure emergency transport/ evacuation?

Emergency planning is further discussed in **Chapter 10: Emergency preparedness and response**.

## 5.3 Organise tasks

Some tasks are more complex or hazardous than others and so they require more structured planning and the development of a safety method statement.

Examples of such tasks are:

- roof repair work;
- construction work;
- removal of waste;
- transporting livestock;
- refilling fuel tanks;
- construction of forest roads;
- glasshouse/greenhouse repair work;
- transportation of machinery and product.

A **safety method statement** is a document detailing the way a task will be carried out so that it will be performed as safely as possible. You may draft your own safety method statements in order to:

- clarify the steps, the sequence, the equipment or the precautions necessary for the task;
- formally, consider a safe procedure to do the work and use it to communicate that procedure to workers.

**Safety Method Statement**

**Description of Activity:**

**Issue date:… …  Name of issuer:……**

**1. Things to considering when planning the activity**

| Working aspects | Working parameters | | | | Notes |
|---|---|---|---|---|---|
| Location | Define where: | Near or Far? | Difficult or easy access? | Rough or smooth terrain? | |
| | | | | | |
| Timing | Define when: | Too tight too long? | Extreme pressure? | | |
| | | | | | |
| Weather | Define weather : | Hot or Cold? | Weather extremes? | Calamities? | |
| | | | | | |
| Equipment & machinery needed | Define them: | Own or Hired? | Maintained or not? | Need repair or not? | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| People | Define who: | Sufficient in numbers? | Trained or not? | Experienced or not? | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| PPE | Define them: | Sufficient in numbers? | Fit to use? | People know how to use them? | |

**A safety method statement details the**:

- location;
- timing;
- weather considerations;
- equipment and machinery;
- human resources, training, competencies, limitations,
- work characteristics (lone working, working in confined spaces, etc.);
- personal protective equipment necessary;
- emergency planning;
- risk assessment for the task;
- description of steps for carrying out the task.

Once the job has been completed, you can make corrections or improvements to the safety method statement, depending on the experience gained. The revised method statement will provide knowledge which can be used in similar situations. At the back of this guide, **Appendix 5.1**, you will find a **Safety method statement form**, ready for use.

# Case study

*A team of 12 forestry workers were logging wood deep in the forest following a week of storms and heavy rainfall. They had been idle for the past week due to the weather extremes and had hurried back to work to make up for lost time. They were caught in a landslide and three of them lost their lives buried under tonnes of mud and rocks.*

## What should the forestry workers have done?

They should have carried out a simple risk assessment of the site to determine:

## What could go wrong?

- landslides;
- hung-up trees; and
- unstable terrain as a result of the storm.

## What is the likelihood of any these happening?

**High**, taking into account:

- extreme weather conditions lasting many days;
- characteristics of the landscape/terrain.

## What are the possible consequences (severity)?

- injury, death.

## What control measures should they have taken, had they assessed the situation in advance?

They should have:

- assessed the condition of the ground landscape;
- postponed the work until the worksite was safe.

In such situations:

- teams must **plan** the timing of such work and have contingency plans in place to avoid working in high risk areas after a storm;
- forestry workers must be trained to understand the warning signs of an imminent landslide (or any other natural disaster) — before a landslide:
  - noticeable changes exist in the landscape such as minor soil creep, land movement, small slides, flows, progressively leaning trees;
  - water may be breaking through the ground surface in new locations;
  - a rumbling sound can be heard (faint at first and gradually increasing as the landslide gains momentum);
  - unusual sounds such as trees cracking may be heard.

CHAPTER 6:

# Training

## This chapter deals with:

- Types of training
- Training needs
- Licensing of drivers and operators
- Training records
- Training effectiveness
- A case study

**Training is essential to ensure that you and any workers are competent** *(i.e. you and your workers must be adequately trained to have the knowledge, awareness, skill, and attitude to do the job safely and correctly the first time. When you and any workers on your site are trained and competent, you are much less likely to be injured or cause accidents than untrained and inexperienced operators.*

## 6.1 Types of training

There are two types of training:

- **lectures** (**theory**), where you and/or your workers attend lectures or presentations on the relevant subject; and
- **on-the-job training** (**practical**), where you and/or your workers are shown how to use machinery or how to carry out a task in practice.

## 6.2 Training needs

You need to make sure that you and your workers are aware of all **work-related hazards** and how these hazards are to be controlled and/or dealt with. This training can be formal or informal. It can take the form of short sessions presented by external advisors or, if you are competent to give the training, you can provide the training yourself. Less formal training can include short talks to workers, for a few minutes after their break, before they go back to work on specific issues or tasks (e.g. the control of vehicle movements and speed, housekeeping and keeping work areas tidy, etc.).

Many European directives require specialised training for certain health and safety aspects, for example manual handling, noise, vibration, carcinogens, mutagens, asbestos.

*Informal training on specific issues*

**Train young workers** who usually lack experience. Many young and inexperienced workers have suffered serious and fatal accidents by being too enthusiastic to show that they can do the work. Point out the risks involved in each work activity they are assigned or will be involved in. Instruct them never to take

a chance and to consult you or their supervisor immediately if they have any concerns. **The mature and existing workforce also needs to be reminded** of what they have been taught: ensure that there is **regular training** and refresher training for everyone.

Make a point of training workers:

- before they start working at the site;
- on the importance of **good housekeeping** and following the **site rules**;
- on **lifting weights**;
- at **regular** intervals;
- on the use of **work equipment**;
- if they are doing a job for the **first time**;
- if you have decided to apply a **job rotation** scheme.

Train selected and capable workers:

- on the use of **chainsaws** or **bush saws**;
- on **welding** techniques;
- on the **use of ladders**, climbing equipment, work on elevated platforms, roof work and **work at height** in general;
- on how to use machinery to prevent accidents and reduce **musculoskeletal** strain;
- on tree felling techniques, including felling hung-up trees;
- on **logging**.

*Training young workers*

Provide some training on possible **emergency situations** and **perform drills** at least annually to put theory into practice (**Chapter 10: Emergency preparedness and response**): this will show whether workers or family members have understood what they have been assigned to do and whether the emergency plan is feasible and effective.

## 6.3 Licensing

Vehicle **drivers and operators** of certain types of machinery such as lifting equipment are required to be licensed. Check that all drivers and operators are licensed for the category of vehicle or equipment they are using. Check how often licences expire and plan ahead for their renewal. Crop sprayers (for pesticides) and other equipment may require inspection and certification. Check with your local inspectorate. Make sure that you keep all certificates available for inspection.

If national legislation demands so, **employees handling certain types of pesticides** need to be licensed. Licensing depends on the type of pesticide, the application, its toxicity and other characteristics.

> Vehicle drivers and operators of certain types of machinery such as lifting equipment are required to be licensed

## 6.4 Training records

It is good practice to keep records of proof of training in whatever format it may be:

- an official training certificate from the training authority;
- a letter of confirmation from the trainer;
- an attendance register for on-site training stating the subject and signed by the participants.

**CERTIFICATE**

It is hereby certified that

Mr ABC

Has successfully completed a training session on

*"the use of lifting equipment"*

Which took place on the 21 February 2008

Trainer Director

## 6.5 Training effectiveness

If you are paying external trainers or suppliers to train workers, make sure:

- the trainer is competent and the training authority is approved, if necessary;
- you resolve any queries that you or your workers may have before the session is over and make the most of your time and money.

In any case, make sure that you and/or your **workers fully understand what they have been told**.

# Case Study

*A farmer hired a telescopic forklift (with operator) to place a plastic water tank on his roof. Because there was a ditch which prevented the forklift from approaching the building wall, the forklift had to be parked some distance away. The forklift could reach the desired location but the operator could not see it. The farmer himself volunteered to guide the operator through the process and stood in a visible spot shouting and waving his arms to direct the operator. When the elevated tank approached some overhead power cables, the panic-stricken farmer started waving his arms in an attempt to warn the operator. Unfortunately, the operator did not understand the farmer's signals and the tank touched the electric power cable. The forklift operator was electrocuted.*


## What should the farmer have done?

The farmer should have carried out a simple risk assessment to determine:

## What could go wrong?

- hand signals used by the farmer might not be understood by the operator;
- contact with overhead electric power lines;
- possible overturning of the forklift.

## What is the likelihood of any of these happening?

**High**, taking into account:

- access to the location was difficult;
- the forklift operator was unable to see location of tank;
- the forklift operator needed to be directed with hand signals;
- the forklift operator and farmer had not agreed on the hand signals to be used; and
- they had not worked together before;
- the presence of overhead electric power lines.

## What are the possible consequences (severity)?

- injury, electrocution, death.

## What control measures should the farmer have taken, had he assessed the activity in advance?

He should have:

- chosen a more accessible location for the water tank;
- asked the forklift provider to provide a trained assistant to guide the forklift operator;
- agreed with the forklift operator on the meaning of the hand signals to be used.

CHAPTER 7:

# Workforce

This chapter deals with:

- Exposure of workers to hazards
- Involvement of workers
- Vulnerable workers
- Facilities
- Additional welfare provisions
- Violence among staff
- A case study

***As much of the strength of a business is within its workforce**, it is essential that the workforce is competent, kept safe, healthy and happy. For many farmers, their workforce consists of themselves, their spouses, children and relatives. At busy times, some use paid workers on a needs basis while others make more permanent arrangements with workers but family ties and employment arrangements are irrelevant when it comes to ensuring workforce health and safety.*

## 7.1 Exposure of workers to hazards

**Those most exposed to hazards are those carrying out the work activities**: **you and your workers**.

Where hazards are not controlled you and/or your workers may:

- be injured in an accident;
- contract a disease;
- be disabled;
- die.

**Although the worker may be at fault** in the event of an accident, **this does not in any way limit the farmer's responsibility** to have taken all practicable steps to provide a healthy and safe working environment prior to the accident.

Historically, agriculture is one of the most hazardous industries for workers in the EU with 400–500 fatalities a year.

*Involve your workforce*

Workers are exposed to:

- weather extremes;
- repetitive manual work;
- vehicle and machinery operation;
- contact with biological agents;
- contact with hazardous substances;
- falls, crushes and much more.

Take some time to think how you could make their work safer and healthier. **Healthy and safe workers are more productive** than overworked, stressed, mistreated, or injured ones.

## 7.2 Involvement of workers

Make your **workers aware** of health and safety issues and **of the risks to which they are exposed**. **Involve your workers** in identifying and recording hazards (**Chapter 4: Risk assessment**); **have regular meetings** with them, listen to their problems and ask for their opinions and suggestions (**Chapter 3: Organising for health and safety**). Employee involvement it is a legal requirement.

## 7.3 Vulnerable workers

7.3.1 Young workers **usually lack experience** and tend to be impulsive. They need training and close supervision until they are competent enough (**Chapter 6: Training**).

7.3.2 Elderly workers are more vulnerable to weather conditions, fatigue and stress. They may have limitations associated with their age or may suffer from chronic illnesses. Their eyesight, hearing, strength, reflexes, speed of movement and even their productive capacity may be diminished. They need to be given work that is suitable for them, provided with close supervision to control risks to them and given frequent health surveillance (**Chapter 8: Health Management**).

> Workers are often in a position to find practical and effective solutions to work place hazards

7.3.3. Family members may be willing or required to help but you should bear in mind their competence for each task as they **may as yet be untrained** and therefore more at risk.

7.3.4. Pregnant workers **must be considered**, **assessing** which work activities they can safely carry out without risk of miscarriage or any other complication for the mother or foetus.

7.3.5. Disabled workers **must be assigned work within their capabilities**. Additional considerations may be needed depending on their needs and abilities.

7.3.6. Child Labour **must not be utilised** (**Chapter 11: Children**) Where children from the farm family accompany their parents carrying out tasks, the hazards and risks involved must be considered, explained to them where appropriate and controlled so that no child is exposed to unacceptable risks.

7.3.7. Immigrant workers often need additional consideration.

- **Communication difficulties** arising from the use of different languages may lead to misinterpretations, misunderstandings and/or accidents, disease or ill health. If this is the case, you need to translate critical safety and health information and instruction into the language of those carrying out the work. You can also use on-the-job practical demonstrations, animations, pictures, simple commands and sign language. Do not give complicated instructions, shout or express anger or dissatisfaction when they fail to understand something.
- **Cultural differences** — make an effort to learn some basic principles about your workers' cultural background as this may save you from unpleasant surprises and misunderstandings. Diet and drinking habits may be strong in some cultures. Certain gestures may be offensive for some.
- **Religion** may be important for, or demanding of, the worker so try to make allowances for religious requirements.

**Immigrant workers sometimes reside on site** and may bring their families with them. **You need to provide decent housing**, **clean drinking water and medical care for these families**. You need to consider any possible safety and health risks to them and ensure that they are controlled. If your worker is confident that their family is safe and well cared for, they are more likely to cooperate with you and instructions on health and safety standards.

## 7.4 Facilities

Always provide suitable restrooms and sanitation facilities for the workforce. These include:

- clean toilets;
- cold and warm water;
- soap and single-use paper towels (or equivalent) for washing and drying hands;
- showers and changing facilities, if necessary;
- segregated male and female facilities if you have workers of both genders.

## 7.5 Additional welfare provisions

If relevant, make sure that the workers are able to communicate satisfactorily with their families, especially if the family is far away and cannot be visited often.

- Provide information, instruction, training and appropriate supervision in a form that can be understood.
- Arrange for medical care whenever needed.
- Provide relevant personal protective equipment free of charge (**Chapter 9: Personal protective equipment**).
- Provide all necessary information relevant to the specific tasks to be carried out.
- Provide appropriate entertainment if workers live on site (e.g. satellite TV).
- Allow for adequate resting time and appreciate that workers may be tired (fatigue may increase the risk of accidents).
- Respect the workers' needs — talk to them and never ignore their concerns.
- Ask the workers' opinions when appropriate (**Chapter 3: Organising for health and safety**).

## 7.6 Violence among staff

Finally, be aware that there may be violent incidents among the workforce. There have been cases of workers being involved in fights, or accused of bullying, sexual harassment, rapes, or attacks. Make sure that you get to know your workers well. Discuss any issues or problems they may have. In this way, you will be aware of any conflicts or personal differences among them and will be in a position to prevent conflict escalating into violence. **Your personal behaviour**, **your attitude and level of supervision can influence their behaviour either way**.

# Case study

*A worker at a pig farm was assigned to clean the feedstuff silos so that they could be refilled the next day. He was supposed to undertake the job with a co-worker. Due to a sudden illness of the co-worker, he decided to proceed alone. While descending inside the silo, he fell and hit his head against the side of the silo: he was found dead seven hours later.*


## What should the farmer have done?

He should have carried out a simple risk assessment to determine:

## What could go wrong?

- worker being injured while working in the silo;
- worker becoming trapped in the silo with no assistance available;
- falls from height.

## What is the likelihood of any of these happening?

**High**, taking into account:

- the worker was working alone.

## What are the possible consequences (severity)?

- injury, coma, death.

## What control measures should the farmer have taken if he had assessed the situation beforehand?

He should have:

- replaced the sick co-worker;
- provided the workers with a safety method statement;
- supervised the work at frequent intervals.

CHAPTER 8:

# Health management

*Whenever health and safety is discussed, safety tends to predominate with health risks often being neglected. Generally, this is because the lack of safety precautions can lead to accidents causing immediate injury or loss of life, whereas health problems usually escalate gradually and may not be obvious at an early stage. Health problems arising from work activity should be recognised as* **accidents in slow motion** *which often have as serious or* **sometimes even more serious implications than many common accidents**.

## This chapter deals with:

- Health effects
- Health surveillance
- Zoonotic diseases
- Allergies
- Vaccinations
- Surveillance
- Asthma
- Musculoskeletal disorders
- Weather-related health effects
- Skin diseases
- First aid
- Reporting health-related issues and accidents
- A case study

## 8.1 Health problems

Health problems usually:

- develop gradually;
- are difficult to identify;
- are long-lasting;
- are difficult to relate to the cause;
- are often not officially diagnosed.

The health of workers on a farm can be put at risk by:

- excessive stress;
- zoonotic diseases;
- allergies;
- musculoskeletal strain;
- exposure to weather extremes;
- contact with earth, flora, fauna, biological agents (skin diseases) and animals.

*Workers on a farm are often exposed to physical loads which are dangerous to health or unnecessarily fatiguing*

## 8.2 Health surveillance

**The monitoring of workers' health is regulated**. This means that, if the law requires it, an employee must visit their doctor at predetermined intervals to be examined at the employer's expense. The purpose of this exercise is to establish whether work-related activities are causing or aggravating any health issues of the worker. The worker is examined for health effects that are likely to occur taking into account the work they are assigned to do. Additionally, health surveillance helps to determine whether a worker is fit for the work assigned to them. For example, an asthmatic worker should not be expected to handle hay or animal feedstuffs, while a worker with cardiovascular disorders or serious visual impairment should not be employed as a driver.

**Health surveillance is meant to be proactive**. It helps to identify work-related health problems before serious damage to the worker occurs. Any work-related health problems should be reported to a doctor immediately and appropriate action taken.

It is useful if the farmer keeps a file on each of his workers with a record of any chronic diseases, allergies or health conditions that may become aggravated, as well as medication taken.

*Work involving exposure to certain chemicals requires medical supervision of the employee*

## 8.3 Zoonotic diseases

**Where people are in contact with animals**, there is always the risk of contracting a zoonotic disease. Not all animal diseases are transmittable to humans but many of them are — see the table of **Zoonotic diseases** in **Appendix 6.1**.

You can reduce the risk of contamination by improving your husbandry practices, providing efficient ventilation, scheduling frequent vaccination of animals, quarantining sick animals and applying good personal hygiene.

If you suspect you have contracted a zoonotic disease, contact your doctor immediately.

## 8.4 Allergies

Allergies to insect stings and reptile bites can cause anything from mild swelling to anaphylactic shock and death. People **are often unaware of allergies they may have had** since birth or which they may have developed at any stage during their life. If you have an incident, even if the effects are mild, **consult a doctor**, who will advise you on how to treat it and whether you need to proceed with further allergy tests.

*A sting from a bee may have serious consequences to a person who is allergic to insects*

Unfortunately, not all allergies can be predetermined through tests and you can never be sure of your body's reaction to a sting or bite at any given moment, even if this has occurred before in the past.

If a sting or bite needs treatment, it is essential for the doctor or nurse to know the type of insect or reptile responsible in order to provide the correct antidote. You also need to be aware that there is a time frame within which the victim must be injected with the antidote. Your doctor may advise you further.

Most snakes are not poisonous: but it is useful if you can distinguish between those that are poisonous in your region's fauna.

Pesticides and hazardous substances in general, if inhaled, ingested or absorbed by skin may cause allergies, anaphylactic shock, even death. **Symptoms can be minor or severe**. They can be **short term** or may **impair health gradually and severely over time**.

## 8.5 Vaccinations

Consult your doctor if you have not already been vaccinated against tetanus, hepatitis, or any other vaccine that could protect you from contracting a potentially life-threatening disease.

## 8.6 Hearing, eye and cardiovascular tests

Exposure to high noise levels and excessive vibration should be minimised as far as practicable and where exposure does occur due to the nature of the work (e.g. chainsaw use, vehicle and machinery use), possible health effects should be monitored and assessed at a frequency specified by a specialist. You should check with your national authority on the maximum allowable duration of exposure and exposure limits. When evaluating exposure to noise and vibration take into account:

- intensity;
- frequency (of emission);
- duration of exposure (continuous or fragmented);
- proximity to the source;
- the combined effect from multiple sources.

| | | |
|---|---|---|
| Whisper | 30 | dB |
| Normal conversation | 60–70 | dB |
| Telephone dial tone | 80 | dB |
| City traffic inside a car | 85 | dB |
| Subway train | 95 | dB |
| Level above which frequent or prolonged exposure may result in permanent hearing loss | 85 | dB |
| Motorcycle | 100 | dB |
| Power saw | 110 | dB |
| Rock concert | 115 | dB |
| Pain begins | 125 | dB |
| Pneumatic riveter | 125 | dB |
| Jet engine | 140 | dB |
| Deafness | 180 | dB |

Indicatively, an indoor shearer produces 80 dB; an ATV, a tractor or a harvester 85 dB; an auger 95 dB; an irrigation pump 100 dB; and a chainsaw 110 dB.

Eye tests and examination of the cardiovascular system are important especially if you are operating machinery, driving, or working at heights. Impairment of vision usually occurs gradually and is underestimated.

## 8.7 Asthma

Workers with asthma should avoid working:

- with hay, feedstuffs, seeds, blossoms;
- with poultry;
- in dusty conditions;
- in very warm and sunny weather;
- in areas with a strong odour;
- in silos and other confined spaces.

*Prevention is better than cure*

Always keep your medication at hand

## 8.8 Musculoskeletal disorders

Stretching while fruit-picking, bending for planting, weeding and picking from low-rise plants, lifting and carrying heavy weights, handling machinery, driving long distances, various tasks that involve pulling and pushing — these tasks almost always cause the farmer or farmworker to suffer from various musculoskeletal disorders including lower back pain, strains and sprains within the spine, legs, hands, shoulders and neck.

Tobacco harvesters, for example, develop wrist problems due to the continuous wrist movement when collecting tobacco leaves by hand as do dairy farmers from the amount of wrist work even involved in mechanised milking.

There are many considerations when lifting loads.

- Be aware of the exact weight you are about to lift, assess it first.
- Depending on the weight, shape and packaging, decide if you can lift it or if you need help from a trained co-worker or a mechanical aid.
- Before you lift anything, first decide where you are going to move it to and how to move the weight safely.
- Where possible, arrange work surfaces at a height facilitating the lifting, handling and setting down of weights.
- Use mechanical systems whenever possible (e.g. hand carts, trolleys, tele-handlers or tractors equipped to lift weights).
- Use pulled systems whenever possible.
- Minimise the amount of lifting involved in work generally.
- If lifting is still part of the work, train workers on the right techniques and postures for lifting and carrying weights.
- Wear appropriate clothing so you can get close to the material to be lifted (e.g. overalls).
- **Never attempt to lift anything at the limits of your ability**.

*Manual lifting of heavy weights can cause serious damage to the back, shoulders and neck*

When lifting weights:

- keep your back straight and bend your knees;
- transfer your weight to your legs;
- bring the load as close to the body as possible;
- distribute the load equally between your arms;
- protect your hands with gloves if the load texture is rough;
- if possible, push or pull the load instead of lifting it;
- weights with handles are generally easier to lift;
- weights between elbow and shoulder height are the easiest to lift;
- seek assistance from a trained co-worker for heavier weights and spread the load between you;
- split large loads into smaller ones if possible;
- take short breaks.

*Use lifting equipment when handling heavy weights*

According to Eurostat, agriculture is the industry which experiences the majority of work-related musculoskeletal problems

## 8.9 Weather-related health effects

Exposure to weather extremes while in the field may lead to **hypothermia**, **frostbite**, **sunstroke**, **heatstroke**, **dehydration and skin cancer**.

What can you do?

- **Schedule the work** to optimise working conditions.
- **Dress appropriately**, depending on weather conditions.
- If it is hot and sunny, **use hats**, **sunglasses**, **sun block**, **drink water and rest in the shade**.
- If it is cold and wet, **dress warmly**, **wear waterproof overalls**, **take a warm bath and change your clothing immediately after finishing work**.
- Plan your activities so as to **minimise exposure** to weather extremes.
- **Postpone activities** that might put you at risk when weather conditions are unfavourable.

*Tobacco pickers, who pick leaves manually, are exposed to skin infections due to continuous contact with the earth, pesticides, fertilisers and nicotine*

## 8.10 Skin diseases

**Skin infections are very common in farming and forestry**. Continuous contact with biological agents, the earth, flora, pesticides and fertilisers, debris, animals, manure and timber can result in infections, swelling, scars and the development of fungi. **Protect your hands as much as possible by wearing gloves** and visit your doctor if skin abnormalities persist.

Many zoonotic diseases such as anthrax, tinea capitis and orf are associated with skin contamination.

## 8.11 First aid

**Always keep an appropriate first-aid kit on site** and ensure it is readily available. Pharmacists have ready-made kits and can provide you with a list of the minimum contents if your national legislation has such requirements.

It is extremely helpful if you, or another member of the family or **workforce**, **attends first-aid training** and can provide immediate assistance if the need arises.

Keep a list of telephone numbers for:

- the emergency services — 112
- the closest hospital
- your doctor
- a poison centre.

# Case study

*A.J. worked had worked for a potato farmer for many years. Her job was to harvest potatoes, put them in boxes and place the boxes on trucks. She had been doing this job for 15 years. She is now suffering from spine disorders and is claiming compensation from her former employer for her current health problem.*

## What should the farmer have done?

The farmer should have carried out a simple risk assessment of the potato harvesting activities to determine:

## What could go wrong?

- chronic spine, muscle and back problems.

## What is the likelihood of this happening?

**High**, taking into account:
- lifting and carrying of weights;
- repetitive bending;
- poor posture;
- long working hours.

## What are the possible consequences (severity)?

- chronic spine, muscle and back problems.

## If the farmer had assessed the situation beforehand, what control measures should he have taken?

He should have:
- automated the process as much as possible;
- arranged for ergonomic containers if these had to be lifted by workers;
- ensured that lifting and twisting actions were eliminated from the system of work;
- assessed the ability and suitability of each employee;
- arranged for adequate breaks and time for rest;
- provided training for his workers on the correct lifting techniques to be used in the task;
- ensured that the weights lifted and hours worked by individuals did not exceed their ability;
- provided health surveillance — the **workers' health should have been periodically monitored**.

CHAPTER 9:

# Personal protective equipment

## This chapter deals with:

- PPE selection
- PPE use and maintenance
- PPE used in farming
- Other types of clothing
- A case study

*When considering health and safety precautions,* ***personal protective equipment*** *(PPE)* ***is the last resort*** *and should only be considered after all other means of controlling the risk have been exhausted. This is because PPE only protects the individual and does not prevent the accident from happening. Critically, it often only partially protects the wearer reducing the severity of the effects.*

## 9.1 PPE selection

When **selecting PPE** you *must* go through the following **thought process**.

- What is the **task** you want to undertake?
- What **hazards** do you need to protect against?
- Which part or **parts of the body** are you trying to protect?
- Which PPE **specifications** are necessary (note them down)?
- Who are the **users** (ensure PPE is suitable and will fit the users — correct type and size)?

Before **purchasing PPE**, ensure that the **specifications** you have set **are met**.

*It is important to use PPE that is appropriate for the task to be performed*

**For example, for the task of spraying pesticides on apple trees with a portable spraying tank, (often referred to as a knap sack sprayer); the hazards are:**

- splashing or spillage of the pesticide during preparation, mixing or washing out;
- skin or eye contact;
- inhalation or ingestion of the pesticide during spraying;
- manual handling and falling objects.

the PPE specifications are:

- Pvc, unlined flexible gloves are suitable — leather/ canvas gloves are unacceptable due to the high permeability and disposable gloves are suitable only for certain tasks;
- Pvc calf-length steel toe capped boots are suitable to protect against spillages and falling objects;
- a full-face shield is recommended rather than goggles, which only protect the eyes;
- a wide-brimmed washable hat can be used as head protection.
- the task to be performed.

Additionally, ensure:

- the correct size is used;
- you communicate with the manufacturer or local supplier to ensure that only PPE with the correct specification is purchased;
- all PPE should be donned prior to opening any containers of pesticides and all persons not wearing appropriate PPE should be kept outside an established danger zone.

## 9.2 PPE use and maintenance

Personal protective equipment will protect the user from a hazard provided the following rules are followed.

- The PPE is suitable for the activity to be carried out.

**For example**, **when you buy safety shoes**, **think of all the activities to be carried out wearing them**.

### Spraying chemicals

- Safety toecap
- Non-slip sole
- Anti-perforation midsole
- Resistant to abrasion and cuts
- Resistant to chemicals (fuels, oils, greases, solvents, weak and diluted acids, phytosanitary products)

### Maintenance operations

- ABG toecap
- Non-slip sole
- Abrasion-resistant leg reinforcement
- Anti-perspiration lining
- Injected sole for ventilating the foot and management of perspiration

### Welding

- Water repellent
- Non-slip sole
- Resistant to glowing embers
- Rubber sole resistant to hydrocarbons and contact heat
- Quick-release buckles

### Working in very cold areas

- Lining to insulate the foot
- Breathable
- Non-slip sole
- Cold insulation sole
- PU+N resistant to extreme cold (– 40 °C)
- Lightness
- Steel insole
- Non-metallic toecap
- Shock-absorbent effect

**For example**, **when you use a chainsaw to cut wood**, **think about the proper type of PPE to use**.

- **Helmet** with integrated full-face visor and earmuffs to protect against kickback, falling branches, stray wood and gravel, noise.
- **Safety cut-resistant leggings** made of a special fabric (based on the classification of the maximum chain speed).
- **Chainsaw gloves** made of a cut-proof fabric.
- **Chainsaw boots** made of chainsaw-protective fabric with steel toecap protection.

Ensure:

- all PPE is certified with a CE mark;
- the manufacturer's instructions are followed;
- all PPE used is the correct size for the user/it fits the user;
- that PPE is used for the length of time as indicated by the manufacturer;
- PPE is adequately cleaned and maintained;
- the user is trained in the use of the appropriate PPE;
- the PPE has not passed the expiry date (even hard hats and goggles have an expiry date);
- the PPE is not used for purposes other than those stated by the manufacturer;
- the PPE used is not used with other, incompatible PPE.

*Safety shoes with steel toe protection protects the feet from being injured*

**Always seek advice from your local supplier, the manufacturer or a specialist. Do not attempt to buy PPE over the counter where specialist advice is not available**.

**PPE is usually designed for a single user** since it is chosen in relation to size, comfort and other features of the individual. If PPE is to be reused by others, it must **be cleaned and disinfected** first. **It is important that workers know how to care for**, **clean**, **maintain and store their PPE to ensure it remains effective**.

**PPE must be provided by the employer free of charge**. The employer must involve workers in the selection of PPE and keep a record of the choice made. The employer must train the worker and give adequate instructions on its safe use.

**In general**, **PPE should not be used for non-work purposes**: it is best that **PPE is kept in lockers** on site rather than allowing workers to take their PPE home. Where workers are allowed to take PPE home, they may be asked to make some contribution to the PPE costs. People such as forestry workers, who often relocate, usually keep PPE in their vehicles.

## 9.3 Common PPE used

Personal protective equipment often used includes the following.

- **Gloves** to protect hands from contact with hazardous substances, hot or cold surfaces, stings, rough textures or sharp tools.
- **Single-use gloves** for use when treating sick animals or assisting births.
- **Safety shoes** or **boots** — depending on their characteristics, to provide protection from materials that may be dropped, livestock that may tread on you, snake bites, weeds, slippery surfaces, static electricity, sharp item penetration, water penetration.
- **Goggles** to protect the eyes from stray particles and fumes — when weeding, welding, cutting, working in the workshop, or when there could be oil splatters.
- **Earplugs and earmuffs** to protect your hearing from the high noise levels emitted from some machinery, such as chainsaws, or animals, such as pigs, when housed.
- **Face protection** must be used while welding to protect eyes, nose and mouth from fumes, heat and stray metal.
- **Face protection** to be worn when mixing, spraying or applying chemicals or using solvents, and when grinding metal and cutting timber.
- **Hard hats** to prevent injuries from falling objects.
- **Breathing apparatus** when working in confined spaces such as in silos.

- **Harnesses** should be used while working at height. However, the harness is only useful when it is attached to a point capable of bearing the workers' weight thus saving them from a vertical fall as well as from lateral strikes. Never use a harness if you are working alone. Remember: if you are suspended and unable to get down, it can be fatal. You have a maximum of 30 minutes to be rescued, so always have an emergency rescue plan for persons **using a harness**.
- Suspension trauma, also known as harness hang syndrome (HHS), is an effect which occurs when the human body is held upright without any movement for a period of time (e.g. a person strapped into a harness). In such cases, if the person faints but remains vertical, they risks death as a result of their brain not receiving the oxygen it requires.
- **Protective clothing worn to protect against chemicals** must be suitable for the type of chemical products being sprayed, handled or used by the worker (see the safety data sheet provided by the manufacturer or supplier).

## 9.4 Clothing

**Items of clothing are considered personal protective equipment only if they have been designed, tested and certified to protect against predetermined hazards**.

For example, the vests worn by workers in low temperature environments (e.g. in walk-in freezers) protect in specific temperature ranges and loggers' trousers protect the user from chainsaw laceration.

In any case, clothing and accessories play an important role in everyday safety.

Clothing may protect you:

- ✔ light-coloured clothing, hats and sunglasses should be worn in hot and sunny weather to reflect the heat and protect from excessive glare;
- ✔ warm clothing should be worn in cold conditions;
- ✔ and waterproof overalls in rain or snow.

**Clothing, and even PPE, can increase risk if not properly selected**.

- ✘ Do not wear loose high-visibility vests, loose shirts, coats, sleeves or straps when operating machinery as you run a risk of being entangled.
- ✘ Do not allow long hair close to machinery, keep long hair tied back.
- ✘ Do not wear old clothes which may be loose or otherwise unsuitable — wear tight-fitting overalls or similar.
- ✘ Do not wear jewellery.
- ✘ Do not wear incorrect gloves and face masks as these might actually increase the risks when handling or spraying pesticides.

# Case study

*A farmer was preparing a pesticide to spray his orchard. He was following the manufacturer's instructions closely because he knew that these substances were highly toxic. He always used gloves when handling chemicals to protect his hands and he preferred single-use gloves that he could throw away after each use. He had a box of medical gloves purchased from the supermarket and they were of excellent quality. However, a couple of hours after using them he came down with a severe rash on his hands: redness, pain, heat and swelling.*

## What should the farmer have done?

He should have carried out a simple risk assessment to determine:

## What could go wrong?

- skin irritation;
- ingestion;
- inhalation of mists;
- exposure to toxicity.

## What is the likelihood of this happening?

**High**, taking into account:

- unsuitability of gloves and personal protective equipment in general.

## What are the possible consequences (severity)?

- irritation, inflammation, illness, anaphylactic shock, death.

## What control measures should the farmer have taken to reduce the risk?

He should have:

- read and followed the safety information on the container and consulted the safety data sheet;
- selected the appropriate gloves taking into account their specifications such as permeation rate, breakthrough time, and degradation;
- selected and used all relevant PPE (face protection, gloves, shoes and overalls).

CHAPTER 10:

# Emergency preparedness and response

## This chapter deals with:

- Planning your emergency response
- Additional measures for forestry operations
- Fire prevention measures
- Firefighting
- Flooding
- Storm
- A case study

*The more **remote** your site is, the more **unreliable telecommunications** will be; the more **hazardous** your activities, the more you need to plan and prepare for **emergencies**.*

## 10.1 Planning your emergency response

When planning for possible emergencies, you need to think:

### What types of emergencies am I likely to encounter?

There are two types of emergency situations:

- **natural disasters** such as flooding, storms, droughts, landslides, earthquakes and volcanic eruptions; and
- **accidents due to human intervention** such as fire, drowning, electricity black-out, spills or leakages, vehicle and machinery accidents, contact with overhead power line entrapment in a confined space, attack by an agitated animal.


*Plan for an emergency before it happens*

### What can I do to be prepared?

**Act proactively, draw up an action plan and be prepared to implement it**.

List what is expected and from whom. Who gives the signal to implement the emergency plan? Who calls the authorities? Who switches off the mains, turns off or isolates machinery? List the tasks and agree with your workers who will be responsible for each task. Build in some contingencies such as who takes over when the responsible person for each task is unavailable.

### What do I need?

The **action plan** will show you what you need. **You need easily accessible escape routes from all indoor areas**, **including livestock holding areas**, **barns**, **silos**, **warehouses and workshops**. **Depending on the nature of your business**, **you may need detection and warning systems**. A warning system should be audible on site and can also be programmed to call your mobile phone. You may need to put up emergency lighting, signs, emergency bars on the inside of doors. You need to determine an assembly point for evacuation. You need to rely on telecommunications: Are they reliable in your area? Do you need a satellite cell phone for emergencies? Do you want your warning system to be connected to the regional fire station? Have you listed emergency phone numbers in various accessible locations? Is it worth installing automated firefighting systems? You certainly need well-positioned fire extinguishers. Do you know how to use them? You need first-aid kits and, if possible, first-aid training. Do you need a standby power generator? If so, is it properly installed?

*Fire extinguishers should be close to hand*

## Is my plan practicable?

**Test the practicality of your emergency plan by having a test run**: **check the speed of assembly**, **the awareness of critical actions by responsible persons and check the availability of equipment**. Test runs should be held on a **regular basis**, and at least once per year, and involve all workers. Depending on the size and extent of your business, these emergency test runs may also involve the **emergency services**. Have fire extinguishers checked regularly and refilled by the manufacturer. Learn from the test runs, make required changes and fine-tune your emergency plans. This is the only way to be sure that your emergency plans will work if the need arises.

## What has changed?

**Amend your plan as people**, **infrastructure**, **equipment and hazards change**. Remind people of their emergency duties. It is important that you have their full commitment to their role, otherwise the plan will collapse. Learn from each incident or from each time a fire extinguisher is discharged or first aid is used. What went wrong? Could it have been worse? Did the emergency plan work well? Can the action plan be improved?

## 10.2 Additional measures for forestry operations

If you are working in the forest and are constantly changing location, you need to have a plan for how to communicate in case of an emergency, how to be located and how to be evacuated. Remember your emergency plan may need to change on a daily basis: it will be influenced by wind direction, numbers on site, machinery being used, your location and topography.

Make sure you have reliable means of communication:

- if you are using a mobile phone, check that it has a steady signal or that you can dial 112 (emergency services) if the signal is not available;
- if you are using a radio, check that all users are within the transmission range;
- use a satellite phone where signals are weak or unreliable.

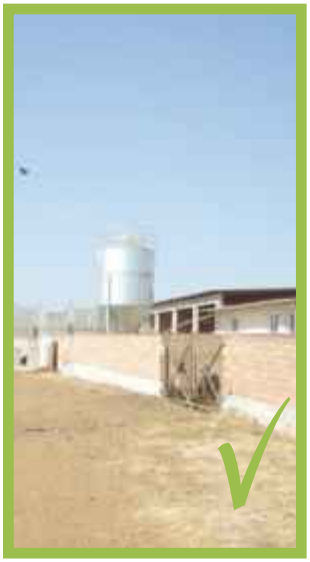
You also need to have at hand an appropriate first-aid kit to treat any unexpected incidents. Make arrangements with the local authorities or private emergency services on how an emergency would be handled, access for emergency services (e.g. use of helicopter) (**Chapter 21: Forestry**).

**If you are working alone**, **think who you will contact and how in case of an emergency**.

## 10.3 Fire prevention measures

Prevent an outbreak of fire by:

- keeping **the site tidy** and free from debris, weeds and flammable materials;
- **lock and secure** chemicals and fuel reserves;
- install fuel **leakage detectors**;
- establish refuelling procedures;
- install **smoke and heat detectors**;
- **store** grain, hay, organic and other flammable matter **well away from sources of ignition** (e.g. workshop, welding, use of machinery);
- **prohibit smoking** on site;
- **fence your area** to keep trespassers out;
- **inspect electricity installations** and panels — they should not get overheated;
- **do not allow equipment to overheat**;
- **do not block vents**;
- **remove manure often**;
- if possible, **use fire-retardant materials** in construction;



- construct a **fire-retardation zone** by weeding and clearing the perimeter of your site: make the zone as wide as you can (up to 10 m) depending on the size of your plot;
- install a **lightning conductor**.

## 10.4 Firefighting

If necessary, **install automated fire suppression systems** (e.g. water sprinklers, carbon dioxide) depending on the materials and other characteristics of the site. **Remember that water is not always appropriate**.

**Install fire extinguishers and make sure they are appropriate**. Various types of fire extinguishers exist — water, foam, dry powder and $CO_2$ — and their selection must take into account the source of the fire to be fought as well as the site characteristics. Water extinguishers, for instance, are not suitable for fires caused by flammable liquids or in places where electricity exists. Fix fire extinguishers on walls in easily accessible locations. Put up signs to indicate their location and **arrange for workers to be trained** in their use.

- Do not fight the fire if it is unsafe for you or the workers to do so.
- Call the fire brigade immediately.
- Do not enter a burning building.
- Do not spray water on electrical installations or panels, oil, or fuel.
- Do not attempt to cross a burning area.
- If your clothes catch fire, lie on the floor and roll to extinguish the flames.
- If gas cylinders including oxyacetylene cylinders are involved, evacuate the area and inform the emergency services as these may explode with considerable force.

## 10.5 Flooding and storms

Sudden unexpected flooding of areas or buildings due to landslides, heavy rainfall or even damaged water mains, may pose a risk of drowning to you or your workers as water levels may rise rapidly. If a workplace needs to be evacuated due to flooding, evacuate people first and livestock second. Do not delay the evacuation to collect personal items other than medication and your means of communication (mobile phone, GPS, etc.). Where possible, switch off electricity mains, provided that both you and the mains switch are dry and that you are standing on a dry surface. Otherwise DO NOT attempt to do so. Similarly, unplug electric appliances only if it is safe to do so.

**If you suddenly find yourself in the middle of a storm which includes lightening**, **avoid standing under high trees and remove any metal items as they attract lightning**. **If you are in a car or other vehicle**, **stay inside. Cease forest activities. In all other types of storm** (**e.g. high winds, heavy rainfall**, **blizzards**), **assess if it is safe to continue any work that is underway**.

## 10.6 Machine contact with overhead electricity lines

If a machine or its attachments comes into contact with an overhead electricity line, it could be fatal for anyone who touches the machine. Do not rely on rubber tyres or rubber-soled boots for protection — they will not insulate against a high voltage shock. Tyres can burst into flames and boots can be destroyed.

**Step 1**: Stay calm. Disengage gently. Back away if possible. Call emergency services and advise them of your exact location. Stay in the cab.

**Step 2:** If risk increases (tyres smoking or catching fire), jump well clear and keep others away. Do not step down. Never make contact between the machine and ground.

# Case study

*A young worker was trampled and crushed by agitated cattle when he was cornered by large animals in a fenced area with a single exit which was blocked.*

## What should the farmer have done?

The farmer should have carried out a simple risk assessment of the activity to determine:

## What could go wrong?

- injury to trapped worker attacked by animals;
- injury to worker trapped or crushed by agitated animals.

## What is the likelihood of this happening?

**Medium**, taking into account:

- unpredictable animal behaviour (although most farm animals are fairly tame);
- animals may attack when stressed, feel threatened or are in pain;
- lack of alternative exit from fenced animal area.

## What are the possible consequences (severity)?

- injury, concussion, coma, death.

## If the farmer had assessed the situation beforehand, what control measures should he have taken?

He should have:

- ensured worker was competent and appropriate for the job;
- provided a vehicle which could be used as a refuge if the animals attacked;
- made sure that **an alternative exit** was available and easily accessible to the worker;
- encouraged working in pairs (as opposed to lone working);
- provided an alarm signal or some other warning device.

CHAPTER 11:

# Children

## This chapter deals with:

- Whose children are commonly found on the farm
- Common causes of accidents
- Factors leading to accidents
- Simple measures to keep children safe
- A case study

*According to the International Social Security Association (ISSA), two thirds of children killed in agriculture are less than five years old.*

Rural children are twice as likely to die in accidents as urban children (refers to all types of accident). The vast majority of children killed in farm accidents are the farmers' children, rather than visiting children.

It is quite common for spouses, children, and relatives to work on the farm, often regardless of their age, competency, training or safety. As a result, agriculture has the highest incidence of accidental deaths of children.

## 11.1 Whose children are commonly found on the farm?

- The farmer's children who usually live on site.
- Friends of the farmer's children.
- The farmer's grandchildren may visit regularly
- The children of paid labour living on site — often immigrants.
- Visiting children — including formal educational excursions of schools, associations, etc.
- Tourists' children — if the farm offers accommodation as an additional source of income, or if the farm runs an on-site shop for its produce.
- Children trespassing.

*Children are the most vulnerable group on the farm, regardless of whether they live on site or they are visiting only once*

## 11.2 Common causes of accidents

Farmers' or workers' children may underestimate the hazards because they are overfamiliar with them as they are part of their everyday life. Visiting children, including school friends, neighbours' children, children of other visitors, tourists' or children trespassing are unfamiliar with the site and unaware of its many hazards. In any case, they are at risk.

**Common causes of accidents are:**

- falls from vehicles;
- being struck by moving vehicles or objects;
- contact with machinery;
- driving vehicles;
- falls from height;
- drowning and asphyxiation;
- poisoning;
- fire; and
- contact with animals.

*Fence premises and hazardous locations to keep children safe*

## 11.3 Factors leading to accidents

The following may, sadly, lead to accidents.

- The child's natural curiosity and sense of adventure.
- The attitude of the farmer (who is often the parent) towards safety.
- Farmers very often allow their children to ride on a tractor with them without proper precautions, such as providing a seat and a seat belt.
- Children playing on the premises without proper supervision.
- Children are expected to assist in the day-to-day running of the farm and are assigned certain tasks/chores which may be inappropriate to their age or ability (child labour is illegal throughout Europe with the age limit varying from country to country). Find out what applies in your country. However, if the farm is the family business and the family residence at the same time, it is difficult to distinguish between a child acting as a worker, learning by accompanying or being assigned his/her chores.
- Although it is illegal, parents often believe that it is acceptable to allow children even as young as 7 to 9-year-olds to operate a tractor (check the age limit with your competent authority).

*Child without proper supervision*

- Parents often do not believe that being within 10 ft (3 m) of a rotating machine poses a risk to their child's safety. Parents need to consider the danger of ejected material and what lesson is being learned by the child on their perception of risk.
- Farmers often neglect to provide appropriate fencing, barriers or other measures to prevent children trespassing or gaining access to dangerous areas.

> Protect children's safety and health: while on your farm, they are your responsibility

## 11.4 Simple measures to keep children safe

- ✔ Keep machine guards in place.
- ✔ Keep children away when hazardous activities are being carried out.
- ✔ Fence premises and hazardous locations.
- ✔ Use warning signs to indicate danger.
- ✔ Cover and secure wells, tanks, pits and trenches.
- ✔ Lock away ladders, chemicals, veterinary medicines and hazardous substances (paints, solvents, pesticides, etc.).
- ✔ Lock access to hazardous areas (e.g. workshops, silos).
- ✔ Remove keys from ATVs, lock tractors and other vehicles.
- ✔ Lock electrical panels.
- ✔ Stack products safely, arranging so that the centre of gravity is as low as possible to prevent them from falling and crushing or trapping a child.
- ✔ **Explain the dangers to children and set them simple but clear safety rules**.
- ✔ Provide adequate supervision.

*Make sure that the children cannot access hazardous locations*

Children do not perceive danger as adults do and you can never predict how they will react

Spend some time making the farm a safer place for them

- ✘ Never allow children in fenced areas with animals.
- ✘ Do not allow children to consume farm products unsupervised (untreated milk products or recently sprayed fruit may be lethal).
- ✘ Do not allow children to operate machinery and tools or drive vehicles: keep keys locked away and the power off.
- ✘ Do not allow children to ride on tractors or any other farming vehicle.
- ✘ Do not assign children tasks that may endanger them.
- ✘ Provide adequate supervision, especially for visiting children.

# Case study

*A farmer was holding his three-year-old daughter in his lap in the harvester cab as he was working in the field. Startled by a bee flying through the window, she slipped off his lap and fell against the door, which swung open. Before her father had time to react, the child fell out of the cab and was crushed under the rear wheel of the harvester.*

## What should the farmer have done?

He should have carried out a simple risk assessment to determine:

## What could go wrong?

- child falling out of the cab and being run over;
- child distracting the driver and causing an accident.

## What is the likelihood of this happening?

**High**, taking into account:

- a child's natural inability to keep still;
- farming machinery and equipment is generally not designed to carry children as passengers;
- the driver/operator's need to concentrate to avoid accidents.

## What are the possible consequences (severity)?

- injury, concussion, coma, death.

## What control measures should the farmer have taken if he had assessed the risks?

- He **shouldn't have allowed his daughter** to ride with him.
- He should have left her safe at home under supervision.

CHAPTER 12:

# Visitors and third parties

This chapter deals with:

- Types of visitors
- Agricultural contractors/governmental representatives/utility workers/construction and maintenance workers
- Information to third parties
- Taking preventive measures
- Tourists/school children/on-farm bed and breakfast activities
- A case study

*In addition to your family and workforce, there will always be visitors on the farm. You may not have visitors every day but* ***you should always be concerned with the safety of visitors****.*

## 12.1 Types of visitors

- **Agricultural contractors** — performing work on your behalf (planting, spraying, harvesting, loading or unloading of produce or animals, transport, vets).
- **Construction and maintenance contractors** — who must comply with the Mobile Sites (Construction) Directive.
- **Governmental agency representatives** — such as health and safety inspectors, hygiene inspectors, agricultural inspectors, agricultural consultants or advisors, vets.
- **Utility workers** — installing or maintaining utility networks or substations (electricity, water, telecommunications).
- **Suppliers** of feedstuffs, fertilisers, pesticides, machinery, etc.
- **Customers** — cooperatives collecting milk or crops, individual shoppers if you run an on-site farm shop.
- **Tourists** — if you run a bed and breakfast business on your farm.
- **School children** — if your farm is used for educational visits or trainee placements.
- **Others** — such as waste collection workers.

Obviously, the needs of each of these categories differ but here are some useful tips.

## 12.2 Agricultural contractors/governmental representatives/utility workers/construction and maintenance workers

Pay particular attention to the activities of agricultural or construction contractors whose work may interfere with, and substantially disrupt, farm activities.

They may be there to dismantle your harvester, vaccinate animals (and possibly agitate them) or carry out work on the electricity network. You and all farmworkers need to be aware of such activities taking place. Accidents often occur because workers are not aware of what is going on or conflicting activities are being carried out at the same time:

- people may attempt to use machinery which is inappropriate for the task or poorly maintained;
- workers may be attacked by otherwise tame animals after vaccination; or
- workers may mistakenly think that the electricity network is disconnected.

It is good practice to **keep a logbook** of all types of contractors and visitors to your premises and carry out a simple risk assessment of their effects on the farm so that you can:

- make sure that conflicting activities are not carried out at the same time;
- remember to inform workers what is planned and the control measures required;
- keep a record of activities on the farm (**who did what**, **when**, **where**, **how**).

## 12.3 Information to third parties

**You also need to inform all contractors and visitors** of anything that may affect their safety.

- Basic site safety rules and exclusion areas.
- Utility shortcomings (e.g. faulty electrical installation, incomplete works).
- Structural weaknesses (e.g. damaged walls, fragile roofs or skylights not capable of bearing their weight).
- Dangerous or potentially aggressive animals.
- Hazardous areas (pits, wells, tanks, trenches, silos, chemical stores, explosive atmospheres).

In addition, any **contractors working on the farm need to be familiar with the layout of the workplace**. Show visitors around so that they will know where everything is: identify the risks and indicate restricted areas, emergency plans, firefighting and first-aid equipment, facilities they can use — the restrooms or where they can take a break. Make sure that they know when they are scheduled to come on site, the entrances and exits they should use, other work ongoing on the site, and establish who within their workforce is responsible for coordinating emergency procedures.

**Always supervise contracted work**. Before any work commences, define and agree contract requirements, disciplinary procedures and a set of site safety rules which must be followed. If they do not work safely, take action immediately or even cancel the contract. Make sure that the area is safe after the work has been completed.

## 12.4 Taking preventive measures

Inform all concerned if machinery or structures will be left unattended overnight or during the weekend and fence off such areas to prevent inadvertent access. Inform all concerned of the risks involved and let them know when the work has been completed and the situation is safe again. If necessary, cut **off the power supply**, **provide proper isolation and clearly label it to prevent its use**.


**If you have frequent vehicle movement on site**, make traffic routes clear and develop a traffic management plan. Clearly mark entrances and exits. Establish one-way systems or use small roundabouts to avoid vehicles reversing. Plan your suppliers' delivery/pick-up schedule so that they do not interfere with each other, or disrupt an activity.

## 12.5 Tourists/school children/on-farm bed and breakfast

If you are visited by a group of people or by a school, you should lay down some simple rules.

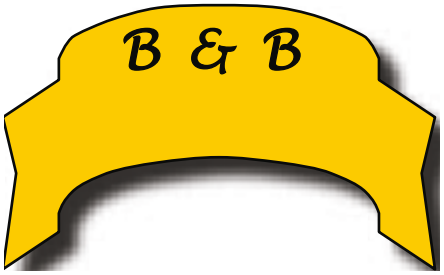
- Keep good order and keep in line.
- Adequate supervision by teachers/adults.
- Controlled and supervised contact with any animals or machinery.
- Authorisation required before consuming any farm produce.
- Hygiene requirements particularly before any eating or drinking.
- No straying from the group.

Keep the site clean and tidy. Keep animals fenced in and any ill animals isolated. Consider an evacuation plan in case of emergency.

If you use your farm as a bed and breakfast facility or if you keep an on-site shop for sale of your produce, make sure you:

- provide safe parking and safe access and egress routes;
- fence and mark restricted areas;
- allow easy access to the shop or the main building;
- label and lock away chemicals, veterinary medicines and other harmful substances;
- cover holes in the ground;
- keep the site tidy;
- label recently sprayed fruit;
- restrict access to animals;
- provide clear instructions;
- have a complete first-aid kit available.

Consider having a person with specialised first-aid training on the farm.



# Case study

*A poultry farmer who used liquid petroleum gas (LPG) for heating in the poultry sheds had LPG cylinders fixed outside each shed. She had forbidden smoking and made sure everybody was aware and complied. Although she had put up 'No smoking' signs, these soon faded. A supplier driving though the site to deliver feedstuffs threw his cigarette butt out of his cab window. The cigarette ignited some weeds on site resulting in a fire and the LPG cylinders exploded. Nobody was injured but extensive damage resulted and the farmer lost 22 000 chickens as a result of the fire.*


## What should the farmer have done?

The farmer should have carried out a simple risk assessment of the premises to determine:

## What could go wrong?

- a person failing to comply with the no smoking policy could cause a fire on the premises;
- visitors to the site may be unaware of the no smoking policy and the risks;
- sabotage or vandalism.

## What is the likelihood of this happening?

**High**, taking into account:

- the 'No smoking' signs had faded;
- the premises were frequently visited by third parties;
- weeds had not been removed;
- there were large quantities of LPG.

## What are the possible consequences (severity)?

- fire, property damage, burns, asphyxiation, death.

## If the farmer had assessed the situation beforehand, what control measures should she have taken?

She should have:

- reorganised the site to prevent third parties from approaching or passing close to the LPG storage area;
- controlled third-party access to the premises;
- advised all suppliers/contractors of the no smoking policy;
- controlled or removed the weeds;
- replaced the faded signs.

CHAPTER 13:

# Infrastructure

## This chapter deals with:

- Boundary protection and access
- Cleanliness and housekeeping
- Electrical installations
- Water supply and reserves
- Work at height
- Earthworks
- Confined spaces
- Stores, warehouses and workshops
- Fuel reserves and fire prevention
- Asbestos
- On-site shops and bed and breakfast facilities
- A case study

*Good infrastructure on the farm is very important both for productivity and for the health and safety of everyone who works there. You need to have the infrastructure essential to your business and suitable for your level of activity. It must be of an adequate standard and kept in good condition and well maintained.*

## 13.1 Boundary protection and access

It is important to establish the boundaries of your premises **by arranging natural boundaries**, **fencing**, **gates and walls**.

There are many types of fencing: wooden, wired, barbed wire, electric. Make sure that your fence is suitable for the purpose needed. Fences keep trespassers and wild animals out while they confine livestock. Be aware that:

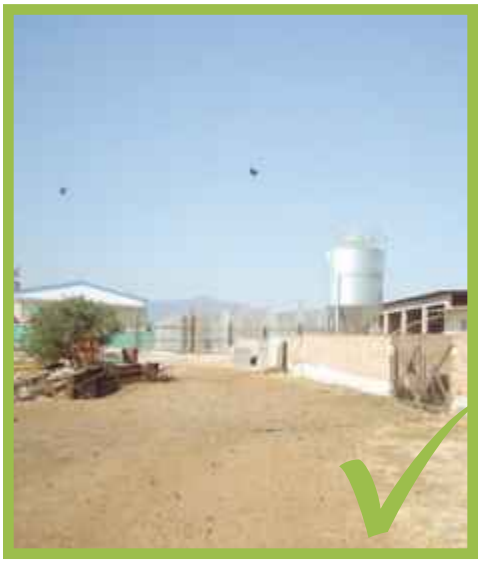
- the coating of wooden fences may be hazardous (check that it is approved by your national competent authority);
- if you are putting up a fence yourself, take precautions to avoid stray wire hits, especially in the face and eyes;
- barbed wire should be marked and warning signs put up as entanglement may lead to injury;
- mark electric fences clearly and at regular intervals.

'Natural' fencing, such as plants and bushes including barrier species, can be an alternative.

A **guard dog** is another way of protecting the premises from intruders and wild animals as well as protecting livestock: make sure you obtain a suitably trained dog.

If you have frequent traffic coming on site, you need to:

- control access to your site and schedule authorised access;
- keep vehicles and pedestrians separated as far as possible to avoid accidents;
- put up clearly understood safety signs;
- mark entrances to and exits from the site;
- use a roundabout or one-way systems to reduce the need for vehicle reversing;
- use mirrors and/or cameras to assist visibility.



If you operate in an area with a history of landslides or incidents of rolling trees, you may need to supplement your fencing with a **trench** or provide **falling-object-protective-structures on vehicles which protect against falling objects**, depending on the risk.

You may consider constructing a **fire-retardation zone** around the perimeter of your farm to prevent fire from spreading to your premises (**Chapter 10: Emergency preparedness and response**).

**Materials used for insulation purposes are often highly flammable** and you should balance their advantages against the likelihood and consequences of catching or spreading fire.

People on farms are often injured by collapsing walls or structures. **If your farm is old** and there are structural weaknesses, make sure you seek **expert advice and take appropriate action**.

**Avoid using temporary structures or sheds** as they may collapse and cause severe injuries. As structures in farms tend to be old, **extreme caution is required when working on roofs**. It is possible for roofs or parts of them to collapse under your weight.

For the same reason, adding extensions to existing structures may also be hazardous.

Do not overlook damage to walls or buildings and do not postpone repairs because they can escalate and lead to serious accidents.

## 13.2 Keep your site clean and tidy

Your site and equipment should be kept clean and tidy at all times. A clean and tidy site is less likely to catch fire, suffer pest infestation or lead to injuries from trips, slips and falls.

**What you can do:**

- have a dedicated and tidy place for machinery, equipment, spare parts and tools;
- dispose of old broken-down machinery, equipment and vehicles;
- remove rubbish and debris;
- clear away weeds;
- clean up oil and chemical spillages;
- fence or securely cover tanks, ponds, wells, ditches and slurry pits; lock them where necessary and implement a pest control programme.

- put a fence or handrail where there is a danger of falls from height;
- put up warning signs where necessary, particularly if you frequently have visitors;
- establish a regular cleaning routine;
- keep toilets clean, provide soap, warm running water and disposable towels;
- arrange for showers and changing rooms, if needed;
- provide clean drinking water as well as a clean area for workers' meal breaks.





## 13.3 Electrical installation

The electrical installation is vital to your business. You need to ensure that it is both **safe and reliable**.

Have a competent person fit all electrical installations with **residual circuit breakers** (RCDs) to reduce the risk of electric short circuit.

Only **qualified electricians** should be employed to design, install, maintain and repair electrical installations. Otherwise, the worker or the user of the facility runs a serious risk of electrocution and death.

**Third-party inspections** are good practice and, in some countries, are obligatory.

Keep your **electrical panel**, **sockets and switches** clean, free from dust and dry, and protected from weather conditions and misuse.

On the control panel, label switches so that you, or any other user, can identify the correct switch to isolate an area or equipment if there is a need to carry out maintenance or repair work. Display the telephone number of your electrician. Control access to the panel or any other electrical installations.


Loss of power may be disastrous for your business if, for instance, you are using it to ventilate, cool or heat poultry, piglets or other heat-sensitive animals.

If you use a **power generator**, keep it in good condition, have it regularly serviced and test its use. **Make arrangements for safe fuel storage**.

*Maintain generators in good condition*

## 13.4 Water supplies and reservoirs

Drowning in ponds or reservoirs is a common cause of fatalities, especially among children. **Fence** off, or otherwise prevent, access to **water reservoirs**, **tanks**, **trenches or ditches**.

*Fence off, or otherwise prevent, access to water reservoirs, trenches and ditches*

If you **consume water** from your **own well**, arrange for chemical and microbiological **laboratory testing** on an annual basis to make sure that it is, indeed, potable. Activities such as the widespread use of fertilisers, the presence of manure, the burial of carcasses, accidental fuel spillages, etc., may contaminate your drinking water and render it undrinkable.

### Legionnaires' disease

The quality of irrigation water may also put lives at risk. *Legionella* bacteria, for example, thrive in water temperatures of 25–45°C (77–113°F) and may become lethal if inhaled. You may inhale water droplets if you stand near a water sprayer or a cooling device used to cool poultry, flowers or vegetables in greenhouses.

While the bacteria reproduce within the above temperature ranges, the greatest risks are posed by water at around 35°C (95°F), which is stagnant, standing water, unused or in dirty piping.

Regularly check irrigation systems.

Equipment and accessories must be **compatible** and used only for the purposes for which they were intended.

What can you do?

- Recycle your water reserves.
- Keep water tanks and piping clean.
- Keep water flowing in and out of water holding facilities and equipment.
- If in doubt, seek expert advice.

For example, you may decide to store cylindrical storage tanks on a platform designed for rectangular water tanks. This practice, however, will create gaps on the platform and whoever needs to access the tanks is at risk of falling from height.

## 13.5 Work at height

**Approximately 24 % of workplace fatalities are associated with falls from height**. A farm is a workplace where work at height occurs in the form of:

- infrequent roof work;
- installation or maintenance of buildings/greenhouses/glasshouses;
- accessing silos, haylofts and **elevated hay barns**;
- accessing elevated water tanks.

Falls from height have a high fatality rate since they usually result in severe head injuries. Get help when it is needed.

### 13.5.1 Safe use of ladders

- Use ladders only if the use of other, safer equipment is not justified.
- Check that the ladder is in good condition.
- Check that the user and the load are within the bearing capacity of the ladder.
- Place the ladder on a level, clean, non-slip, durable and dry surface, away from pathways.
- Fully open A-frame ladders and ladders with extensions so that they lock into place to prevent sections moving relative to each other.
- Place the ladder at a secure angle of 75° or apply the 1:4 rule (1 unit out for every 4 units up).
- Ensure the ladder is long enough to protrude sufficiently beyond the working level (minimum 1 m).
- Ensure rungs remain horizontal.
- Secure stiles at/near upper or lower end.
- Climb facing the ladder.
- Do not climb higher than the second step from the top.
- Always keep three points of contact (i.e. two feet and a hand) with the ladder.
- Do not stretch out: if you cannot reach something, it is safer to get off the ladder, move the ladder and start again.
- Keep tools in a tool case attached to a belt to free your hands for climbing.
- Have someone hold or 'foot' the ladder or use another means to prevent it moving.
- Do not use metal ladders for work involving electricity.
- Lock away ladders or lock a metal sheet to the lower steps to prevent their uncontrolled use (especially by children).

Instructions on safe use of ladders can be found in the Work Equipment Directive (2001/45/EC).

### 13.5.2 Working safely at height

For complicated or hazardous jobs such as cleaning and painting large sheds, replacing damaged roof sheeting, changing the nylon cover on a greenhouse, etc., you should use **qualified contractors/technicians** rather than your own workforce or family members.

**In general**, **if carrying out any work at height**:

- make sure your shoes fit properly and are slip-resistant;
- only step on solid, stable, durable, even, dry surfaces;
- make sure that you can identify and not step on fragile roof sheeting including skylights, which can be difficult to identify due to discolouration or dirt;
- use a five or seven-point harness tied to a point of adequate height and strength;
- ensure you have received training on how to use the harness;
- always have a co-worker on the ground to assist you.

*Use boards on fragile roofs*

**Remember to**:

- give priority to collective protective measures over personal protective equipment;
- work at height only when weather conditions do not jeopardise your safety;
- keep a safe distance from overhead power cables.

Climbing equipment including **ropes and anchorage should be certified** at a frequency specified by national law **and should be inspected before each use**.

It is usually safer to use scaffolding and it should always be preferred when the task is complicated or time-consuming. **If not competent**, **it is better to outsource any activities involving working at height or scaffolding work to competent contractors**.

For further information, refer to the Non-binding guide for work at heights issued by the Directorate-General for Employment, Social Affairs and Inclusion.


### 13.5.3 Working close to overhead power lines

When working in the proximity of overhead power lines, be aware of the following:

- you must be aware of the height of your machinery and the maximum reach of extending parts;
- arrange for power lines to be moved, if possible;
- ensure safe clearance while working near power lines; bear in mind that safe clearance depends on voltage (e.g. 7 m distance for 275–400 kV);
- put up safety signs to warn operators of machinery and ensure awareness;
- map the route of overhead power lines on your site and put up barriers where necessary;
- inform workers and contractors of overhead power line routes and any safety control measures.

## 13.6 Work on the ground — earthworks

If you have underground piping or cables, you should mark their location both on drawings (as fitted) and indicate their exact position with underground signage. This will indicate any underground hazards you need to dig around. It is especially important if you have underground electrical, gas or liquid fuel networks. When you are excavating, make sure you provide adequate support against trench or sidewall collapse. When not working, fence off and cover the hole where possible and put warning signs in place. Fill in and reinstate the ground as soon as possible. Remember such holes can also pose a risk of drowning if they fill with water.

## 13.7 Confined spaces

Silos, grain storage pits, walk-in refrigerators and other enclosed areas combined with dangerous conditions or hazardous substances are considered confined spaces. Confined spaces may be dangerous because once you are inside:

- air quantity and quality may not be satisfactory;
- oxygen levels may be low;
- fumes, poisonous gases, vapours and explosive gases or dusts may fill the space;
- temperatures and humidity may reach extremes (high or low);
- lighting may be inadequate;
- you may not be able to get out.

**Organise your premises and work activities to minimise the need for any work in confined spaces**.

People suffering from claustrophobia may have panic attacks when they find themselves in a confined space. Their inability to escape from a confined space may lead to asphyxiation, heatstroke, hypothermia, dehydration and aggravation of any of the above. You should make sure that **confined spaces** are:

*Make sure that silos are adequately ventilated after fumigation and prior to entry*

- not entered often and only with good reason;
- **entered only after permission** is granted and under **supervision**;
- **ventilated** and tested before entry (test the air quality with a suitable gas detector before entering — never use a naked flame to test air quality as this cause an explosion);
- equipped with adequate and appropriate **lighting**.

Use appropriate personal protective equipment (e.g. breathing apparatus) when entering manure pits, silos or anywhere that may involve an irrespirable atmosphere.

Always work in teams of two or more: one person to carry out the work in the confined space and the other to remain outside to implement any emergency response if necessary.

Emergency and evacuation plans, communication arrangements and alarms must be available and tested. Think about:

- alternative exits;
- how you will communicate with the person assisting you;
- how to raise the alarm if you need assistance or in case of emergency.

Remember that **grain and cereal** stored in silos are **highly flammable**. The site should be designed so that silos are far from sources of ignition.

**Do not allow people to smoke** anywhere on the farm other than in dedicated places.

*Easy to exit — fit release handles to walk-in refrigerators*

*Confined space entry*

## 13.8 Stores, warehouses, stacking and workshops

### 13.8.1 Stores and warehouses

- Store and lock up chemicals, veterinary products (**Chapter 16: Hazardous substances**).
- Make sure that chemical stores are adequately ventilated.
- Store incompatible or hazardous materials separately.
- Never store edible and non-edible products together as cross-contamination or accidental consumption may occur.
- Temperature and humidity needs to be controlled, especially in warehouses for chemicals.
- If you store large quantities of grain and cereal, there is a risk of creating an explosive atmosphere (**Chapter 16: Hazardous substances**).

### 13.8.2 Stacking

- Be careful when you stack products, boxes or sacks as they may fall and seriously injure you.
- Make sure that stacks are stable and balanced and use fences or bars to restrict falls or rollover.
- Mobile machinery such as telescopic handlers or tractors equipped with front loaders must be equipped with a falling objects protective structure (FOPS) in order to protect the driver.
- Check wooden pallets as they may rot and break.
- Stack as recommended by the manufacturer/supplier.
- Each pallet should have a secure base on to which it can be lowered.

### 13.8.3 Workshops

If you have a workshop on site, bear in mind that it is a high risk area due to the type of work activities carried out in it and the presence of various items of machinery, equipment and tools.

Make sure that you implement the following:

- keep the workshop clean and tidy which will reduce the risk of accidents;
- ensure machinery is guarded and manufacturer's instructions are followed;
- keep tools and equipment tidy and store them in dedicated areas (**Chapter 14: Machinery and equipment**);
- light the workshop adequately;
- if you carry out welding in your workshop, make sure that it is well ventilated;
- have suitable (dry powder) fire extinguishers available ready for use;
- control access to the workshop or where necessary keep it locked at all times.

## 13.9 Fuel reserves and fire prevention

**If you keep fuel of any kind on site**, **make sure that**:

- you store minimum quantities;
- it is stored away from the main farm buildings or other frequently used areas of the farm;
- you follow supplier guidelines on safety distances;
- access can be controlled;
- the installation is safe;
- the containers are in good condition (inspect for holes, corrosion, damage);
- keep the area clear of weeds and debris;

*Store fuel safely*

- you have a leakage/spillage detection system in place — including an audible warning system;
- you have taken measures for fire detection, fire containment, firefighting;
- you remove sources of ignition from the vicinity;
- people refrain from smoking at or close to the area;
- the contractor refuelling your fuel tanks has safe access and follows safety procedures while refuelling.

## 13.10 Asbestos

Asbestos sheeting is a very common type of roof construction material on old farms in many countries. **Asbestos fibres within products containing asbestos and within asbestos sheeting are hazardous and carcinogenic if released**.

- Asbestos roofs are relatively safe if left intact. Do not walk on asbestos roofs as they are fragile and will almost always break under a person's weight.
- If you have an asbestos roof, **do not attempt to remove it** by yourself. Contact **a qualified and licensed contractor** to remove it. It is a legal requirement that they **notify the relevant competent authority** every time they plan work to remove any type of asbestos or asbestos containing material including asbestos sheeting.
- Dispose of all asbestos containing materials, through **a licensed contractor**.
- **Never cut or drill** asbestos elements — if you do, they will become airborne and much more hazardous.
- Asbestos water pipes are also relatively safe if left in place and intact.

## 13.11 On-site shops and bed and breakfast facilities

If you have a bed and breakfast business or run a shop on site, make sure your guests and customers (**Chapter 12: Visitors and third parties**) are not exposed to risks and cannot enter dangerous locations. Lock these areas, **put signs up or fence** them off to prevent people, particularly children, from wandering in.

**Accompany** visitors near animal enclosures and do not allow them into fenced areas with livestock. Visitors may not be familiar with animal behaviour and habits and, therefore, may not recognise when an animal is anxious or agitated.

# Case study

*The owner of this cattle farm was trying to lift a bale of hay with his forklift. The round bales had been stacked too high and they were unstable: when the bales became dislodged, they rolled down and crushed the driver as there were no falling objects protection measures (FOPS) on the forklift cab. The man was hospitalised for three months and still suffers from serious spine problems. Because he can no longer work his farm on his own, he now has to rely on paid labour.*

## What should the farmer have done?

When first stacking the bales of hay, he should have carried out a simple risk assessment to determine:

## What could go wrong?

- round bales becoming unstable;
- round bales difficult to access and remove safely;
- round bales rolling/falling;
- round bales damaging machinery and crushing someone.

## What is the likelihood of this happening?

**High**, taking into account:

- the shape, size and weight of the round bales of hay;
- when round bales are stacked too high, removing one of them affects the balance of the whole stack;
- the lack of falling objects protection (FOPS) fittings on the forklift.

## What are the possible consequences (severity)?

- damage to machinery, serious injury, death.

## What control measures should he have taken to reduce the risks?

He should have:

- stacked the round bales lower and in a stable configuration;
- arranged the round bales more securely and monitored their stability;
- fitted the forklift with falling objects protection (FOPS).

CHAPTER 14:

# Machinery and equipment

This chapter deals with:

- Machinery-related hazards
- Purchasing machinery
- Starting to use the machinery
- Safe use of machinery
- Children and machinery
- Accessories
- Maintenance and repairs
- Decommissioning machinery/equipment
- Tools and workshops
- A case study

**Machinery is used in almost every type of agricultural operation**. *Whatever your type of business or its degree of automation, you inevitably rely on machinery to a certain extent. The machinery may be in the form of a* **vehicle** *with a cab where the operator sits and operates the controls while driving (e.g.* **tractor**, **harvester**, **forklift***) or it may be stationary machinery operated by the power take-off (PTO) of a tractor, or powered by electricity, water or by hand.*

## 14.1 Machinery-related hazards

While machinery primarily makes our lives easier it can also be responsible for a number of health and safety problems.

Operating machinery may **expose the user to various hazards**, associated with **movement or mechanical actions** such as cutting or bending, **typically**:

- revolving shafts, wheels or discs;
- revolving augers, worms or spirals in casings;
- revolving drums, spiked cylinders or beaters;
- in-running nips points;
- reciprocating, oscillating or sliding motions.

An easy way to consider machinery hazards is to ask yourself **five basic questions** in relation to any machine and consider the possible severity of injury.

1. **Traps**: Can I suffer an injury from trapping a limb or being crushed in any closing motion or passing movement (e.g. silage shears, crushed by slow rolling vehicle)?
2. **Impact**: Can I suffer an injury due to the speed of movement (e.g. struck by moving vehicles, post-drivers)?

3. **Contact**: Can I suffer an injury following contact due to sharpness, live electricity, hot or cold (e.g. chainsaw blade, circular saw)?
4. **Entanglement**: Can I suffer injury due to being drawn into the machine or entangled in its moving parts (e.g. PTO shaft, flail hedge cutters, combine harvester)?

5. **Ejection**: Can I suffer an injury due to materials being worked on by the machine being ejected, thrown out at force from the machine (e.g. timber mulching machine, circular saws)?

It is important to note that a **machine may pose more than one of the risks** above (e.g. a circular saw can both cause injury due to **contact** with cutting blade and from timber being **ejected** and a combine harvester can cause injury due to **impact** and from **entanglement**).

To be successful in controlling the risks posed by machinery, it is important to realise that while it is essential and must be kept in place, you cannot rely solely on mechanical guards. You also need to **ensure appropriate behaviour** around machinery, that simple rules are followed and that **management and supervision** is also applied (e.g. control vehicle speed, use a push stick at the circular saw, switch off machinery before clearing blockages).

Many machinery accidents occur during machinery set-up, when dealing with breakdowns and during machinery maintenance. Only competent persons should be involved and particular care must be taken.

**Additional risks** exist which are not purely mechanical including electrical, hydraulic, temperature, vibration, noise, etc.

**Electricity-related hazards including**:

- electric shock due to direct contact with live parts (accidental contact with parts that are normally live) or indirect contact (contact with parts that have become live due to a fault);
- burns;
- fire or explosion due to electric sparks or due to overheating of electrical equipment.

***Example**: Contact with worn cables of welding machine*

**Extreme temperatures:**

- contact with or proximity to hot machinery parts causing, pain and burns;
- contact with very cold parts can cause numbness or frostbite.

***Example**: Contact with any moving part of machinery that has been in operation*

**Noise emission**: Prolonged exposure to noise from machinery is the main cause of noise-induced hearing impairment. It is important to note that hearing damage of this nature cannot be rectified by the use of hearing aids. The damage to hearing is cumulative and irreversible but, most of the time, the person exposed to the noise is not aware of the damage being caused. Exposure to high-energy noise can cause sudden loss of hearing. Exposure to noise is also associated with other hearing disorders such as tinnitus (perception of sound in the absence of an external source).

***Example**: Use of chainsaw*

**Vibrations**: Exposure to vibrations transmitted through the feet or the seat to the whole body can cause or aggravate musculoskeletal disorders such as back pain and damage to the spine. Exposure of the hand-arm system to vibrations can cause damage to blood vessels in fingers and hands (vibration white finger disease) and damage to the peripheral nervous system, tendons, muscles, bones, joints of hands and arms. This is exacerbated by smoking which narrows the blood vessels.

***Example**: Tractor*

**Slips**, **trips and falls** — take care on parts of machinery such as footboards, work platforms, gangways, walkways, ramps, steps, stepladders, ladders, floors, etc.

**Cuts or punctures** — especially from corroded metal parts (e.g. when using a hedge trimmer).

## 14.2 Purchasing machinery

When you purchase any piece of machinery, tool, accessory or other equipment, keep the following in mind.

- Is it the right machinery for the job?
- Does the machinery allow you to do the work safely with ease, speed and convenience?
- Does the machinery bear the CE mark and have a certificate of conformity as a proof of conformity to the relevant directives/standards?
- Is the operator's seat/cabin easily accessible by the operator (steps, ladders, doors)?
- Can you evacuate it easily and quickly if the need arises?
- Is the operator's seat ergonomic and are the controls ergonomically positioned, easy to reach and handle?
- Are there arm, back and foot rests?
- Have measures been taken to reduce the operator's exposure to vibration?
- Is it equipped with a warning beacon?
- Is it equipped with air conditioning and a dust filter?
- What is the noise level of the machinery? Have noise absorbent fittings been installed? Is the cabin fitted with noise insulation?
- Is the visibility of the operator unobstructed?
- Is the operator protected from fumes?
- Is there a need for safety belts — are they provided?
- Is there a need for emergency stop buttons or power take-off (PTO) cut-off switch?
- Has the manufacturer provided basic safety features for protection from rollover, falling objects, penetrating objects, and fire?
- Who can carry out maintenance work on it?
- Who will carry out training on its safe use?


**By posing the right questions at the purchasing stage**, **you can prevent problems arising later**.

## 14.3 Start using the machinery

*Machines and equipment must be used in accordance with the instruction manual*

Before you start using the machinery, it is vital that you fully understand how to use it safely. **Never attempt to operate it or allow anyone else to operate it unless they know how to use it properly and safely**. If the supplier is going to train you or if you read the instructions yourself, make sure you have no doubts about its basic functions and safety precautions. Once the machinery is up and running, you may find it difficult to control, manoeuvre, stop or change its mode. **Train more than one user** so they can solve each other's problems and safely take over from each other.

## 14.4 Safe use of machinery

*Some wheeled machinery requires a licence to operate — make sure you acquire all relevant licences for all users*

Always use machinery according to the manufacturer's instructions. Make sure that safety guards on moving parts of machinery or transmission shafts are in position at all times. **Do not remove safety guards** or override emergency stop functions.

Reduce the risk of entanglement in moving parts by avoiding loose coats or jackets, loose sleeves, untied shoelaces, jewellery, loose collars and long hair. **Do not operate the machine if you have consumed alcohol**, **taken drugs or taken medication that may cause drowsiness**. **Do not operate machinery if you feel sleepy**, **tired or unwell**, **if you are not adequately trained and if weather conditions limit visibility or make the use of the machinery unsafe in any way**.

Prolonged use of machinery exposes workers to fatigue, stress and anxiety, noise-induced hearing loss, **musculoskeletal injuries** (MSDs), repetitive strain injuries (RSIs), **hand-arm vibration** which may lead to **Raynaud's disease**, vibration **white finger disease**, etc.

**Always inspect machinery before every use**. This check could include the integrity of movable transmission shafts, machine guards, brakes, tyre pressures, side and rear mirrors, water and lubricants, fuel, alarm and brake lights and audible warning signals (e.g. for reversing). Also consider the refuelling procedure: engine/machine should be switched off, hoses well in place, monitor fuel level, refrain from smoking, keep firefighting equipment at hand.

## 14.5 Children and machinery

Many deaths of children in agricultural situations involve machinery. Lock machinery when it is not in use and keep the keys out of the reach of children. Do not allow your children or other children to play in or operate machinery. It is illegal and dangerous (**Chapter 11: Children**).

Avoid using certain machinery in the presence of children or visitors.

## 14.6 Accessories

Accessories fitted to the main body of the machine should be hitched to the drawbar and instructions should be closely followed. Do not make 'home-made' modifications to machinery as they are usually extremely unsafe. The manufacturer did not plan for them and these modifications may impair other uses or override safety functions. As a result, the equipment may not be fit for the job you for which you are using it.

Lift rear-mounted attachments when turning, raise and lower attachments slowly and smoothly.

A power take-off (PTO) can be used to transfer power from a self-powered machine to an attachment or separate machine. PTO shafts are common causes of injuries in the farming industry. The most common cause of accident involves a piece of clothing, which can be as small as a single thread, touching a spinning part and being pulled around it. Clothing and the person wearing it are pulled into the shaft in less than one second, often resulting in amputation or death.

PTO shafts must NEVER be used without a complete PTO guard safely secured around the spinning shaft, a U-guard over the stub protruding from the tractor and an O-guard where the PTO connects to the machinery in use. Even with all the guards in place, caution is needed around PTO shafts when they are powered by a tractor. Furthermore, ensure that chains provided at both ends to prevent the guard itself from rotating must are attached. Bear in mind that if the guard is not fitted properly or if it is damaged in any way, it will probably not provide the expected protection and often no protection at all. Guards should be a perfect fit and should bear a CE marking. Closely follow the manufacturer's instructions when connecting PTO shafts and guards.

PTO guards have greatly improved over recent years; however, you should prevent damage through proper maintenance, which includes proper greasing and lubrication — this will greatly prolong the life of the guard. Careful handling avoiding severe impacts and care when used with mobile plant and equipment is also important as damage can be caused by poor driving, particularly taking tight corners and during reversing manoeuvres.

## 14.7 Maintenance and repairs

Maintenance and repairs should always be carried out by competent/qualified people. Otherwise, you run the risk of a problem arising when you least expect it and you may end up having to pay far more than you would have paid a qualified technician or mechanic for routine maintenance. Additionally, unqualified people carrying out maintenance and repairs on their own are exposed to a greater risk of being injured themselves.

Arrange for maintenance to take place within the time frames suggested by the manufacturer and arrange for a qualified technician or mechanic to carry out a regular service. Keep a card on the machine or in the cab indicating when the next maintenance is due. Do not neglect repairs. Where the equipment has interlocking guards, these should be checked and maintained and should never be bypassed to make the machine operational. Mechanical problems never sort themselves out: rather, they can escalate and pose a direct threat to your life or the life of others. Make sure you lock or label machinery that is out of order to prevent it from being used. Remove the keys and put a notice or a lock on the machine/ignition or switchgear.

*Do maintenance in the workshop before it becomes a problem in the field*

It is good practice and, in some countries, it is a legal requirement, to keep machinery maintenance and repairs records. This may be in the form of a logbook listing the activities carried out on the machine, or it may be enough to keep the technicians' bills describing the work done together in a box file. It is important to know the history of the machine. Whether or not this is a legal requirement, it is helpful and does not take much time each time your machine is serviced or repaired.

> Never use equipment or machinery that has not been properly maintained

## 14.8 Decommissioning

When machinery wears out or is ready to be replaced, you need to find a safe and effective way to dispose of it. Dumping broken or unwanted equipment on your property is not a solution as abandoned machinery corrodes, attracts pests and may become a potential source of danger for children who see it as an attractive and exciting place to play. To prevent a child from being injured while playing in your old abandoned machinery, ask the supplier or a recycler to dispose of it for you. They are usually obliged by law to recycle the machinery and will rarely refuse to do so (especially if you are purchasing a new piece of equipment from them or if there is a recycling scheme in place).

## 14.9 Tools and workshops

Hand-operated tools and bench tools may not be considered heavy-duty machinery but they can be equally hazardous. Pay attention when purchasing tools so that they conform to specifications and are fitted with safety guards. Do not neglect to:

- follow the manufacturer's instructions;
- keep tools clean and maintained and in good working condition;
- use tools only for their intended use;
- wear the necessary PPE.

The chainsaw, for example, is the most dangerous hand-operated tool on many farms and in the forestry industry, and is responsible for injuries and deaths to farmers and even to many professional loggers every year. For more details on chainsaws, refer to **Chapter 21: Forestry**.

If you have a workshop:

- ✔ keep it clean and tidy (**Chapter 13: Infrastructure**);
- ✔ make sure the electrical installation is checked and the qualified technician's name and contact number posted on the electrical panel;
- ✔ keep the workshop well ventilated and adequately lit;
- ✔ keep suitable (dry powder) firefighting equipment at hand;
- ✔ dispose of unsuitable tools (worn out, damaged);
- ✔ avoid picking up tools by their blades;
- ✔ do not allow children or untrained people to access them (**Chapter 11: Children**).

# Case study

*A farmer who decided that his cotton picker was not worth repairing dumped it near his field. The site soon became the playground for schoolboys from the neighbouring village. After prolonged corrosion and wear, the cab of the cotton picker collapsed when six boys were playing inside. They all suffered scratches and bruises and one was hospitalised with a tetanus infection because a rusty piece of metal had pierced his leg.*

## What should the farmer have done?

The farmer should have carried out a simple risk assessment to determine:

## What could go wrong?

- injuries to children using it as a play area;
- public injured by contact with equipment;
- pest nesting.

## What is the likelihood of this happening?

**High**, taking into account:

- uncontrolled access to the site;
- individual's and especially children's curiosity;
- gradual corrosion of equipment;
- pest infestation in abandoned machinery structures.

## What are the possible consequences (severity)?

- injury, tetanus infection (potentially fatal).

## What control measures should he have taken, had he assessed the situation in advance?

He could have:

- prevented access to the site;
- disposed of the machinery;
- asked a professional to decommission/recycle the equipment;
- sold the equipment as scrap metal.

When disposing of equipment, you are still responsible for it.

CHAPTER 15:

# Transport and vehicles

Transport and the use of various vehicles is part of practically all farming and agricultural activities including the transportation of:

- livestock
- crops and other produce
- feed and bedding
- machinery and equipment
- timber, and
- workers.

**All over the world**, **vehicles and wheeled machinery is responsible for up to 50 % of the fatal accidents in agriculture**. Such accidents range from vehicle overturns (rollovers), loss of control, falls, being crushed or run over, collisions and entanglement.

## This chapter deals with:



Transport involves two distinct work environments: it involves off-road activities, (loading and unloading) and movement on the public road network. Therefore, when considering transport safety you must consider both workplace safety and road safety.

## 15.1 Vehicles in agriculture

The most common vehicles used for performing agricultural activities are:

- tractors and trailers;
- loaders and telehandlers;
- all-terrain vehicles (ATVs) and jeeps;
- self-powered, wheeled machinery (e.g. harvester, cotton picker).

The tractor is the single most important vehicle in agriculture. It can be used by the farmer:

- as a means of access in otherwise inaccessible locations;
- to power and drive attachments and perform various agricultural activities such as tillage, harvesting, application of manures, fertilisers, pesticides;
- to transport goods and crops by towing trailers.

## 15.2 Safe use of tractors

- ✔ Fit tractors with a cab with a rollover protection structure (ROPS) and a seat belt.
- ✔ Apply signage and reflectors to towed accessories.
- ✔ Train all tractor operators regarding appropriate operational guidelines for both on and off-road activities.
- ✔ Always know where all family members and co-workers are when operating the tractor.

✔ Keep a **first-aid kit** and a **dry powder extinguisher** in the tractor.
✔ **Disengage the PTO** when not in use.
✔ Keep all **shields and guards** in place.

✘ Do not leave the key in the ignition.
✘ Do not leave the tractor running while you are performing activities on the ground or on the tractor.
✘ Do not allow passengers at any time unless a seat and seat belt are provided.
✘ Never **refuel the tractor** with the engine running.

## Quick check before starting work with your tractor

Even though tractors are becoming increasingly safer, they are still responsible for many farm accidents. It is important before you start using your tractor to check:

- air pressure in **tyres**, to reduce the risk of overturns;
- that the **steps** are clean and dry, to reduce the risk of slips and falls;
- **transmission oil** is adequate, to protect transmission system;
- the **handbrake** is working, to reduce the risk of tractor creep/roll and crushing people;
- **hydraulic oil and hoses** are in good order, to reduce the risk of equipment failures;
- that the **cab floor** is clean, to reduce the risk of material interfering with pedals;
- all **windows** are clean, to allow for good visibility;
- the **brake pedals** function, to bring the vehicle to a sudden stop if required;
- the water in the **radiator** is adequate, to protect the engine from overheating;
- the **lights and mirrors** function properly, to assist safe driving practice;
- the **engine oil** level is adequate, to protect the engine.

Be sure that the tractor is properly maintained and serviced.

## The ‘safe stop’ procedure

1. Bring the tractor to a stop at a safe place.
2. Disengage the gearbox and the drives.
3. Apply the handbrake.
4. Lower implements to the ground.
5. Switch off and remove the keys.

**ONLY NOW CAN YOU GET OUT**

*Park your tractor safely*

## 15.3 All-terrain vehicles (ATVs)

All-terrain vehicles (ATVs) are used extensively in farming and forestry. However, they are responsible for a large number of deaths and serious injuries resulting from overturns, bad mechanical condition, operator driving knowledge and behaviour (speeding), carrying passengers and mishandling.

Before buying an ATV, consider carefully your needs (e.g. power and speed) and your site characteristics (e.g. broken, hilly and uneven terrain).

Ensure correct all-round tyre inflation and that all guards are always kept in place, particularly footplates. Apply the correct loads on the front and rear. Follow the manufacturer’s instructions when fitting and using accessories. Do not customise or alter your ATV because it can increase instability and cause overturns.

Safe practices

- Get professional training on the safe use of your ATV.
- Wear appropriate PPE including safety helmet and safety boots.
- Drive slowly enough to maintain control of the vehicle.
- Stay in low gear when you descent slopes, when turning and when using attachments.
- Never allow passengers on the ATV unless it has been specifically designed to carry two people.
- Do not allow anybody to operate an ATV without training or under the influence of alcohol or drugs.
- Keep children away from the ATV and its accessories.
- Adjust all controls so they can be operated comfortably and safely when seated — if this is not possible, shut off the engine and ensure all moving parts have stopped before making any adjustments.

## 15.4 Self-powered, wheeled machinery

Self-powered, wheeled machinery (e.g. harvesters, loaders, telehandlers, cotton pickers) have practically all the hazards associated tractors and ATVs with additional hazards associated with the particular machinery and equipment (**Chapter 14: Machinery and equipment**).

## 15.5 Loading and unloading

The first stage of transport is loading the vehicle. Considerations when loading a vehicle should include:

- suitability of the vehicle for the task;
- safe means of placing the load on the vehicle;
- load distribution and balance;
- stacking height and stability;
- covering of produce or supplies;
- securing the load;
- driver's visibility (the load should not obstruct the driver's field of vision);
- driver's safety (the load should not strike the driver in case of sudden stops or a collision).

Unloading

*Safe loading is essential for all road users*

- Make a visual check of the load before unloading.
- Check if the load has shifted or become unstable.
- Consider if and how the load will move if chains, ropes, straps securing the load are loosened or removed.
- If material shifts or starts to fall off, keep well out of the way.
- Do not attempt to stop material falling if there is any risk of injury.
- Ensure you have appropriate means of unloading the vehicle.
- Once the vehicle is unloaded, store chains, ropes, straps and tensioning devices and any other loose material safely so that they cannot inadvertently fall from the vehicle.

Never allow people to be transported with produce or animals. For the loading and unloading of animals, refer to **Chapter 19: Livestock**.

## 15.6 Planning your journey

Even though transport is generally a daily activity which most of the time is considered routine, it can greatly affect the successful completion of daily work.

Think of all transporting activities in terms of the:

- time of day or night best suited for your transport activities, slow-moving agricultural machinery can place you and other road users at greater risk when the road is very busy;
- appropriate route to use (in some countries, there is a restriction on the use of motorways by slow-moving agricultural vehicles);
- means of transport (tractor and trailer, truck, van, jeep, other vehicle, train, boat, etc.);
- duration of the journey (length of driving time and rest breaks required by a single driver is generally well regulated);
- driver (competency, availability);
- type of load and its needs (timber, animals, people);
- readiness of the vehicle (mechanical condition);
- risks to other road users.

Planning the journey helps you to proactively make decisions and take measures to prevent any problems, undue delays or accidents from happening. Ensure that you are a member of a roadside assistance scheme.

## 15.7 Causes of road accidents

Road accidents are influenced by the following factors:

- human competence and behaviour;
- vehicle condition;
- road network condition;
- weather conditions.

Since there is generally very little you can do about the condition of the road network (other than requesting repair or maintenance) and you can do little about the weather conditions, you need to focus on competence and behaviour, and on vehicle maintenance and condition. When driving, take care to avoid, if possible, roads known to be hazardous, areas known for unstable ground, rock falls, landslides and excessive gradients. Also, avoid roads close to cliffs and try to avoid driving on, or having to cross, high-speed motorways.

## 15.8 Human competence and behaviour

**Make sure that the driver**:

- ✔ holds a valid driving licence for the category of vehicle driven;
- ✔ is fit to make the trip:
  - ✘ is not taking medication/drugs causing drowsiness;
  - ✘ is not sleepy or unwell;
  - ✘ has not consumed alcohol;
- ✔ is not pressured by time (avoid peak hours);
- ✔ has a safe driving attitude;
- ✔ obeys traffic regulations;
- ✔ concentrates;
- ✔ adjusts their driving to road conditions;
- ✔ is considerate towards other road users;
  - ✘ is not rude, aggressive or impulsive;
- ✔ always keeps their seatbelt fastened;

✔ only uses hands-free mobile phones or communication systems;
✔ drives with lights on when necessary;
✔ keeps the vehicle doors closed and locked.

Additionally:

- make sure that adverse **weather conditions** do not impair driving ability, consider weather forecasts;
- instruct your driver to **pull off the road and rest if they feel sleepy** or tired rather than force themselves to complete the journey;
- make sure that the **loads to be transported are covered and secured against falling**: **do not tow excessive loads** using unbraked equipment and **never transport people together with livestock**, **crops or other materials**.

## 15.9 Emergencies

In emergency situations such as breakdowns or collisions:

- try to stop in a safe place;
- where a collision is involved, call your national emergency number if people are injured;
- contact your roadside assistance provider;
- where applicable, inform your employer;
- wear a high-visibility vest, secure the area if possible, and ensure you stand in a safe place.

**Do not attempt to deal with a situation** on your own if it is too difficult or demanding for a single person to handle: for example, a vehicle stuck in the mud.

## 15.10 Vehicle maintenance

Make sure that the vehicle is:

- maintained by a competent person;
- appropriately licensed;
- maintained according to the manufacturer's instructions;
- taken out of service if necessary and properly repaired;
- not fitted with home-made accessories;
- in good operating condition;
- fitted with rollover protection structures if necessary.

**Before the journey**, **you should check**:

- fuel
- lights and spare bulbs
- lubricants
- tyre pressures
- oil and fuel tank caps
- coolant and water levels
- brakes
- battery
- spare tyre
- fire extinguisher
- first-aid kit
- high-visibility vest
- warning triangle
- stability/security of load.

## 15.11 Transporting livestock

Livestock may be transported for short or long distances:

- from farm to farm;
- for breeding purposes;
- for sale or slaughtering.

Transport concerns begin with loading and end with unloading of livestock to and from the vehicle. For more information, refer to **Chapter 19: Livestock**.

**While transporting:**

- the vehicle may need to be licensed;
- use special vehicles to ensure workers' safety (i.e. equipped with rollover protective structure, suitable fixed seats and seat belts);
- obey speed limits;
- use specialised vehicles to ensure the safety of the public and the welfare of the animals being transported;
- keep livestock in the vehicle for the minimum possible time;
- after every journey, wash out and disinfect trailers as well as hay bags and water buckets.

## 15.12 On-site traffic arrangements

If you have frequent traffic movement on site, you need to:

- put in place a traffic management plan and adjust it as necessary to suit the activity;
- keep vehicles and pedestrians separated as far as possible to avoid accidents;
- keep vulnerable groups such as children and the elderly away from harm particularly during busy periods;
- put up clearly understood signs;
- mark entrances to and exits from the site;
- schedule traffic to avoid congestion;
- use a roundabout or one-way system to reduce the need for vehicle reversing (the most deadly activity);
- use mirrors mounted at corners or blind spots to aid visibility;
- fit forklifts and other vehicles with audible warning signals for reversing.

## 15.13 Animals used for transport

In forestry, especially in southern Europe, transport of timber from the logging site to the landing would be impossible without the use of animals such as mules or horses, which are able to reach otherwise inaccessible areas.

For the welfare of the animals, it is essential to make sure that animals are not mistreated. Ensure:

- gradual and appropriate loading;
- timber is secured;
- a path is cleared for the animal to follow;
- unloading does not injure the animal's legs or feet;
- the animal is fed, watered and rested.

## 15.14 Water transport

Water transport of agricultural produce or timber may sometimes be the easiest option.

Consider:

- total load;
- load balance;
- condition of the boat;
- operator's competence and licensing (if applicable);
- communication and lifesaving equipment;
- weather conditions;
- familiarity with river characteristics (depth of water, features such as waterfalls, rocks, whirlpools);
- buoyancy equipment.

# Case study

*A tractor was being used to tow a trailer loaded with bales of hay. The farmer did not bother to tie or secure the bales to prevent them from falling since he was planning to drive only a short distance. He was using the public road from the field to his village but as he was driving round a bend in the road, some bales of hay fell off the trailer. He pulled to the side of the road, but the car behind him, driven by a fellow villager collided with the bales of hay and went over a cliff along the road. The driver of the car was killed.*

## What should the farmer have done?

He should have carried out a simple risk assessment to determine:

## What could go wrong?

- loss of part of or the entire load;
- road accident caused by falling bales;
- contact with overhead lines or trees along the road;
- excessive load affecting farmer's ability to control and manoeuvre vehicle.

## What is the likelihood of this happening?

**High**, taking into account:

- excessive load and over-stacked trailer;
- lack of precautions to prevent bales from falling off the trailer.

## What are the possible consequences be (severity)?

- injury, concussion, coma, death.

## What should the farmer have done if he had assessed the situation beforehand?

He should have:

- stacked the bales of hay in such a way as to achieve stability of the load;
- secured the load with ropes or straps on the trailer;
- avoided excessive height of the load or overloading;
- used a quiet route/road with little traffic (where vehicles cannot speed);
- used a route that did not involve a roadside cliff.

CHAPTER 16:

# Hazardous substances

*Hazardous substances come in many forms in agriculture and forestry operations; they can be pesticides, fuels, chemicals or paints, manure or medicines, animal fluids or even construction materials. They are important to your operation; however, while using them, you may inadvertently be, inhaling, contacting or ingesting them.*

## This chapter deals with:

- Hazardous substances on farms
- What harm could they cause
- Routes of contact
- Storage considerations
- Safety data sheets
- Contact with hazardous substances
- Using hazardous substances
- Using personal protective equipment
- Labelling and signage
- Fuels
- Grain/wheat/cereal dust/ feedstuffs
- Animal slurry and fluids
- Asbestos
- A case study

## 16.1 Hazardous substances on farms

- Chemicals
- Pesticides and fumigants
- Paints/timber preservatives
- Solvents
- Cleaning agents/disinfectants
- Veterinary medicines
- Fertilisers
- Manure/slurry, mould
- Fuels and oils
- Asbestos
- Wood dust
- Grain in large quantities.

## 16.2 What harm could they cause?

- Poisoning
- Gastric disorders
- Teratogenesis
- Cancer
- Parkinson's disease
- Chronic diseases
- Death.

## 16.3 Routes of contact

Hazardous substances may:

- come into contact with skin;
- splash into the eyes;
- be inhaled;
- be accidentally ingested;
- be accidentally injected.

## 16.4 Storage considerations

When you store chemicals, pesticides, veterinary medicines, fertilisers, make sure they are:

- **labelled**, preferably in the manufacturer's packaging, in containers which are easy to handle, open, close and reopen, thus minimising leakage or splashing;
- accompanied by the relevant **safety data sheets**;
- **stored away from food products** to avoid cross-contamination or accidental consumption;
- **kept separate from incompatible materials** as contact or mixing may cause chemical reactions, even fires or explosions;
- **stored away from personal protective equipment** and any clothing;
- **equipped with restraining tanks** or bunding in order to prevent possible leakages from spreading;
- **away from smoking areas** and other sources of ignition;
- **well ventilated**.

Warehouses and storage areas should be indicted by **signage** and, where necessary, **locked**.

**Temperatures and humidity** may need to be controlled.

**Both EU and national legislation provide clear guidance on storage and handling of chemicals**.

## 16.5 Safety data sheets

Safety Data Sheets (SDSs) are documents produced by the manufacturer to indicate:

- chemical composition;
- instructions for use;
- instructions for storage;
- potency (toxicity, abrasiveness, corrosiveness, flammability, explosion hazard, mutagenic and teratogenic characteristics);
- how to deal with accidents, spillages, explosions, fires involving the chemical;
- possible consequences of mishandling, contact and consumption;
- actions to take.

✔ Always ask your supplier for copies of the SDSs (they are free of charge and provide useful information).
✔ Study the SDSs.
✔ Keep SDSs in a place easily accessible by all workers (e.g. at the place of storage).
✔ Keep a second filed copy of each SDS for backup.

## 16.6 Contact with hazardous substances?

You may come in contact with hazardous substances while **mixing**, **loading or applying them**, **or while cleaning the application equipment**, **during transport**, **storage**, **and even simply from entering areas** where crops have been sprayed. Try to **automate procedures** so as to avoid direct contact with chemicals as much as possible.

When spraying pesticides, **use tractors or sprayer machinery** equipped with standardised filtering cabs.

## 16.7 Use of hazardous substances

When using hazardous substances:

- make sure they are **approved by national competent authorities**;
- **read the label and follow the manufacturer's instructions**;
- use clean **personal protective equipment**;
- **do not mix with other hazardous substances** (unless specifically allowed by the manufacturer) even if the products are compatible;
- **do not spray** in windy conditions or against the wind when using a knapsack sprayer;
- **do not leave solutions unlabelled or unattended**.

Empty containers should be labelled, stored and disposed of through the supplier or a licensed recycler. They should not be used as containers for other substances or materials or as toys.

## 16.8 Use of personal protective equipment

When handling hazardous substances you should use:

- **gloves** to protect your hands from accidental or unavoidable contact;
- **goggles** to protect your eyes from fumes or splashing;
- **nose and mouth protection** if fumes are expected or if you are spraying pesticides (a mask with activated carbon);
- **an apron or overalls** if you are spraying pesticides or other chemicals that are hazardous to the skin;
- **absorbent resistant boots with steel toecaps** (**Chapter 9: Personal protective equipment**).

## 16.9 Labelling and signage

- All containers must have appropriate labelling to ensure the safe use of the hazardous substances.
- Where hazardous substances are placed in smaller or different containers, they must be relabelled.
- All storage facilities for hazardous substances must be indicated with safety signage in accordance with the Signs Directive requirements.
- If you have visitors on your farm, **mark or fence recently sprayed fruit**; warn visitors not to eat them as it may lead to poisoning: **place warning signs on surfaces which have been freshly painted or coated with preservatives**, as contact may cause skin rash or irritation, eye irritation or worse.

## 16.10 Fuels and oils

*Use bunded fuel storage locations*

**Refuelling of fuel tanks is especially hazardous** as there may be spillages, leakages or ignition.

- Ask the supplier for a safety method statement for refuelling.
- Prohibit smoking and place signage to that effect.
- Keep fire extinguishers and sandbags in the vicinity.
- Consider installing leakage, heat or smoke detectors.
- Install cut-off valves in fuel piping.
- Oils and lubricants are also flammable and should be handled with care.

## 16.11 Grain/wheat/cereal/feedstuff dusts

Grain, wheat or cereal or feedstuff dust in large quantities **has the potential to create an explosive atmosphere**. Keep sources of ignition away and ensure electrical equipment used is suitable and is marked in compliance with the ATEX Directive where necessary.

If cereals and other feedstuffs become wet or start to decompose, they may generate decomposition gases which may replace and deplete oxygen levels in a store or silo. Gas readings must be taken with great care before entering stores and silos to ensure that the air quality is not harmful to health as the build-up of decomposition gases can be lethal.

Feedstuffs in large quantities can emit gases and strong odours and may **cause workers to lose consciousness**. Nitrogen oxide may be produced and this can lead to pneumonitis.

## 16.12 Animal fluids and slurry

**Animal discharges and birth fluids are biological contaminants** since they are carriers of viruses and infections. If you are treating a sick animal or assisting birth, use gloves and overalls to protect yourself from possible contamination. It is advisable to have a veterinarian undertaking or overseeing the procedure.

The **unsafe disposal of animal carcasses may contaminate humans** directly after contact or indirectly through the contamination of land or groundwater reservoirs. You should bury carcasses far away from watercourses, wells or ponds or incinerate them if local authorities permit this.

Fertilisers and manure are both flammable and hazardous if inhaled or directly contacted.

**Hydrogen sulphide and methane**

- When cattle and other livestock are housed in slatted sheds, large quantities of slurry are held in tanks beneath the slats. During periods while the slurry cannot be spread on land, a hard crust may form on the slurry. Decomposition gases including methane and hydrogen sulphides can build up under this crust which can be at lethal levels when the crust is broken.
- The most dangerous time is during agitation of the slurry which is done to facilitate pumping into vacuum tankers for spreading on the land.
- Spent mushroom compost and other organic matter if subject to decomposition can also build up lethal levels of hydrogen sulphides and great care must be taken if disturbing or loading it similar to below.

Before agitation;

*Safe removal of slurry*

- only agitate and spread on windy days which will disperse the gases quickly;
- remove all livestock (including dogs or other pet animals) from the housing and general area;
- open as many doors of the shed or housing unit as possible to ventilate and prevent access to the area, particularly children and elderly;
- stand upwind as you insert the agitation equipment and start agitation ensuring that a full PTO guard is in use;
- the majority of gases are released in the first 15–20 minutes of agitation but care must be taken at all times;
- hydrogen sulphide gas is very toxic, while it smells of rotten eggs, it kills your sense of smell at low levels creating a false sense of security that the gas has gone when, in fact, the concentration may have increased;
- the concentrations released from slurry when the crust is broken are generally at lethal levels where one lungful can kill;
- when the agitator is withdrawn to allow for pumping and spreading, put a system in place to ensure that the agitation point is recovered or otherwise protected from inadvertent access.
- Always replace agitation point covers on completion.

*Replace covers at the end of work*

## 16.13 Asbestos

**Asbestos is an extremely hazardous**, **carcinogenic substance**. In the past, it was widely used as a structural element for roofs and piping. Today, **asbestos is no longer used** and the trend is to remove it where necessary from existing structures. However, since it is the fibre of asbestos which is hazardous to humans, it is important to bear in mind that asbestos is much safer when it is left intact or bound up in its host material, than when it is cut or chopped which releases the asbestos fibres.

**If you have an asbestos roof**:

- leave it in place if it is in good condition;
- if it is damaged or breaking up, contact a qualified and licensed contractor to have it removed: your local labour inspectorate should have a list of competent contractors;
- do not attempt to remove it yourself;
- ensure no one is exposed to dust or fibres from asbestos sheeting or other asbestos material;
- make sure that the contractor removes all of it and disposes of it appropriately.

**If you have other asbestos items on site such as boiler housing**, **pipelines or sheets** dispose of them through a licensed contractor or recycler. **Remember there is no safe exposure limit**.

Therefore, you should never break up, cut or drill material containing asbestos

*Roofs in good condition can remain in place*

# Case study

*A farmer was using thinners to clean the workbench in his workshop. There was a small quantity of the solvent left after he had finished and before returning it to the chemicals cabinet, he was interrupted by a phone call which he had to take in his office. His little boy, who came in looking for his father, found the bottle containing the chemical and took a large mouthful and fell into a coma. If his mother had not found him soon afterwards, he would have stayed there without help and may have died.*

## What should the farmer have done?

He should have carried out a simple risk assessment determine:

## What could go wrong?

- poisoning and internal burns from accidental consumption;
- poisoning from accidental inhalation;
- skin burns from accidental contact with skin;
- eye irritation from accidental contact or exposure to fumes.

## What is the possibility of these happening?

**High**, taking into account:

- that the farm was also home of his family where his two children were living;
- lack of labelling;
- lack of warning signs;
- lack of supervision of the child;
- wrongly labelled container.

## What are the possible consequences (severity)?

- eye irritation, skin burns, poisoning, internal burns, coma, death.

## What should the farmer have done to reduce the risk?

He should have:

- stored the solvent in the dedicated chemicals cabinet right after use;
- labelled the bottle/container clearly;
- restricted access to the workshop for his children;
- spoken to his children about farm safety and chemical dangers.

CHAPTER 17:

# Signs

This chapter deals with:

- Importance of signs
- Considerations for signage
- Audio signals
- Warning signs
- Hand signalling
- A case study

*Signs are there to provide **information about the workplace, warn people of hazardous situations**, **require certain actions or prohibit certain activities**. **They should not be used as the sole means of controlling risk and when in place must not be ignored**.*




## 17.1 Importance of signs

Signs are used to:

- **prohibit** an activity;
- **warn** of danger;
- **impose** an obligation;
- **provide** information.


**Distinguish signs by shape and colour**:

- **prohibition** signs are round and red;
- **warning** signs are triangular and yellow;
- **obligatory** signs are round and blue;
- **evacuation** signs are rectangular and green.

If you run a small, family-owned business, you may feel that putting up signs is unnecessary since there is no one to warn. However, many different people including advisors, suppliers, quality assessors, relatives, friends, etc., may, from time to time, visit your business and may be exposed to a hazard which they could have been warned about in advance if appropriate signs were in place.

If you employ workers, have a bed and breakfast facility, have an on-site shop or host visitors, signs are essential.

When posting signs, make sure that they are appropriate for the hazard and comply with the Signs Directive and guidance provided by your national competent authority.

## 17.2 Considerations for signage


Consider placing a general safety sign at the entrance to your farm or property to give general warnings of hazards within your site. This will help make persons entering your site, workers, contractors, suppliers and all types of visitors immediately aware of what hazards they face.

Approach and walk around your site as if you were a visitor or a new employee and identify each and every location where a safety sign would be useful. Take note of the most critical safety signs required and give priority to them. Review what safety signs are in place on a regular basis and at least once per year or when your work processes change.

When advising children, inducting new workers or advising new contractors, point out the critical messages these signs are giving about safety on your site and advise them that they must be followed.

When designing or purchasing safety signage, ensure that it complies with the Signs Directive, consult your national competent authority and any guidance they provide if you need advice.

Ensure signage is appropriate to the hazard being faced: here, you may need a warning sign warning of forklift operations and potential danger from falling objects

You may have a general no smoking policy on site but even so, you may need to consider placing 'No smoking signs' where there are additional risks involved. Put 'No smoking signs' where you store fuel, chemicals, hay, slurry, manure, near flammable materials and in areas with livestock and farm produce either being prepared or finished.


If you have drawn up an emergency plan, put signs up to indicate the assembly points, exits, escape routes, fire extinguishers.

Note the contents and dangers associated with silos.

Place signs on all silos warning workers of the content, dangers involved in entry and precautions to be taken before entry. Where you have containers of liquids, ensure that they have appropriate labels regardless of container size, and place warning signs in order to help avoid accidental consumption or inappropriate use of hazardous substances.


Place warning signs at the entrance to switch rooms or electrical installations. It is a legal requirement to clearly mark all electrical switchgear. Make a clear note on your electricity panels of which device or area is powered by each switch. You could risk electrocution by cutting the power from the wrong device. Mark high voltage areas clearly.

Do not remove signs from machinery. All recently purchased tractors, harvesters, forklifts, hand lifts, will bear warning signs from the manufacturer and these serve to warn of the associated hazards.

Lifting equipment should also be labelled with its safe lifting capacity.

Use **mobile signage** to warn workers and the public of temporary activities such as hedge trimming, a herd crossing a public road or temporary construction works.

## 17.3 Audio signals

**Audio signals** are often used on machinery to indicate or warn of **reversing manoeuvres**, **malfunctions**, **leakages**, **pressure loss**.

Make sure that:

- the audio signals are appropriate;
- the audio signal can be heard and distinguished against general background noise;
- the audio signals do not confuse where several machines work in close proximity;
- people on site understand the meaning of each audio signal;
- you test audio signals regularly.

## 17.4 Warning signs

Use signs to warn of:

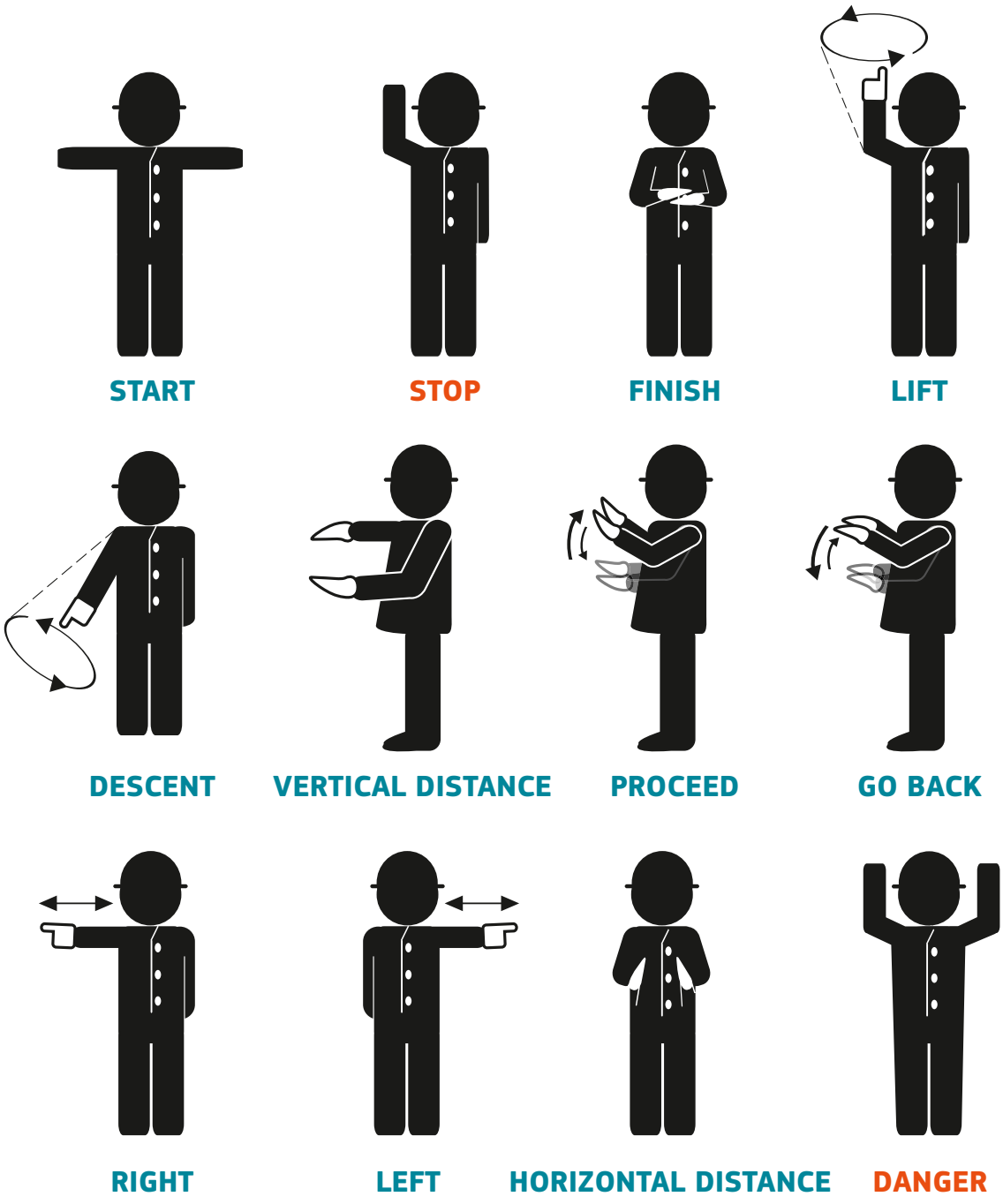
- recently sprayed fruit;
- premises recently sprayed with pesticides;
- animal hazards;
- stored chemicals/fuel;
- contaminants;
- vehicle movement;
- noise hazards;
- equipment or vehicles out of order;
- hot or cold surfaces;
- gases or liquids under pressure;
- entanglement hazards;
- ground or structural instabilities;
- falling objects;
- holes in the ground;
- evacuation routes;
- underground piping or cables.

## 17.5 Hand signalling

When operating lifting equipment, the operator often relies on a 'signaller' (often referred to as a 'banksman') who signals instructions and directions to him, especially where visibility is limited. This happens commonly in forestry operations.

In such situations it is essential that:

- **you confirm or agree signals** in advance since there are variations from country to country;
- the **signaller stands at an elevated spot** where he is safe and from which the operator can view him clearly;
- **only one signaller** at a time gives signals;
- if the operator is **uncertain** of the meaning of a signal or cannot see it clearly, they must **not take further actions** until the uncertainty has been resolved;
- where a direct line of sight is not possible, radio or other similar systems may be used.



# Case study

*The owner of a fresh herbs farm had recently purchased bait for rats which were a major problem for his business. The retailer assured him that the bait, which was almond-shaped, was extremely effective and advised him to mark the location of each piece of bait with the stickers provided. He placed the bait in his packaged products warehouse and asked his worker to put the stickers in place. The worker, who was on his way to his lunch break, forgot all about the stickers. Later that evening the farmer's wife did not recognise the almond-shaped objects as bait, swept them together with dirt and rubbish into the yard. A week later, the farmer's dog died after eating the bait.*


## What should the farmer have done?

He should have carried out a simple risk assessment of this activity to determine:

## What could go wrong?

- the bait could have been consumed by a human;
- the bait could have been consumed by an animal;
- the bait could have been accidentally transported elsewhere.

## What is the likelihood of this happening?

**High**, taking into account:

- lack of warning signage/stickers;
- lack of information to his workers/wife/children;
- lack of means to ensure the bait was not moved.

## What are the possible consequences (severity)?

- poisoning, death.

## What measures should the farmer have taken if he had assessed the risks?

He should have:

- positioned the bait to prevent accidental use or consumption;
- required bait boxes to be provided and advised all of their locations;
- made sure the warning stickers were in place.

CHAPTER 18:

# Growing of crops

## This chapter deals with:

- Stages of the crop growing cycle
- Types of crop
- Plot and soil preparation
- Planting/sowing
- Cultivation
- Pruning
- Harvesting
- A case study

*The growing of crops is a large and diversified field of the agricultural economy. Different types of crops have different needs and require different cultivation and harvesting methods.*

*Work activities and work hazards will vary depending on the type of crops involved and the stage of the crops growing cycle.*

## 18.1 Stages of the crop growing cycle

Growing of crops involves several **stages** such as:

- **plot and soil preparation**;
- **planting/sowing**;
- **cultivation** — spraying, weeding, irrigation;
- **fertilising**;
- **pruning**;
- **harvesting**.

## 18.2 Types of crop

For each stage in the crop growing cycle, the **type** of crop needs to be considered:

- **low-rise plants**: wheat, oat, barley, cereal cotton, corn, tobacco, rice, clover, sunflower;
- **vegetables**: aubergines, tomatoes, cucumbers, pepper, courgette;
- **condyle**: potato, sugar beet, radish, carrots;
- **vines**;
- **spices/herbs;**
- **fruit** — **low-rise**: melon, watermelon, strawberries, berries;
- **fruit trees**: olives, almonds, apples, pears, cherries, peaches, apricots, oranges, plums.

## 18.3 Plot and soil preparation

Soil preparation involves soil testing and conditioning, ploughing to loosen the soil, rolling to prepare the seedbed, seeding, cultivating, the use of fertilisers, spraying and weed elimination, either manually or mechanised.

Tillage of the field is essential to aerate the soil, incorporate fertilisers, remove weeds and facilitate seed growth. Tillage with a hand hoe presents a high risk of musculoskeletal strain and disorders and cannot be used extensively. The use of a mouldboard plough or a chisel plough significantly decreases this problem but, on the downside, it involves machinery-related hazards including entanglement in moving parts, injury from protruding parts — especially corroded metal.

Coupling and uncoupling and the use of a PTO shaft to power the attachments are major sources of machinery-related hazards (**Chapter 14: Machinery and equipment**).

Alternatively, weeding can be achieved by applying chemicals potentially exposing the farmer to chemical hazards (**Chapter 16: Hazardous substances**).

To improve plant growth and quality, soil is conditioned prior to planting with the addition of organic matter that decays and enriches it with nutrients. Application of fertilisers (especially manually) poses a risk of coming into contact with biological agents.

## 18.4 Planting/sowing

Planting of seeds in a field is very different from planting young trees or plants in an orchard.

In field planting, a row planter or seed drill can be used for automation purposes, with the benefits and drawbacks of using machines instead of doing the work manually.

Planting trees or plants, however, cannot be greatly automated. It is, therefore, a strenuous job requiring:

- the use of hoe or auger to drill the soil;
- carrying the plants on the site;
- bending to plant and compact the soil.

## 18.5 Cultivation

During cultivation, plants need frequent irrigation, periodic pesticide and fertiliser applications and occasional weeding.

Irrigation can be achieved through a permanent system of piping or canals or by using movable irrigation systems.

To set up a permanent system is a tedious and strenuous but one-off activity. A movable irrigation system involves:

- repetitive musculoskeletal strain since it requires frequent relocating of the sprayer;
- exposure to vehicle/machinery hazards while towed.

At this stage, weeding can only be done manually.

The application of pesticide exposes farmers to chemical hazards. Mixing and loading of pesticides releases vapour, odour, and fumes that cause eye, skin, nose and throat irritation. Long-term exposure to chemicals may lead to chronic and severe health problems.

While mixing, ensure good ventilation, following the instructions of the manufacturer regarding dosage and compatibly of chemicals.

At all stages of handling pesticides (mixing, loading, applying and cleaning of apparatus), you need to use at the minimum face protection (eyes, nose, mouth), gloves and safety shoes (**Chapter 16: Hazardous substances**).

*Spraying with pesticide*

## 18.6 Pruning

Pruning entails cutting branches, removal of shoots, buds, leaves, etc. If pruning is done early in spring, when tissues are soft, you reduce the risk of hand and finger injuries (cuts, bruises, calluses) and improve the productivity and longevity of plants.

Choose tools depending on the size of branches and the amount of pruning to be done. Tools may range from hand-pruners and hand-shears to pruning saws and chainsaws. While pruning ensure:

- you are clear of utility lines to avoid contact;
- tools are sharp and in good condition to reduce fatigue as well as hand and wrist strain;
- tools are cleaned and sanitised to reduce spreading of plant diseases.

## 18.7 Harvesting

On small farms, where the use of machines is limited, harvesting can be the most labour-intensive activity of the crop growing cycle. Picking fruit from trees or vines, harvesting crops, or collecting fruit from low-rise plants are all strenuous, repetitive activities involving reaching, bending and lifting weights.

*On large farms, harvesting utilises expensive and sophisticated farm machinery, such as the combine harvester or the cotton picker*

Automated harvesting relieves the farmer from musculoskeletal strain, fatigue and extensive contact with crop, organic matter, fertilisers and pesticides. However, it entails all machinery and vehicle-related hazards.

Crops may be taken to market immediately, or may be stored by the farmer or a cooperative in silos or refrigerators.

*Harvesting is followed by post-harvesting activities*

*Crops may need to be sun-dried (e.g. tobacco).*

Residues that cannot be used further are collected and arrangements should be made for proper disposal.

*Crop residues are collected: hay is baled and stored for animal feed*

# Case study

*A 58-year-old lady farmer was manually picking tobacco from a small plot she owned after her paid worker became sick. She had been collecting corn manually well before she had hired the worker. As time passed, it became warmer and very sunny. She was not accustomed to the task and was getting tired. She lost consciousness. Her husband found her lying there five hours later.*

## What should the farmer have done?

The farmer should have carried out a simple risk assessment of the site to determine:

## What could go wrong?

- dehydration, heat/sunstroke from warm weather;
- stings and bites from reptiles, insects and rodents;
- unable to communicate with other people in case of an accident.

## What is the likelihood of any of these happening?

**High**, taking into account:

- the lady farmer's age;
- lone working;
- exposure to extremely warm weather;
- the omission of safe practices.

## What are the possible consequences (severity)?

- injury, loss of consciousness, death.

## What measures should she have taken to reduce the risks?

She should have:

- not been working alone;
- selected cooler hours of the day and avoided working close to midday;
- ensured she took plenty of liquids to prevent dehydration;
- had a means of communication and advised someone about the expected time she would return;
- waited for the worker to recover.

CHAPTER 19:

# Livestock

This chapter deals with:

- Healthy herds
- Animal behaviour
- Contact with animals
- Zoonotic diseases
- Feeding
- Handling manure
- Transportation of animals
- Consumption of animal products
- Pests
- Musculoskeletal hazards
- Respiratory problems
- Chemicals
- Additional points to consider
- Animals and the public
- A case study

***Livestock farming** makes a major contribution to the food industry as well as being a **main source of income for many families in rural Europe**. Livestock farming may be free-range or confined.*

## 19.1 Healthy herds

Maintaining a healthy herd is the most important factor in running a profitable livestock farm. **The selection of healthy animals and the maintenance of high standards of sanitation**, **together with planned and prompt vaccination are the main characteristics of a successful livestock farm**. Confined livestock farming requires carefully designed infrastructure, in order to provide for ventilation, feeding, watering, veterinarian intervention and waste management.

The insulation materials generally used in livestock farms are highly flammable. You must always balance the benefit against the potential risks of using such materials.

## 19.2 Animal behaviour

As a livestock farmer, you need to be well aware of and anticipate the behaviour of your animals. Almost all animals in livestock farming would have been animals of prey in the wild and will therefore have a strong herd instinct that makes them react to threats and attack. Animal behaviour is influenced by the following factors.

- **Genetic factors** — you can improve on the safety of the herd by:
  - selecting the tamest of bulls for breeding using docility ratings;
  - being aware that animal temperaments change as they mature;
  - remembering that animal behaviour is unpredictable;
  - keep in mind that each species has different behaviour characteristics (e.g. bulls kick using their rear hooves whereas deer may rise and strike downwards using their front hooves).
- **Animal characteristics** such as field of vision and sensitivity to noise, light, shadows, etc. Bulls, as a result of their field of vision, may become agitated by unexpected movements in '**blind**' spots. Animals, in general, **are sensitive to noise** especially at high frequencies and may also become agitated by otherwise normal sounds such as clanging gates, loud voices or shouting.
- **Animal perception — animals react depending on what they perceive your intentions to be**. **Most female animals**, such as cows, sows and deer will attack if they believe their young are threatened.
- **Living conditions** — long periods of isolation render animals unsociable and will fear and often attack anyone approaching them. Animals can be taught from a young age to be sociable and used to other animals and human presence. Overcrowding may have similar effects since it makes animals agitated and restless. Good housing and living conditions including cleanliness, caring and balanced populations, make animals feel at ease.

- **Human contact and behaviour** — animals will copy you and your behaviour towards them. If you chase, slap, kick, hit, shout at, or frighten them, they learn to fear you and other humans and they become agitated and distressed. In trying to defend themselves, they may attack and injure you or worse. Calm, quiet and controlled treatment will minimise perceived threat and generally improve handling efficiency and safety.

As a result, **the good stockman**:

- **Cares** for their livestock calmly and patiently without stressing them;
- ensures **proper living conditions** taking into account noises, smells and lights;
- is **observant**, recognises signs of ill health and seeks veterinary advice;
- **understands** changes in behaviour;
- maintains **feeding and vaccination** plans;
- is always in control of their animals.

Additional measures you can take:

- **dehorn** cattle at an early age preferably within the first six weeks before they learn to use their horns aggressively;
- **ring** bulls in the nose (when they are 10 months of age) and examine the ring regularly;
- **castrate** bulls not intended for breeding by applying a rubber ring to young calves preferably less than a month old;
- adopt **artificial insemination** to avoid keeping a bull on site;
- only allow **fit and agile handlers** (generally aged 18–65) working in pairs to work with animals;
- keep in mind that activities aimed to render the herd safer, may be hazardous themselves.

Dehorning and drenching cattle are activities that give rise to many injuries. **The younger the animal**, **the safer the practice**. Workers must be trained, fit enough to handle an agitated animal and must wear personal protective equipment.

If you don't feel confident in undertaking these activities yourself, get assistance or consider bringing in professional help.

## Emergency arrangements

While working with animals in secluded areas always:

- arrange for an **easy means of exit**;
- have a **mobile phone** handy;
- let your **family/co-workers know** where you are, what you are doing and your estimated return time;
- have a **first-aid kit** available.

## 19.3 Contact with animals

When you assist animals during birth, you are exposed to a risk of **infection from birth fluids** and sudden movements of the mother. You can reduce the risk of infection by wearing gloves and aprons. Positioning yourself correctly may save you from injury if an animal suddenly moves. Using well-designed calving sheds with calving gates will greatly reduce the risk of injury.

When assisting an animal which is sick, you may be injured if the animal moves suddenly or behaves unpredictably. Injuries caused by **kicking**, **butting**, **biting or crushing** when assisting animals are very common.

**Injuries** caused by an animal suddenly moving can be severe since the animal is often much larger and heavier than the worker. Handling deer or bores, for example, requires body shields. **Elderly persons**, **women and children working on the farm are more vulnerable** to injury or worse when working with livestock.

**Branding and marking** as well as **dehorning** may cause **burns** or other injuries to the worker if an agitated animal makes a sudden movement.

When **injecting animals**, there is a risk of injecting yourself if the animal moves unexpectedly. Ensure the animal is restrained and workers are competent to assist. When the work is finished, place the needles in a secure container to avoid involuntary use or contact.

Tranquillisers must only be used when absolutely necessary (e.g. safely transporting stags from the farm).

Activities such as **semen collection**, **vaccination**, **manual milking and shearing** require direct contact with the animal. The sharp hand tool used for sheep and goat shearing may slip and cause injuries if an animal becomes agitated and struggles. For this reason, it is essential that the worker is fully trained for these activities and positions themselves correctly.

Ensure you have adequate livestock handling facilities suitable for the livestock in question.

Always wear **safety shoes** to avoid feet being crushed if stepped on and slips, trips and falls.

## 19.4 Zoonotic diseases

Many zoonotic diseases such as **anthrax**, **tinea capitis** and **orf** are associated with skin contamination. Improvements in husbandry practices, efficient ventilation, frequent vaccinations of animals, quarantining sick animals and good personal hygiene may reduce the risk of contamination. Tending to a sick animal presents the risk of contracting **rabies** and **tularaemia**.

Animals are also associated with numerous **allergies**, symptoms of which are usually **hives**, **swelling**, **nasal discharge**, **itching and asthma**.

Working with animals can also expose you to the risk of contracting a **pandemic virus such as psittacosis**, **swine flu**, **avian flu, etc.** (**Appendix 19.1**: **Zoonotic diseases**).

## 19.5 Feeding

Mixing animal feedstuffs and feeding exposes workers to organic dust and silo dust. **Farmworkers may develop organic dust toxic syndrome**, **farmers' lung disease**, **chronic bronchitis** and **other respiratory problems even from a single exposure**. A particularly hazardous activity is cleaning out silos containing animal feedstuffs since it combines work in confined spaces, work at height and exposure to organic dust. Ensure good ventilation of all enclosed areas. When entering silos, confined space entry procedures must be followed (e.g. testing of air quality, availability of breathing apparatus and established emergency rescue procedures).

There is also a risk of fire where large quantities of grain, cereal and hay are stored. Keep fire extinguishers at hand.

If you maintain elevated hay barns, you need to put barriers around them to prevent falls.

## 19.6 Handling manure

Dealing with manure on a farm involves its collection, transfer and, possibly, treatment. Manure collection, as a part of the cleaning process, **exposes workers to manure/ slurry gases**. Slurry (manure) pits generate and emit gases and, if they are not well ventilated, they can kill both animals and workers. Entering slurry tanks is specialised work requiring the testing of air before entering. **Keep slurry pits covered and locked if necessary but provide for external agitation points**. Farmers often use manure as a fertiliser to cultivate fields. However, the **direct use of manure as a fertiliser without prior treatment and analysis of its content is not a safe practice since manure content is not always suitable**.

**A cost-effective way of handling manure is the use of slatted floors** in animal housing.

**Exposure to animal urine may transmit cryptosporidiosis**. **Liquid manure is toxic** and care should be taken when it is cleaned, stored and transferred.

For further details regarding slurry handling, refer to **Chapter 16: Hazardous substances**.

## 19.7 Transportation of animals

Livestock may be transported:

- from farm to farm;
- for breeding purposes;
- for sale or slaughtering.

Loading animals for transportation is a hazardous procedure. Animals are usually unwilling to be loaded onto the transportation vehicles, particularly if they have never been loaded before. They can become restless, agitated and possibly aggressive. **It is important to remember** that livestock which has been loaded at least once is usually much easier to load again.

*Calm loading of cows*

Transport concerns are generally associated with the use of vehicles involving loading and unloading the livestock:

- create a passage to guide the livestock on or off the vehicle and prevent lateral movement;
- use sticks/paddles to direct but not strike animals;
- protect yourself from possibly agitated animals;
- do not stand in an animal's blind spot;
- work calmly but make your intentions clear;
- wear gloves and overalls when caging poultry for transport;
- wear safety shoes.

**Use licensed transportation companies and follow the legislation relating to the welfare of animal**.

For issues regarding road safety, refer to **Chapter 15: Transport and vehicles**.

**Loading and unloading issues**

When creating loading passages, make sure that:

- railings are high and durable to prevent animals from escaping;
- sheets are used instead of railings;
- sharp bends are avoided and curves are used instead, where possible;
- steep inclines are avoided;
- loading ramps angles do not exceed 15˚.

When unloading, do not allow handlers to stand within the side vision of the animal and never get in the animal's way.

## 19.8 Consumption of animal products

Farmers and farmworkers need to be aware that the direct consumption of **untreated or under-treated animal products** may pose a risk of contracting diseases such as **campylobacter**, **cryptosporidiosis**, **salmonellosis** (e.g. consumption of eggs without prior 48-hour refrigeration), **trichinosis**, **tuberculosis**, **brucellosis**, or **leptospirosis** (**Appendix 19.1. Zoonotic diseases**). Animal products produced on site (e.g. milk or cheese) should be regularly tested by specialised accredited laboratories. Animals receiving medication should not be slaughtered prior to the elapse of the period specified by law.

## 19.9 Pests

**Parasitic insects and mites on farms may transmit diseases through blood sucking**, **or contact with food**, **or they may sting and release venom**. Allergic sensitivity to mites may result in general allergenic reactions such as asthma, dermatitis, nasal and eye irritation. The farmer's exposure is continuous and lifelong and, therefore, such problems can become chronic.

Ensure there is a pest control programme in place using pest control products approved by your national authorities. For complicated pest control problems, contact a professional pest controller.

## 19.10 Musculoskeletal hazards

A farmer's work often involves carrying excessive loads, long hours of standing, reaching, bending and other strenuous postures, all of which can lead to **joint**, **back** and **hip pain and injuries**.

**In dairy farming**, **manual milking** is considered the single most hazardous activity to the musculoskeletal system, because the farmer may need to bend and stoop four to six times per cow. Even mechanised milking poses significant musculoskeletal risks and parlour design is critical.

These repetitive actions may lead to **arthritis**. Modern well-developed milking parlours relieve this problem as they allow the simultaneous milking of several cows; the worker or farmer stands at a lower level than the animals and does not need to bend. The milk is piped into a mass storage container so the worker does not need to carry buckets manually. Other work activities in agriculture requiring bending and twisting actions pose similar risks to workers. **Catching poultry for transportation** can lead to musculoskeletal **disorders** as the worker needs to repeatedly reach out and grasp struggling birds.

## 19.11 Respiratory problems

Workers experience respiratory problems (due to exposure to dust or ammonia) mainly as a result of:

- handling feedstuffs;
- handling manure;
- working in henhouses;
- working in confined and crowded spaces;
- cleaning barns and silos;
- working in barns covered with hay.

You can reduce your workers' exposure to organic dust by replacing the bedding of the barn or stable with sawdust instead of hay, covering silos containing feedstuffs, and by sprinkling water to settle the dust.

## 19.12 Chemicals

- Chemicals have many uses in agriculture and are used for cleaning areas, equipment and animals.
- Spills may result in skin burns and splatters may irritate eyes.
- Young children may accidentally ingest a chemical that is left unattended or stored in unlabelled containers or, worse still, in wrongly labelled bottles.
- Always label measuring cups clearly, rinse them thoroughly after use and never leave them unattended.
- Take care in mixing, storing and applying all chemicals from pesticides to antibiotics and cleaning agents.
- When spraying or bathing animals with pesticides, workers are exposed to direct contact with chemicals.
- For further details regarding chemicals, refer to **Chapter 16: Hazardous substances**.

## 19.13 Additional points to consider

**Farm floors are usually slippery and slips**, **trips and falls often occur**. Keep:

- floors as even as possible;
- stair steps in good condition; and
- sites as clean and as tidy as possible.

- **Farm work often involves working late into the evening or at night**. It is particularly dangerous to load/unload livestock at night or move them along a public road. Work in low-visibility hours may also cause entanglement in barbed or electric wires or falls in pits.
- **Farmers and farmworkers are vulnerable to heat exhaustion and heatstroke is common**.
- In some countries, old farm structures housing livestock may contain asbestos. Asbestos is an extremely dangerous and carcinogenic substance. **If in good condition**, **risks are minimal**. **Never remove asbestos by yourself**. **Always contract specialists for the removal and disposal of asbestos**, refer to **Chapter 13**: **Infrastructure** and **Chapter 16: Hazardous substances**.
- **Workers may be exposed to high levels of noise from tractors, chainsaws and other equipment** (e.g. piping on vacuum milking machines) **often reaching 90–100 dBA**, **refer to Chapter 8: Health management**.

Livestock farms may attract wild animals such as wolves and foxes. **Fencing or guard dogs are usually sufficient measures**. Different types of fencing are illustrated in **Chapter 13**: **Infrastructure**. Guard dogs must be trained appropriately for the livestock they are guarding.

## 19.14 Animals and the public

If your farm is visited by tourists, schools or shoppers, you should be aware that hazards that may be quite obvious to you may be totally unfamiliar to them (e.g. animal behaviour or reactions). You should **never leave visitors unattended** and you must **provide them with clear instructions** regarding possible hazards, restricted areas and safe behaviour. **Do not allow them to enter fenced animal areas**, **touch**, **pet or feed animals by themselves** (**Chapter 12: Visitors and third parties**).

# Case study

*A young worker on a pig farm was trying to vaccinate a large animal. Holding the animal between his legs and grasping it with his left hand to prevent it from moving, he tried to inject it using his right hand. The animal suddenly moved and the worker injected his own leg instead. He was immediately transferred to the hospital for treatment.*

## What should the farmer have done?

He should have carried out a simple risk assessment to determine:

## What could go wrong?

- workers accidentally injecting themselves when an animal suddenly moves;
- workers attacked by an agitated animal;
- workers accidentally injured when an animal suddenly moves.

## What is the likelihood of these happening?

**High**, taking into account:

- sudden movement of an animal when in pain or frightened;
- the unpredictable behaviour of an animal when in pain or frightened;
- lack of experience of workers;
- animal size and weight;
- side effects on humans of injected vaccines.

## What are the possible consequences (severity)?

- injury, anaphylactic shock, death.

## If the farmer had assessed the situation beforehand, what should he have done to reduce the risk?

He should have:

- asked a vet to perform the vaccinations instead;
- constructed purpose-made structures to confine animals and restrict movement;
- trained his worker;
- provided his workers with overalls to protect against accidental injection.

CHAPTER 20:

# Greenhouses

This chapter deals with:

- Greenhouse hazards
- Material-related hazards
- Working conditions in greenhouses
- Environmental control systems
- Muscular strain and manual handling
- Pesticides and fertilisers
- Greenhouse maintenance activities
- Additional considerations
- A case study

*Greenhouses represent a popular way of farming as the farmers benefit from being able to grow crops all year round regardless of weather conditions.*

*Greenhouses are used for growing vegetables, low-rise fruits, flowers, rare and exotic plants.*

## 20.1 Greenhouse hazards

Working in greenhouses involves hazards related to:

- materials
- extreme environmental conditions
- manual handling
- pesticides, and
- work at heights.

## 20.2 Material-related hazards

Greenhouses include glasshouses or plastic-covered structures.

Greenhouses may pose various hazards, depending on their construction materials:

- suffocation due to collapse of plastic cover;
- injury (cuts and lacerations) due to glass breakage;
- contact with corroded/rusty metal parts;
- spread of fire due to flammable materials.

## 20.3 Working conditions in greenhouses

When working in a greenhouse, you and your workers are exposed to an '**enclosed**' **space** situation where environmental factors such as temperature, humidity, air quality and quantity, dust concentration may influence your ability to work safely and effectively.

A combination of high temperature and humidity can create an extremely **uncomfortable working environment** which may lead to heatstroke, respiratory problems, fatigue and loss of consciousness. Drink plenty of liquids and fresh water; choose the cooler parts of the day for working and use ventilation and cooling systems to reduce any ill effects.

Such working conditions together with the **use of pesticides and fertilisers** can increase both the likelihood and severity of harm. Make a careful selection of pesticides and use appropriate personal protective equipment (mouth, nose, eyes protection) and wear suitable clothing. Use pesticides only for the purpose, and under the conditions, suggested by the manufacturer.

## 20.4 Environmental control systems

In greenhouses, environmental conditions are controlled mechanically using **artificial heat sources**, **fans and ventilation systems**, **shading and cooling mechanisms**, **humidification and climate-control equipment**. While the use of these systems decreases your exposure to environmental hazards, it may expose you to **electrical and mechanical hazards**, **noise and biological hazards** (*Legionella* bacteria).

Always bear in mind that you need to balance the advantages and disadvantages of environmental control systems and design them accordingly.

The ***Legionella*** **bacterium which thrives** in water temperatures 25–45 °C (77–113 °F) can become lethal if it is inhaled. You may inhale water droplets if you are standing close to a water sprayer or to a cooling system used to cool flowers or vegetables (**Chapter 13**: **Infrastructure**).

## 20.5 Manual handling and muscular strain

Working in greenhouses is a year-round job involving strenuous and repetitive work in an unnatural environment and often involves difficult postures. It can cause:

- repetitive strain injury (RSI) in the arm, wrist and hand;
- musculoskeletal disorders (sprains and strains).

It involves many repetitive manual activities such as:

- filling containers with soil;
- planting seeds;
- fertilising;
- trimming or thinning plants;
- applying fumigants or pesticides;
- picking, batching and packing;
- transporting the plants or product from the greenhouse.

## 20.6 How to reduce musculoskeletal hazards

- Automate as many activities as possible.
- Minimise manual handling tasks.
- Customise seating to suit the task.
- Job rotation.
- Provide frequent breaks.
- Use suitable and ergonomic tools, monitor health effects.
- Train the workforce in manual handling, particularly in the lifting of weights.
- Organise the work so that workers generally only lift between waist and shoulder height.

*Custom seating for workers*

## 20.7 Pesticides and fertilisers

Pesticide and fertiliser-related hazards in greenhouse operations (**Chapter 16: Hazardous substances**) may be more severe. The fact that they are applied in enclosed spaces with high temperature and humidity levels makes the application of fertilisers and pesticides potentially more harmful. Applying pesticides may cause eye irritation, skin burns and respiratory problems.

- Consult the manufacturer's instructions before use and implement the recommended control measures:
- restrict access to the greenhouse after pesticides or fertilisers have been applied and allow sufficient time before re-entry;
- keep safety data sheets (SDSs) available at all times;
- contact your supplier regularly and ask to be informed of potentially safer products;
- where possible, use automated pesticide application machinery instead of manual, handheld equipment as exposure to chemicals will be less.

Consider integrated pest management (IPM), an environmentally sensitive and ecological approach to pest management. IPM programmes aim to manage pest damage by the most economical means, and with the least possible hazard to people, property, and the environment. IPM is implemented mainly through three stages: identification and monitoring, prevention and intervention and control.

Use pesticides produced from natural sources, rather than chemicals.

## 20.8 Greenhouse maintenance activities

The most hazardous activities carried out in greenhouses are those related to construction and maintenance work which mainly involve roof work, electrical and mechanical work.

- Regarding **roof work**, first make sure that your greenhouse is equipped with the necessary safety infrastructure such as a footbridge and anchorage points on the roof. Then, you should consider the safest way of carrying out the specific work involved: use scaffolding rather than a ladder.
- Never work alone when using a harness: if you fall and remain suspended, without immediate help, death may occur after 20 minutes or half an hour.
- If a task is too difficult or complicated, ask for expert advice or outsource the activity to professional contractors.
- During roof work, make sure that you keep clear of overhead power cables.

You need to be trained and competent in order to carry out electrical or mechanical work. If you are not, do not rely only on your own experience. **Bring in someone qualified to do the job**.

## 20.9 Additional considerations

- Wear **closed-toe** shoes in the greenhouse to avoid being cut by broken glass. Do not use your bare hands to clear away broken glass.
- Keep the greenhouse **tidy** to prevent slips, trips and falls.
- Provide sufficient lighting.
- Arrange for **pest control**.
- Make **emergency arrangements** including alternative exits and firefighting equipment.
- When you use combustion engines in the greenhouse, check the **level of carbon monoxide** in the air and ensure there is adequate ventilation.
- In extremely **windy weather**, avoid working in glasshouses to prevent injury from broken glass.

# Case study

*A farmer's 18-year-old son had come to help his father with some roof work on their greenhouses before going to a football match. They were replacing the nylon cover before winter. The son was on the roof when his foot slipped out of his flip-flops and he fell off the roof. He suffered severe spine damage and is permanently disabled.*

## What should the farmer and his son have done?

They should have carried out a simple risk assessment to determine:

## What could go wrong?

- falls from height;
- falling objects.

## What is the likelihood of this happening?

**High** for both, taking into account:

- lack of safety method statement;
- lack of training and experience;
- lack of suitable equipment;
- unsuitable footwear;
- anticipation of the football match.

## What are the possible consequences (severity)?

- injury, permanent disability, concussion, coma, death.

## If they had assessed the job, what should they have done to reduce the risks?

They should have:

- got a professional to do the job;
- used a scaffold, an mobile elevated work platform (MEWP);
- used a suitable ladder system, purpose-made footage;
- worn suitable safety shoes, harness and a tool belt.

CHAPTER 21:

# Forestry

## This chapter deals with:

- Planning
- Human resources management
- Camps
- Tree planting
- Forest maintenance
- Logging
- Hung-up trees, skidding
- Timber transport
- The chainsaw
- Hand signalling
- Ropes and climbing equipment
- First-aid and emergency arrangements
- Forest fires
- A case study

**Forestry can be a hazardous occupation**. *It is even more dangerous when self-employed workers or casual workers are employed rather than full-time professional contractors.*

*If forestry is your livelihood, neither you nor your employees can afford to miss a day's work even for minor injuries.*

*You should make sure that people working with and for you are trained and competent to do the work. Remind them that their negligence may impair their safety, their co-workers' safety and possibly the safety of third parties (public).*

## 21.1 Planning

**The planning of operations is one of the most important factors in establishing safe and healthy working conditions in forestry operations**.

The site manager should ensure the following.

- **People** working with and for them **are competent**, **responsible and sensible** and are aware that their negligence may impair their own and their co-workers' safety.
- **Competent team leaders** are appointed to supervise the work. Where multiple contractors are engaged in activities, the site manager should establish clear lines of authority, duties and responsibilities
- **Arrangements are made for the appropriate transportation and communication** systems for workers.
- Where necessary, arrangements for appropriate accommodation facilities for the workers are made.
- **Machinery**, **equipment**, **tools and personal protective equipment** (PPE) **are available and in good operating condition**. Arrangements for refuelling, safekeeping and transportation should be made and if firearms are used, they should be properly licensed, safely kept and used.
- **The work is planned**.
- **That team members are aware of the wildlife including animals**, **insects and reptiles** they are likely to encounter, recognition of dangerous species and how they can deal with or avoid them. Infections and diseases transmitted by forest animals vary from region to region. Some lack symptoms and are difficult to detect and, therefore, pose a greater risk of infecting forestry workers. Some infections and diseases may prove lethal.
- **Emergency plans should be developed and workers are informed** of them.
- **Workers should be trained** to cope with off-road driving and vehicle safety, fire procedures, relevant hazards, operation of machinery, tree felling, manual handling, loading.

## 21.2 Human resource management

The human resource is the most valuable and critical factor in the forestry business. Workers are exposed to extremes and experience unusual physical and psychological strain.

Fatigue and strain **are a result of working days which are too long**, **long commuting distances**, **camping on-site**, **and high work rates** (since most workers are on a piece-rate system). **Time pressure** leads to haste and unsafe practices. **Tired workers** may experience lethargy, weakness, exhaustion, sport anaemia, or adrenal exhaustion syndrome.

**Young and old workers** are especially vulnerable: the former due to lack of experience and overestimating their capabilities and the latter due to age-related problems and fatigue.

Workers are vulnerable to **heatstroke**, **sunburn**, **dehydration and exposure to extreme weather conditions**.

## 21.3 Tree planting

Tree planting is strenuous, repetitive work and is therefore directly associated with **musculoskeletal problems**.

Use hand tools specifically intended for forestry work. **Women account for 10–15 % of the tree planter workforce**. When there are women in the workforce, special considerations should be made (e.g. separate lodgings, load carrying ability).

When using sharp tools for digging, it is essential to wear steel **toe-capped boots**. When carrying plants and tools, **use suitable tool belts** to reduce load strain.

What can you do?

- **Reward** your workers based on criteria other than output (this may reduce speed of work but it also reduces injuries and accidents).
- **Rotate jobs** to relieve workers even if it requires more thorough training.
- **Plan activities** to avoid lone working.
- **Encourage vaccinations** where available.
- **Use personal alarm systems** wherever you employ lone working; the systems should transmit to emergency staff in order to detect emergency situations and implement emergency plan.
- **Adapt working hours** and breaks to the needs and complexity of the work.
- **Establish discipline** and effective supervision through the team leader.
- **Educate your workers to avoid injuries and infections**, instruct them on the wearing of suitable clothing and personal protective equipment (e.g. wear knee-high boots to reduce the risk of **snake bites** or use **insect repellent sprays** or lotions to prevent insect bites).
- Train and make your workers aware of **harmful plants and animals**, the risks associated with the work, the machinery and the systems of work used.
- **Always know** where your crews are located so that they can be evacuated in emergency situations.

The site manager and the team leaders must ensure that they are, at all times, aware of the team members' allergies to stings and bites and intolerances to medication. They need to keep the relevant medical history records of the workers available on site.

**Protect from sun exposure**, **heat and humidity by wearing**, hats and sunglasses, by applying sunblock and by taking regular drinks of water. During wet and cold weather, wear warm wind and rainproof clothing and anti-slip footwear.

## 21.4 Camping

Where camping is necessary and is allowed by national law, the **site manager** should ensure **adequate accommodation facilities**, **separate facilities for men and women**, **sanitation**, **communication arrangements**, **transportation to and from the site and recreation**.

Workers commonly suffer from **stress-related** problems caused by long periods of isolation away from families and friends, lack of privacy and lack of comfort.

**The better the facilities and the organisation of the camp**, **the less stress is imposedon workers**. Workers should be informed whether stream water is potable and tree products are edible. Inform team members of **hunting zones and any restrictions**.

**Construct fire safety zones** around camps and ensure that all workers understand the risks posed by forest fires.

In areas where there is **danger of lightning strikes**, **advise** workers on what they should do to avoid them.

In **extreme weather conditions**, **activities should be suspended** and the workforce should be provided with suitable shelter (**Chapter 10: Emergency preparedness and response**).

## 21.5 Forest maintenance

Combating plant diseases involves the use of pesticides which pose chemical hazards. Develop a safety method statement and work according to it (**Chapter 5: Planning**). Wear suitable personal protective equipment including eye, nose and mouth protection while spraying and suitable gloves while handling either chemicals or freshly sprayed plants. It is advisable to carry out spraying during the cooler hours of the day as wearing personal protective equipment may induce excessive sweating.

## 21.6 Logging

Logging is undoubtedly the most hazardous activity in the forestry industry. It involves felling, topping and de-branching, debarking, moving logs to an accessible location and piling them up for temporary storage and, finally, loading them onto transport vehicles. The use of modern forestry harvesting machinery has greatly reduced the frequency of fatal and serious accidents in the logging process in forestry.

Wood harvesting involves the use of mobile heavy-duty machinery that should be equipped with rollover protective structures (ROPS) and falling object protective structure (FOPS). The training of operators and the establishment of exclusion zones around these machines is essential for safety.

## 21.7 Hung-up trees, skidding

**After a storm**, **only trained workers should be allowed to work** since operating conditions may be hazardous due to broken branches, hung-up trees, rolling and skidding trees. Hung-up trees can be safely removed using safe turning hooks and winches — 'driving' is an unsafe method of bringing down hung-up trees. Ground skidding equipment should not be used on slopes of more than 15°. Skidding operations should be suspended during exceptionally wet weather.

## 21.8 Timber transport

When logs are piled in the landing area, they must be secured against sliding and rolling. Timber loading for transport is an activity associated with musculoskeletal disorders and fatigue. **Lifting equipment** (e.g. cranes, truck mounted cranes) **and their lifting accessories** (e.g. ropes and chains) **must be periodically checked**.

In southern countries, animals such as horses or mules are often used for transporting logs from inaccessible locations to the landing areas. Take care when using purpose-made vehicle loading platforms.

## 21.9 The chainsaw

**The chainsaw is considered the single most hazardous piece of equipment in the forestry industry**. Chainsaw **kickback** is related to many forestry worker injuries. Other machines involved in accidents are shredders and log-splitters. When machinery is poorly designed and when protective **guards or safety control devices are removed**, machinery-related injuries are more likely.

**Chainsaw accidents are associated with:**

- lack of training
- kickback
- muscle strain
- being struck by chain
- hot engine
- petrol
- noise and vibration
- debris and dust
- carbon monoxide/fumes
- lack of proper PPE.

**Take precautions:**

1. Attend a training course on the safe use of chainsaws and only allow trained competent persons to use the chainsaw.
2. Select a chainsaw that suits your needs making sure the length of the saw's guide matches the type of job you expect to do.
3. Choose a low-level vibration chainsaw to avoid **vibration** being transmitted to arms.
4. Check that the chainsaw is balanced.
5. Read the operator's manual.
6. Provide refresher training to workers on how to avoid kickback and make sure your chainsaw uses a low kickback or safety chain.

7. Make sure the chainsaw is switched off when you refuel or lubricate it.
8. Keep a fire extinguisher in the vicinity.
9. During refuelling and lubrication, wear gloves to prevent contact with skin.
10. Start the chainsaw on the ground.
11. Make sure the chain is out of the dirt.
12. Use appropriate PPE, including earmuffs with earplugs, safety boots, safety glasses, gloves, and protective cut-resistant chaps or leggings.
13. Never operate a chainsaw above shoulder height.
14. Always hold a chainsaw with both hands.

Check your chainsaw to ensure that it is fitted with:

- ✔ **a muffler** to reduce noise and to direct exhaust gases away from the operator;
- ✔ **a spark arrester** to catch sparks in the exhaust gases;
- ✔ **a chain catcher** to catch the chain if it breaks and prevent it from hitting the operator;
- ✔ **on and off switch** to quickly turn the saw off with thumb when holding the rear handle with the right hand;
- ✔ **mitt** to prevent your left hand coming off the front handle;
- ✔ **a chain brake** to stop the chain moving in cases of kickback;
- ✔ **a throttle lock-out** to ensure the throttle only functions when the rear handle is held securely;
- ✔ **anti-vibration mounts** to reduce the amount of vibration felt by the operators hands;
- ✔ **rear-hand guard** to protect the right hand from debris and broken chains.

The following PPE and accessories should be worn by chainsaw operators:

- high-visibility helmet;
- visor or safety glasses;
- earmuffs and earplugs to achieve attenuation;
- high-visibility shirt, vest or other garment;
- chainsaw-cut-resistant chaps or trousers;
- safety boots with steel toecaps;
- tool belt and spares kit with all appropriate tools and components.

## 21.10 Hand signals

Hand signals for felling and loading operations should be agreed upon before commencement of work even if universal signals are to be used. It should also be established who the signaller will be. The signaller should position himself in a safe spot which is clearly visible to the operator. Signals must be given only when their meaning is clear (**Chapter 17: Signs**). Felling very often requires the use of hand signals.

*When felling, control the direction of falling through a special sequence and configuration of cuts*

## 20.11 Ropes and climbing equipment

Ropes and climbing equipment **used for elevating people must be certified** by an independent competent authority at regular intervals as specified by national law. Additionally, they must be visually inspected **before initial and subsequent use** and following major repairs.

## 21.12 First aid and emergency arrangements

The site manager and the team leader should be aware of the **nearest medical establishment** having antidotes and antiserums available to prevent anaphylactic shock and poisoning.

**The provision of first-aid kits containing antibiotics**, **antihistamines**, **preventive and treatment vaccinations** (tetanus) **is essential**.

**First-aiders should be trained** to identify and treat illnesses, diseases and injuries **relevant to the flora**, **fauna and key features of the site**. Records of treatment provided should be kept.

**Emergency situations should be planned for**, equipment should be provided, personnel should be trained for several possible scenarios and emergency drills should be carried out including, where necessary, helicopter rescue. **Evacuation arrangements** should be made, especially where access to vehicles is restricted. A **satellite radio-equipped** emergency transport vehicle should be available (**Chapter 10: Emergency preparedness and response**).

## 21.13 Forest fires

**Forest fires are a common** emergency situation encountered in forestry. **More than 90 % of forest fires are caused by human factors**.

**Smoking**, **fuel leaks**, **vehicles**, **hand tools and forest camps are the usual causes**. Forest fires are extremely dangerous due to the abundance of flammable material, sudden wind changes, inaccessible terrain. Fires are unpredictable: they move uphill, spread quickly and follow wind direction.

Forest fires often result in serious injuries or fatalities and extensive damage to forestry. **Fires cause burns**, **asphyxia**, **respiratory problems and eye irritation**.

**If the fire is detected early**, **it is easier and safer to extinguish**.

Hazards associated with firefighting include excessive heat radiation and poor visibility due to smoke and dust. It may be difficult to get supplies to the firefighters and remove injured people.

# Case study

*A forestry worker with 15 years' experience was made a team leader of a team of nine forestry workers employed by the local forestry cooperative. He was logging wood with his chainsaw when the chain struck a rock on the ground, kicked back and gashed his knee. He was very fortunate to end up with just a deep scar.*

## What should he have done?

Before using the chainsaw, he should have carried out a simple risk assessment to determine:

## What could go wrong?

- cuts from contact with chainsaw while powered;
- injury from chainsaw kickback;
- injury from stray objects coming in contact with the moving chain.

## What is the likelihood of this happening?

**High**, taking into account:

- sudden movement of chainsaw;
- the nature of the ground containing rocks;
- the force of kickback.

## What are the possible consequences (severity)?

- cuts, injury, amputation.

## What should the forestry worker have done to reduce the risk?

They should have:

- made sure they were trained and competent for the work to be done;
- taken care to prevent the chain from touching the ground, rocks or other objects;
- worn protective cut-resistant boots and leggings.

APPENDIX 1.1:

# Glossary

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| Term | Explanation |
|---|---|
| **Accident** | An undesired event giving rise to death, ill health, injury, damage or other loss (British Standards Institute) |
| **ATVs** | All-Terrain Vehicles |
| **Competent person** | A person who has sufficient knowledge, skill, awareness and attitude to undertake a task (British Standards Institute) |
| **dB** | Decibel |
| **Emergency** | An issue, event or incident which threatens the operation of a company, its personnel and its assets |
| **FOPS** | Falling Object Protective Structure |
| **Hazard** | A hazard is any situation, substance, activity, event, or environment that could potentially cause injury or ill health (OHSAS 18001:2007) |
| **Occupational Health** | The promotion and maintenance of the highest degree of physical, mental and social well-being of workers in all occupations (International Labour Organisation/World Health Organisation) |
| **Incident** | An event that gave rise to an accident or had the potential to lead to an accident |
| **IPM** | Integrated Pest Management |
| **MSDs** | Musculoskeletal disorders that can affect the body's muscles, joints, tendons, ligaments and nerves (International Labour Organisation) |
| **SDS** | Safety Data Sheet |
| **PPE** | Personal Protective Equipment |
| **PTO** | Power Take-Off |
| **RCD** | Residual Current Device |
| **ROPS** | Rollover Protective Structure |
| **RSI** | Repetitive Strain Injury |
| **Safety** | Freedom from unacceptable risk (British Standards Institute) |

APPENDIX 1.2:

# References

↑ back to Chapter 1


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APPENDIX 2.1:

# National health and safety bodies

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↑ back to Chapter 2

| | | | |
|---|---|---|---|
| **BELGIUM** | Service public fédéral Emploi, Travail et Concertation sociale | **http://www.meta.fgov.be**<br>**http://www.emploi.belgique.be** | Direction Générale Controle du bien être au travail<br>Rue Ernest Blerot 1<br>1070 Brussels<br>BELGIUM |
| **BULGARIA** | Glavna inspekcia po truda | **http://www.gli.government.bg/bg/page/386** | General Labour Inspectorate Executive Agency<br>bul. Dondukov 3<br>1000 Sofia<br>BULGARIA |
| **CZECH REPUBLIC** | Státní úřad inspekce práce | **http://www.suip.cz/** | Horní náměstí 103/2<br>7461 01 Opava<br>CZECH REPUBLIC |
| **DENMARK** | Arbejdstilsynet | **http://arbejdstilsynet.dk/da/** | Landskronagade 33<br>2100 København Ø<br>DENMARK |
| **GERMANY** | Bundesministerium für Arbeit und Soziales | **http://www.bmas.de/DE/Startseite/start.html** | Wilhelmsstraße 49<br>10117 Berlin<br>GERMANY |
| **ESTONIA** | Labour Inspectorate of Estonia | **http://www.ti.ee/** | Töönspecktsioon<br>Gonsiori 29<br>10147 Tallinn<br>ESTONIA |
| **IRELAND** | Health and Safety Authority | **http://www.hsa.ie/eng/** | The Metropolitan Building<br>James Joyce Street<br>Dublin 1<br>IRELAND |
| **GREECE** | SEPE — Labour Inspectorate | **http://www.ypakp.gr/** | 2 Lolkou & Argonafton<br>38001 Volos<br>GREECE |
| **SPAIN** | Ministerio de Trabajo e Inmigración | **http://www.mtin.es/itss/web/index.html (Labour Inspectorate)**<br>**http://www.mtin.es/ (Ministry of Labour)** | Inspección de Trabajo<br>Dirección General de la Inspección de Trabajo y Seguridad Social<br>C/Agustín de Bethencourt, 4<br>28071 Madrid<br>SPAIN |
| **FRANCE** | Ministère de l'emploi, de la Cohésion sociale et du logement | **http://www.travail-emploi-sante.gouv.fr/** | Ministère de l'emploi, de la Cohésion sociale et du logement<br>39-43 Quai André Citroën,<br>75902 Paris Cedex 15<br>FRANCE |
| **ITALY** | Ministero del Lavoro e delle Politiche Sociali | **http://www.lavoro.gov.it** | Via Cesare de Lollis. 12<br>00185 Roma RM<br>ITALY |

| | | | |
|---|---|---|---|
| **CYPRUS** | Department of Labour Inspection | **http://www.mlsi.gov.cy** | Apelli Street 2<br>1493 Nicosia<br>CYPRUS |
| **LATVIA** | State Labour Inspectorate | **http://www.vdi.gov.lv** | 38 k-1, Kr. Valdemara Street<br>Riga, LV-1010<br>LATVIA |
| **LITHUANIA** | State Labour Inspectorate of the Republic of Lithuania | **http://www.vdi.lt/** | Algirdo str. 19<br>LT-03607 Vilnius<br>LITHUANIA |
| **LUXEMBOURG** | Inspection du travail et des mines | **http://www.itm.lu/** | Boïte postale 27<br>2010 Luxembourg<br>LUXEMBOURG<br>3, rue des Primeurs<br>2361 Strassen<br>LUXEMBOURG |
| **HUNGARY** | Hungarian Labour Inspectorate | **http://www.ommf.gov.hu** | Budapest Margit krt. 85.<br>1024 HUNGARY<br>Budapest Pf. 639. 62<br>1399 HUNGARY |
| **MALTA** | Occupational Health and Safety Authority | **http://www.ohsa.org.mt/** | 17, Edgar Ferro Street Pieta<br>PTA 1533<br>MALTA |
| **NETHERLANDS** | Dutch Labour Inspectorate | **http://www.arbeidsinspectie.nl/** | Postbox 90801<br>2509 LV The Hague<br>NETHERLANDS |
| **AUSTRIA** | Bundesministerium für Arbeit, Soziales und Konsumentenschutz | **http://www.arbeitsinspektion.gv.at** | Stubenring 1<br>1010 Vienna<br>AUSTRIA |
| **POLAND** | National Labour Inspectorate | **http://www.pip.gov.pl** | Chief Labour Inspectorate<br>38/42 Krucza Street<br>00-962 Warsaw<br>POLAND |
| **PORTUGAL** | ACT — Autoridade Para as Condições do Trabalho | **http://www.act.gov.pt/** | Av. Casal Ribeiro 18-A<br>1749-073 Lisbon<br>PORTUGAL |
| **ROMANIA** | Labour Inspection | **http://www.inspectmun.ro/** | Matei Voievod Street 29<br>Sector 2<br>21455 Bucharest<br>ROMANIA |
| **SLOVENIA** | Ministry of Labour, Family and Social Affairs | **http://www.id.gov.si/** | Parmova 33<br>SI-1000 Ljubljana<br>SLOVENIA |
| **SLOVAKIA** | National Labour Inspectorate | **http://www.safework.gov.sk/** | Masarykova 10<br>040 01 Kosice<br>SLOVAKIA |
| **FINLAND** | Ministry of Social Affairs and Health | **http://www.stm.fi/sivukartta** | Kirkkokatu 14<br>PO Box 33<br>FI-00023 Helsinki<br>FINLAND |
| **SWEDEN** | Swedish Work Environment Authority | **http://www.av.se/** | Lindhagensgatan 133<br>SE-112 79 Stockholm<br>SWEDEN |
| **UNITED KINGDOM** | Health and Safety Executive | **http://www.hse.gov.uk/** | Redgrave Court<br>Merton Road<br>Bootle<br>Merseyside<br>L20 7HS<br>UNITED KINGDOM |

APPENDIX 2.2:

# European health and safety directives

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| S/N | Theme | Title | Ref. No |
|---|---|---|---|
| 1 | **Work equipment** | Council Directive 89/656/EEC of 30 November 1989 on the minimum health and safety requirements for the use by workers of personal protective equipment at the workplace | 89/656/EEC |
| 2 | **Work equipment** | Council Directive 95/63/EC of 5 December 1995 amending Directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work | 95/63/EC |
| 3 | **Work equipment** | Directive 2001/45/EC of the European Parliament and of the Council of 27 June 2001 amending Council Directive 89/655/EEC concerning the minimum safety and health requirements for the use of work equipment by workers at work | 2001/45/EC |
| 4 | **Visual display units** | Council Directive 90/270/EEC of 29 May 1990 on the minimum safety and health requirements for work with display screen equipment | 90/270/EEC |
| 5 | **Vibration** | Directive 2002/44/EC of the European Parliament and of the Council of 25 June 2002 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (vibration) | 2002/44/EC |
| 6 | **Signs** | Council Directive 92/58/EEC of 24 June 1992 on the minimum requirements for the provision of safety and/or health signs at work | 92/58/EEC |
| 7 | **Pregnant workers** | Council Directive 92/85/EEC of 19 October 1992 on the introduction of measures to encourage improvements in the safety and health at work of pregnant workers and workers who have recently given birth or are breastfeeding | 92/85/EEC |
| 8 | **Physical agents** | Directive 2006/25/EC of the European Parliament and of the Council of 5 April 2006 on the minimum health and safety requirements regarding the exposure of workers to risks arising from physical agents | 2006/25/EC |
| 9 | **Personal protective equipment** | Council Directive 89/656/EEC of 30 November 1989 on the minimum health and safety requirements for the use by workers of personal protective equipment at the workplace | 86/656/EEC |
| 10 | **Noise** | Directive 2003/10/EC of the European Parliament and of the Council of 6 February 2003 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (noise) | 2003/10/EC |
| 11 | **Mineral extracting — drilling** | Council Directive 92/91/EEC of 3 November 1992 concerning the minimum requirements for improving the safety and health protection of workers in the mineral-extracting industries through drilling | 92/91/EEC |
| 12 | **Mineral extracting** | Council Directive 92/104/EEC of 3 December 1992 on the minimum requirements for improving the safety and health protection of workers in surface and underground mineral-extracting industries | 92/104/EEC |

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|---|---|---|---|
| 13 | **Manual handling** | Council Directive 90/269/EEC of 29 May 1990 on the minimum health and safety requirements for the manual handling of loads where there is a risk particularly of back injury to workers | 90/269/EEC |
| 14 | **Ionising radiation** | Council Directive 96/29/Euratom of 13 May 1996 laying down basic safety standards for the protection of the health of workers and the general public against the dangers arising from ionizing radiation | 96/29/Euratom |
| 15 | **Health and safety — minimum requirements** | Council Directive 89/654/EEC of 30 November 1989 concerning the minimum safety and health requirements for the workplace | 89/654/EEC |
| 16 | **Health and safety** | Council Directive 89/391/EEC of 12 June 1989 on the introduction of measures to encourage improvements in the safety and health of workers at work | 89/391/EEC |
| 17 | **Fishing vessels — medical treatment on board** | Council Directive 92/29/EEC of 31 March 1992 on the minimum safety and health requirements for improved medical treatment on board vessels | 92/29/EEC |
| 18 | **Fishing vessels** | Council Directive 93/103/EC of 23 November 1993 concerning the minimum safety and health requirements for work on board fishing vessels | 93/103/EC |
| 19 | **Exposure limit values — second list** | Commission Directive 2006/15/EC of 7 February 2006 establishing a second list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC and amending Directives 91/322/EEC and 2000/39/EC | 2006/15/EC |
| 20 | **Exposure limit values — first list** | Commission Directive 2000/39/EC of 8 June 2000 establishing a first list of indicative occupational exposure limit values in implementation of Council Directive 98/24/EC on the protection of the health and safety of workers from the risks related to chemical agents at work | 2000/39/EC |
| 21 | **Explosive atmospheres (ATEX)** | Directive 1999/92/EC of the European Parliament and of the Council of 16 December 1999 on minimum requirements for improving the safety and health protection of workers potentially at risk from explosive atmospheres | 1999/92/EC |
| 22 | **Employment relationship** | Council Directive 91/383/EEC of 25 June 1991 supplementing the measures to encourage improvements in the safety and health at work of workers with a fixed-duration employment relationship or a temporary employment relationship | 91/383/EEC |
| 23 | **Electromagnetic fields** | Directive 2008/46/EC of the European Parliament and of the Council of 23 April 2008 amending Directive 2004/40/EC on minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields) | 2008/46/EC |
| 24 | **Electromagnetic fields** | Directive 2004/40/EC of the European Parliament and of the Council of 29 April 2004 on the minimum health and safety requirements regarding the exposure of workers to the risks arising from physical agents (electromagnetic fields) | 2004/40/EC |
| 25 | **Construction sites** | Council Directive 92/57/EEC of 24 June 1992 on the implementation of minimum safety and health requirements at temporary or mobile constructions sites | 92/57/EEC |
| 26 | **Chemical, physical and biological agents** | Commission Directive 91/322/EEC of 29 May 1991 on establishing indicative limit values by implementing Council Directive 80/1107/EEC on the protection of workers from the risks related to exposure to chemical, physical and biological agents at work | 91/322/EEC |

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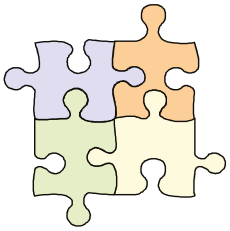
|---|---|---|---|
| 27 | **Chemical agents** | Council Directive 98/24/EC of 7 April 1998 on the protection of the health and safety of workers from the risks related to chemical agents at work | 98/24/EC |
| 28 | **Carcinogens and mutagens** | Directive 2004/37/EC of the European Parliament and of the Council of 29 April 2004 on the protection of workers from the risks related to exposure to carcinogens or mutagens at work | 2004/37/EC |
| 29 | **Carcinogens** | Council Directive 90/394/EEC of 28 June 1990 on the protection of workers from the risks related to exposure to carcinogens at work | 90/394/EEC |
| 30 | **Biological agents** | Directive 2000/54/EC of the European Parliament and of the Council of 18 September 2000 on the protection of workers from risks related to exposure to biological agents at work | 2000/54/EC |
| 31 | **Asbestos** | Council Directive 83/477/EEC of 19 September 1983 on the protection of workers from the risks related to exposure to asbestos at work | 83/477/EEC |
| 32 | **Young people** | Council Directive 94/33/EC of 22 June 1994 on the protection of young people at work | 94/33/EC |

APPENDIX 4.1:

# Risk assessment instruction

↑ back to Chapter 4

## When trying to identify the hazards for risk assessment, think through the following:



### *What is the source of the hazard?*

- A situation?
- A machine or equipment?
- A tool?
- A chemical substance?
- Any other item?

### *What is the hazard?*

- Slippery surface?
- Obstruction?
- Temperature extremes?
- Height difference?
- Potency (toxic, abrasive, corrosive, flammable, explosive, mutagenic, teratogenic, destructive in any other way)?
- Movement/inertia?
- Sharp ends/edges?
- Particle release?
- Dynamic energy?
- Weight?
- High pressure/vacuum?
- Noise?
- Radiation?
- Fumes?
- Biological agents?

*EXAMPLES*

- ✔ Milking area
- ✔ Untidy site
- ✔ Field work in winter/summer
- ✔ Roof work
- ✔ Painting work
- ✔ Vehicle movement/collision
- ✔ Screwdriver/workshop bench
- ✔ Welding
- ✔ A hung-up tree
- ✔ Fruit box or basket
- ✔ Gas storage
- ✔ Chainsaw
- ✔ Welding
- ✔ Vehicle movement
- ✔ Animal birth fluids.

### *Who will be affected?*

- Workers?
- Residents?
- Subcontractors?
- Visitors?
- Neighbours?

*Sensitive categories*

- Children
- Elderly
- Other family members
- Disabled
- Pregnant women.

### *What are the consequences?*

- Damage to property, produce and livestock?
- Injury and full recovery with no absence?
- Short absence with full recovery?
- Long absence with full recovery?
- Minor permanent disability?
- Major permanent disability?
- Permanent total disability?
- Death?

*Additional questions you can ask yourself:*

**For human action — could I**:
- Slip on it?
- Trip on it?
- Fall on it?
- Collide with it?
- Touch it?
- Breathe it?
- Drink it?
- Be exposed to it?

**For a substance — could it**:
- Be splattered into my eyes?
- Result in burns?
- Ignite a fire?
- Explode?
- Strike me?

**For a location/place — where could I**:
- Fall from?
- Become trapped?

**For an activity — could it**:
- Wear me out?
- Injure me?
- Make me ill?

## Identify unsafe situations:

- Are safety guards out of place?
- Are safety precautions inadequate?
- Is working space inadequate?
- Are there escape routes?
- Are escape routes obstructed?
- Are there sources of ignition?
- Are there hot surfaces?
- Is there a possibility of unpredicted movement?
- Are there protruding parts?
- Are loads unbalanced?
- Is equipment inadequate/inappropriate?
- Is equipment faulty/damaged/unmaintained?
- Is there adequate signage/fencing?
- Are substances unlabelled?
- Is clothing inappropriate?

*EXAMPLES*

- ✔ Moving parts of harvester exposed
- ✔ Absence of emergency stop buttons
- ✔ Small workshop
- ✔ Absence of alternative route from livestock fenced areas
- ✔ Doors locked
- ✔ Smoking
- ✔ Friction heat
- ✔ Animal behaviour
- ✔ Corroded metal parts in old tractors
- ✔ Feedstuffs stacked in sacks
- ✔ Private vehicles to carry animals
- ✔ Unmaintained equipment
- ✔ Exposed holes, pits, trenches, water reservoirs
- ✔ Unlabelled veterinary medicines, solvents, paints
- ✔ Loose sleeves, jewellery.

## Identify unsafe actions/behaviour:

- Incompetent for task
- Unauthorised personnel
- Uninformed personnel
- Bypassing safety guards
- Ignoring signs
- Misuse of substances/materials
- Use of faulty equipment
- Incorrect use of equipment
- Failure to use PPE
- Use of faulty PPE
- Incorrect use of PPE
- Incorrect lifting of weight
- vehicle maintenance while in motion
- Under influence of drugs/alcohol/medicines.

*EXAMPLES*

- ✔ Operating machinery without training
- ✔ Repair of electricity installation
- ✔ Unaware of construction work on site
- ✔ Operating PTO without complete guard
- ✔ Ignoring prohibition/danger signs
- ✔ Mixing incompatible chemicals
- ✔ Driving damaged, unmaintained vehicle
- ✔ Using loader to gain access to height
- ✔ Welding without face protection
- ✔ Hard hats with holes drilled
- ✔ Handling chemicals with cloth gloves
- ✔ Bending at the waist instead of knees
- ✔ Clearing blockage without turning power off
- ✔ Driving vehicle/operating lifting equipment while taking medicines.

## Identify why such behaviour occurs:

- To save time?
- It's less effort?
- To achieve more comfort?
- To attract attention?
- To save money?
- Lack of knowledge?
- Lack of concentration?
- Familiarity with the danger?
- Lack of training?
- Inadequate instructions?
- Lack of planning?
- Lack of supervision?
- Lack of adequate, appropriate and maintained equipment?

APPENDIX 4.2:

# Risk assessment form

↑ back to Chapter 4

## Assessment of hazards

| Likelihood \ Severity | HIGH | MEDIUM | LOW |
|---|---|---|---|
| HIGH | High risk | Substantial risk | Moderate risk |
| MEDIUM | Substantial risk | Moderate risk | Minimal risk |
| LOW | Moderate risk | Minimal risk | Trivial risk |

## Interpretation of results

| Risk rating | Remedial action and timescale |
|---|---|
| 16-25 High | STOP activity until measures are taken and the level of risk has been reduced (consult further specialist resources) |
| 10-15 Substantial | Make the situation safe within a week — meanwhile, take temporary measures |
| 7-9 Moderate | Make the situation safe within a month |
| 4-6 Minimal | Make the situation safe within a year |
| 1-3 Trivial | Continue implementing current protective and preventive measures — keep under review |

Activity/Task:

| | | | Risk assessment (Risk = Likelihood x Severity) | | | Implementation | | | Residual risk assessment (Risk = Likelihood x Severity) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hazard No | Description of hazard | Consequences | Likelihood (High/ Medium/ Low) | Severity (High/ Medium/ Low) | Risk (Trivial/ Minimal/ Moderate/ Substantial/ High) | Prevention measures to be adopted | Assigned to | Time plan | Likelihood (High/ Medium/ Low) | Severity (High/ Medium/ Low) | Risk (Trivial/ Minimal/ Moderate/ Substantial/ High) |
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Activity/Task:

| | | | Risk assessment (Risk = Likelihood x Severity) | | | Implementation | | | Residual risk assessment (Risk = Likelihood x Severity) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hazard No | Description of hazard | Consequences | Likelihood (High/ Medium/ Low) | Severity (High/ Medium/ Low) | Risk (Trivial/ Minimal/ Moderate/ Substantial/ High) | Prevention measures to be adopted | Assigned to | Time plan | Likelihood (High/ Medium/ Low) | Severity (High/ Medium/ Low) | Risk (Trivial/ Minimal/ Moderate/ Substantial/ High) |
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Activity/Task:

| | | | Risk assessment (Risk = Likelihood x Severity) | | | Implementation | | | Residual risk assessment (Risk = Likelihood x Severity) | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Hazard No | Description of hazard | Consequences | Likelihood (High/ Medium/ Low) | Severity (High/ Medium/ Low) | Risk (Trivial/ Minimal/ Moderate/ Substantial/ High) | Prevention measures to be adopted | Assigned to | Time plan | Likelihood (High/ Medium/ Low) | Severity (High/ Medium/ Low) | Risk (Trivial/ Minimal/ Moderate/ Substantial/ High) |
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APPENDIX 4.3:

# Examples of hazards

You can use these examples to complete Appendix 4.2

↑ back to Chapter 1

↑ back to Chapter 4

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Equipment and machinery | 1 | **Accident as a result of children handling machinery and equipment** | Fracture<br>Concussion<br>Death | Prohibition and supervision<br>Do not leave keys unattended | Chapter 11: Children | |
| Equipment and machinery | 2 | **Contact with corroded metal** | Cuts<br>Tetanus infection<br>Death | Maintenance<br>Inspection<br>Tetanus vaccination | Chapter 14: Machinery and equipment<br>Chapter 8: Health management | |
| Equipment and machinery | 3 | **Contact with hydraulic and hot oils under pressure** | Skin burns<br>Eye injury<br>Damage requiring amputations | Subcontract maintenance work<br>Training<br>Fit guards on hydraulic pipes<br>Avoid contact with leaking oils<br>Wear gloves and goggles | Chapter 9: Personal protective equipment<br>Chapter 17: Signs | |
| Equipment and machinery | 4 | **Contact with or proximity to machinery parts or materials at high or very low temperature** | Skin burns | Maintenance<br>Guarding against hot or cold surfaces<br>Protective gloves | Chapter 14: Machinery and equipment<br>Chapter 9: Personal protective equipment<br>Chapter 17: Signs | |
| Equipment and machinery | 5 | **Entanglement in mechanical parts** | Cuts<br>Amputation<br>Death | Stop driving/switch off machine before any intervention<br>Maintenance<br>Training<br>Cover moving parts with safety guards<br>Wear tight clothing<br>Avoid wearing jewellery or loose straps | Chapter 14: Machinery and equipment<br>Chapter 9: Personal protective equipment<br>Chapter 17: Signs | |
| Equipment and machinery | 6 | **Exposure to vibration — hand-arm vibration — from use of hand held machinery** | Raynaud's disease<br>Vibration white finger<br>Carpal Tunnel Syndrome | Replace old machinery with new<br>Ensure maintenance to prevent unbalance of rotating parts<br>Vibration dampers on handheld tool<br>Job rotation<br>Prohibit smoking<br>Frequent breaks<br>Wear thermal gloves when operating machinery in cold environments | Chapter 14: Machinery and equipment<br>Chapter 8: Health management | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Equipment and machinery | 7 | **Exposure to fire while refuelling of machinery or engine overheating** | Loss of property<br>Asphyxiation<br>Burns<br>Death | Method statement<br>Switch off ignition<br>Refuel after engine has cooled down<br>No smoking policy<br>Avoid liquid spillages<br>Ensure suitable firefighting equipment is to hand | Chapter 14: Machinery and equipment<br>Chapter 10: Emergency preparedness and response | |
| Equipment and machinery | 8 | **Exposure to musculoskeletal strain from handling machinery and operating controls** | Muscle strain<br>Strain of spinal cord<br>Back pain<br>Neck and shoulder strains | Use ergonomic machinery and equipment<br>Ergonomic seating<br>Good posture training<br>Job rotation<br>Avoid stress<br>Avoid cold surroundings | Chapter 5: Planning<br>Chapter 6: Training<br>Chapter 14: Machinery and equipment<br>Chapter 8: Health management | |
| Equipment and machinery | 9 | **Exposure to noise from the use of machinery** (e.g. bush saws) | Noise-induced hearing loss<br>Tinnitus<br>Headaches<br>Fatigue<br>Effects on foetus | Replace noisy machinery with new less noisy machinery<br>Job rotation<br>Noise control measures<br>Earplugs and earmuffs | Chapter 14: Machinery and equipment<br>Chapter 9: Personal protective equipment<br>Chapter 8: Health management | |
| Equipment and machinery | 10 | **Exposure to noise from use of machinery — chainsaw** | Noise-induced hearing loss<br>Tinnitus<br>Headaches<br>Fatigue<br>Effects on foetus | Replace noisy machinery with new less noisy machinery<br>Job rotation<br>Noise control measures<br>Earplugs and earmuffs combined to achieve attenuation | Chapter 14: Machinery and equipment<br>Chapter 21: Forestry<br>Chapter 9: Personal protective equipment<br>Chapter 8: Health management | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Equipment and machinery | 11 | **Exposure to vibration — whole body — from use of heavy equipment and machinery** | Spinal disorders<br>Central nervous system disturbance<br>Musculoskeletal disorders | Careful selection of equipment at purchase stage<br>Use anti-vibration mounts<br>Install shock absorbers<br>Replace old seats with adjustable seats (decreasing vibration)<br>Job rotation<br>Maintain machinery and equipment<br>Optimum tyre inflation<br>Maintain roadways | Chapter 14: Machinery and equipment<br>Chapter 8: Health management | |
| Equipment and machinery | 12 | **Falls from elevated platforms** | Fracture<br>Concussion<br>Death | Outsource work at height<br>Training<br>Use certified lifting equipment<br>Sufficient handrails in place<br>Use of harness | Chapter 14: Machinery and equipment<br>Chapter 9: Personal protective equipment<br>Chapter 5: Planning<br>Chapter 6: Training | |
| Equipment and machinery | 13 | **Falls from ladder while pruning**, **fruit picking**, **roof works**, **repairs** | Fracture<br>Concussion<br>Death | Use scaffolding or mobile elevating platform<br>Training<br>Correct use of ladder — stabilisation of ladder<br>Good condition of ladder<br>Use of harness | Chapter 13: Infrastructure<br>Chapter 9: Personal protective equipment<br>Chapter 6: Training | |
| Equipment and machinery | 14 | **Injury due to mishandling of bush saws** | Cuts<br>Amputation of fingers and toe<br>Struck by flying objects | Training<br>Safety distances<br>Guarding against protection of objects<br>Helmet with visor<br>Safety shoes<br>Gloves | Chapter 5: Planning<br>Chapter 6: Training<br>Chapter 9: Personal protective equipment<br>Chapter 14: Machinery and equipment | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Equipment and machinery | 15 | **Injury during maintenance of machinery by untrained person** | Cuts<br>Burns<br>Eye injuries<br>Amputation<br>Electrocution<br>Death | Outsource maintenance<br>Training<br>Licensed staff supervision | Chapter 6: Training<br>Chapter 14: Machinery and equipment | |
| Equipment and machinery | 16 | **Injury while using poorly maintained or unmaintained equipment** | Cuts<br>Burns<br>Eye injuries<br>Amputation<br>Electrocution<br>Death | Outsource maintenance<br>Training<br>Licensed staff supervision | Chapter 6: Training<br>Chapter 14: Machinery and equipment | |
| Fieldwork | 17 | **Accident involving eye injury from branches** (while pruning, fruit picking, forestry activity) | Eye injury<br>Loss of vision | Training<br>Wear eye protection | Chapter 9: Personal protective equipment | |
| Field work | 18 | **Attack by wild animal** | Loss of herd<br>Injury<br>Death | Avoid lone working<br>Fencing<br>Specially trained guard dogs | Chapter 13: Infrastructure<br>Chapter 19: Livestock<br>Chapter 21: Forestry<br>Chapter 5: Planning<br>Chapter 6: Training | |
| Field work | 19 | **Contact with unfriendly flora — skin, eye, ingestion** | Irritation<br>Allergic shock | Minimise manual work<br>Training<br>Ensure good visibility<br>Gloves and PPE<br>Medical records<br>Advice from doctor on known allergies | Chapter 5: Planning<br>Chapter 6: Training<br>Chapter 9: Personal protective equipment | |
| Fieldwork | 20 | **Contact with vegetation and organic mater** | Friction burns<br>Blisters<br>Allergy | Automate procedure<br>Wear gloves | Chapter 9: Personal protective equipment | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Field work | 21 | **Crushed by landslide or rolling rock/trees etc. on steep slopes** | Damaged property<br>Loss of herd<br>Injury<br>Death | Fencing<br>Planning<br>Construct a trench around the site<br>Provide mobile equipment with falling object protective structure (FOPS)<br>Signage | Chapter 13: Infrastructure<br>Chapter 17: Signs<br>Chapter 10: Emergency preparedness and response | |
| Field work | 22 | **Crushed by over-stacked bales of hay, boxes or other materials** | Fracture<br>Concussion<br>Death | Secure hay bales, boxes and other material while stacking<br>Safe stacking systems<br>Training<br>Use same type of boxes<br>Provide mobile equipment with falling object protective structure (FOPS) | Chapter 13: Infrastructure | |
| Field work | 23 | **Electrocution from lightning** | Burns<br>Heart failure<br>Death | Emergency planning<br>Cease forest work in stormy weather<br>Stay in the vehicle cab and remove aerial<br>Lightning conductor and equipotentiality of metallic components with earth conductor<br>Training | Chapter 21: Forestry<br>Chapter 10: Emergency preparedness and response | |
| Field work | 24 | **Exposure to extreme weather conditions** | Skin irritation<br>Frostbite<br>Hypothermia<br>Dehydration<br>Heat stress | Plan to avoid weather extremes<br>Suitable clothing<br>Cease activities in extreme weather conditions<br>Ensure potable water available<br>Job rotation | Chapter 21: Forestry<br>Chapter 9: Personal protective equipment<br>Chapter 20: Greenhouses | |
| Field work | 25 | **Exposure to fire** | Loss of property<br>Asphyxiation<br>Burns<br>Death | Keep the site tidy<br>Remove sources of ignition<br>Training<br>Emergency planning<br>No smoking policy<br>Ensure firefighting equipment is available | Chapter 13: Infrastructure<br>Chapter 10: Emergency preparedness and response | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Field work | 26 | **Exposure to high-UV sun radiation** | Sunburn<br>Sunstroke<br>Skin cancer<br>Death | Plan to avoid hours of high sun radiation<br>Suitable clothing<br>Cease activities when sun radiation is high<br>Consumption of liquids<br>Sunglasses, sunblock | Chapter 18: Growing of crops<br>Chapter 21: Forestry<br>Chapter 9: Personal protective equipment | |
| Field work | 27 | **Exposure to strenuous situation due to lack of or inappropriate toilet facilities** | Discomfort<br>Constipation<br>Kidney disorders | Arrange for appropriate hygiene facilities and regular cleaning<br>Regular breaks<br>Provide transport | Chapter 13: Infrastructure | |
| Field work | 28 | **Injury while firefighting** | Asphyxiation<br>Burns<br>Death | Contact firefighting authorities<br>Assess situation<br>Emergency planning<br>Training<br>Use of correct firefighting equipment | Chapter 10: Emergency preparedness and response | |
| Field work | 29 | **Poor visibility of operator while working at night or at low visibility conditions** | Injury<br>Concussion<br>Coma<br>Death of pedestrian | Minimise work under low visibility<br>Make arrangements for lighting<br>Avoid lone working<br>Avoid using machinery at night<br>Install indicator lighting<br>Check vehicle lighting regularly<br>Wear fluorescent vest | Chapter 21: Forestry<br>Chapter 14: Machinery and equipment<br>Chapter 13: Infrastructure | |
| Field work | 30 | **Poor visibility of pedestrian at night or at low visibility conditions** | Injury<br>Concussion<br>Coma<br>Death of pedestrian | Minimise work under low visibility<br>Make arrangements for lighting<br>Avoid lone working<br>Avoid using machinery at night<br>Install indicator lighting<br>Check vehicle lighting regularly<br>Wear fluorescent vest | Chapter 21: Forestry<br>Chapter 14: Machinery and equipment<br>Chapter 13: Infrastructure | |
| Filed work | 31 | **Slips, trips and falls due to unsuitable footwear in relation to the ground and planned work** | Fracture<br>Rupture<br>Death | Training<br>Plan activities<br>Level the ground<br>Clean oil spillages<br>Suitable footwear | Chapter 9: Personal protective equipment<br>Chapter 5: Planning<br>Chapter 6: Training | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Field work | 32 | **Soaked in humidity and morning dew** | Discomfort<br>Influenza<br>Pneumonia | Planning (selection of working hours)<br>Keep informed of weather forecast<br>Suitable clothing | Chapter 5: Planning<br>Chapter 6: Training<br>Chapter 9: Personal protective equipment | |
| Field work | 33 | **Stings and bites from insects and reptiles while planting**, **harvesting**, **weeding**, **handling animals**, **manure**, **feedstuffs** | Skin irritation<br>Anaphylaxis<br>Infection<br>Poisoning<br>Allergic shock<br>Death | Minimise manual work<br>Make arrangements for antidote injection<br>Desensitisation<br>Emergency planning<br>Wear gloves, long sleeves, long trousers with tight bottoms, wellington boots | Chapter 9: Personal protective equipment<br>Chapter 8: Health Management<br>Chapter 10: Emergency preparedness and response | |
| Forestry | 34 | **Accident caused by stray bullet or shard during involuntary entrance into shooting field** | Injury<br>Coma<br>Death | Training and awareness<br>Familiarity with site | Chapter 21: Forestry<br>Chapter 6: Training<br>Chapter 5: Planning | |
| Forestry | 35 | **Accident caused by stray bullet or shard from hunters during hunting season** | Injury<br>Coma<br>Death | Familiarity with site<br>Training<br>Planning (knowledge of hunting areas and seasons) | Chapter 21: Forestry<br>Chapter 5: Planning<br>Chapter 6: Training | |
| Forestry | 36 | **Accident due to incompatible communication signs between machinery operator and hand signaller** | Injury<br>Coma<br>Death | Agreement of signals<br>Alternative communication means (e.g. mobile phone, radio) | Chapter 21: Forestry<br>Chapter 6: Training | |
| Forestry | 37 | **Attack by wild animal**, **stings and bites by insects and reptiles** | Injury<br>Skin irritation<br>Anaphylaxis<br>Infection<br>Poisoning<br>Allergic shock<br>Death | Planning and preparation<br>Training and familiarity<br>Avoid lone working<br>Make arrangements for first aid and antidotes | Chapter 21: Forestry<br>Chapter 6: Training<br>Chapter 5: Planning | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Forestry | 38 | **Crushed by falling trees or rolling woods** | Injury<br>Death | Keep safety distances<br>Secure trees and logs to avoid rolling and sliding<br>Establish good communication channels with rescue services | Chapter 21: Forestry | |
| Forestry | 39 | **Crushed by hung-up trees** | Injury<br>Coma<br>Death | Use method statement<br>Training to achieve competency in logging<br>Use specialised machinery<br>Avoid wandering while logging | Chapter 21: Forestry | |
| Forestry | 40 | **Crushed by windblown trees during clearing** | Injury<br>Concussion<br>Death | Use method statement<br>Training to achieve Competency in logging<br>Avoid wandering while logging | Chapter 21: Forestry<br>Chapter 5: Planning<br>Chapter 6: Training | |
| Forestry | 41 | **Entanglement in animal traps** | Fracture<br>Amputation<br>Death | Familiarity with site<br>Training<br>Planning<br>Suitable clothing<br>Protective boots | Chapter 21: Forestry<br>Chapter 6: Training<br>Chapter 5: Planning | |
| Forestry | 42 | **Exposure to natural hazards** (broken terrain or mud, dense vegetation) | Injury<br>Death | Familiarity with site<br>Planning<br>Training<br>Suitable equipment<br>Safety boots | Chapter 21: Forestry<br>Chapter 5: Planning | |
| Forestry | 43 | **Exposure to strenuous situation due to lack or inappropriate toilet facilities** | Discomfort<br>Constipation<br>Kidney disorders | Arrange for appropriate hygiene facilities and regular cleaning<br>Regular breaks<br>Provide transport | Chapter 21: Forestry | |
| Forestry | 44 | **Falls from height due to failure of ropes or climbing equipment** | Injury<br>Coma<br>Death | Use method statement<br>Certification of ropes and equipment<br>Inspection before work<br>Training | Chapter 14: Machinery and equipment<br>Chapter 21: Forestry<br>Chapter 5: Planning<br>Chapter 6: Training | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Forestry | 45 | **Hit by stray piece of wood while logging** | Eye injury<br>Loss of vision<br>Bruises<br>Cuts | Use method statement<br>Avoid wandering while logging<br>Training<br>Wear face protection | Chapter 9: Personal protective equipment<br>Chapter 21: Forestry | |
| Forestry | 46 | **Imposed extended periods of isolation from family and friends** | Stress<br>Lack of concentration<br>Homesickness<br>Psychological disorders | Planning of working periods<br>Establish good communication channels | Chapter 21: Forestry | |
| Forestry | 47 | **Injury by chainsaw kickback** | Bruises<br>Injury<br>Concussion<br>Death | Training to achieve competency in logging<br>Maintenance<br>Use certified chainsaws<br>Helmet and PPE | Chapter 21: Forestry<br>Chapter 5: Planning<br>Chapter 6: Training<br>Chapter 14: Machinery and equipment | |
| Forestry | 48 | **Member of the public crushed by falling trees and rolling logs** | Injury<br>Death | Fencing<br>Warning signs<br>Notification of local authorities | Chapter 21: Forestry<br>Chapter 17: Signs<br>Chapter 12: Visitors and third parties | |
| Forestry | 49 | **Slips, trips and falls due to stepping on felled branches** | Bruises<br>Fracture | Clear path<br>Safety shoes | Chapter 9: Personal protective equipment | |
| Hazardous substances | 50 | **Contact with fertilisers** (while spraying, during harvesting) | Skin irritation<br>Dermatitis<br>Allergies<br>Anaphylaxis | Automate procedures<br>Use approved/controlled fertilisers<br>Training<br>Keep SDSs<br>PPE (mouth, nose and eye protection) | Chapter 16: Hazardous substances<br>Chapter 9: Personal protective equipment | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Hazardous substances | 51 | **Contact with pesticides** (skin, eye) **while mixing**, **loading**, **application**, **cleaning and maintenance of application equipment**, **transport**, **storage**, **re-entry**, **etc**. | Skin burns<br>Poisoning<br>Loss of vision | Automate procedures<br>Use approved pesticides<br>Use appropriate work equipment with pressurised filtering cabs with carbonic filter<br>Avoid leakages and spraying in direction of operator<br>Training<br>Keep MSDSs<br>PPE (mouth, nose, skin and eye protection) | Chapter 16: Hazardous substances<br>Chapter 9: Personal protective equipment<br>Chapter 20: Greenhouses | |
| Hazardous substances | 52 | **Contaminated water due to bad waste management or overuse of fertilisers and pesticides** | Poisoning<br>Death | Improve waste management<br>Correct use of fertilisers and pesticides<br>Perform water quality tests<br>Provision of potable water | Chapter 16: Hazardous substances<br>Chapter 19: Livestock<br>Chapter 13: Infrastructure | |
| Hazardous substances | 53 | **Explosion or fire due to organic dust in silos** (explosive atmosphere) | Burns<br>Asphyxiation<br>Lung infection<br>Death<br>Loss of property | Remove sources of ignition<br>Refrain from smoking | Chapter 13: Infrastructure<br>Chapter 16: Hazardous substances<br>Chapter 10: Emergency preparedness and response | |
| Hazardous substances | 54 | **Exposure to paints**, **solvents**, **adhesives**, **cleaning agents** (skin, eyes, inhalation) | Inflammation of nasal passage, throat and lungs<br>Skin irritation<br>Anaphylaxis | Automate procedures<br>Use approved chemicals<br>Training<br>Keep MSDSs<br>Ventilation<br>PPE (mouth, nose and eye protection) | Chapter 16: Hazardous substances<br>Chapter 9: Personal protective equipment | |
| Hazardous substances | 55 | **Fire caused by unsafe storage of fuel and gas** | Loss of property<br>Burns<br>Asphyxiation<br>Lung infection<br>Death | Store minimum quantities away from building, livestock and vehicles<br>Remove sources of ignition<br>Improve storage conditions<br>Leakage detection<br>Adequate ventilation<br>Safety signage | Chapter 13: Infrastructure<br>Chapter 16: Hazardous substances<br>Chapter 10: Emergency preparedness and response | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Hazardous substances | 56 | **Inhalation of dust from harvesting**, **handling grain**, **mixing animal feedstuffs**, **handling mouldy hay** | Asthma<br>Respiratory problems | Automate activities<br>Use filtering cabs against dust<br>Minimise exposure<br>Use face protection | Chapter 9: Personal protective equipment<br>Chapter 16: Hazardous substances | |
| Hazardous substances | 57 | **Inhalation of fertiliser fumes due to inadequate ventilation in storage** | Poisoning<br>Respiratory problems | Use approved fertilisers<br>Ventilation<br>Training<br>Keep SDSs<br>PPE (mouth, nose) | Chapter 9: Personal protective equipment<br>Chapter 13: Infrastructure<br>Chapter 16: Hazardous substances | |
| Hazardous substances | 58 | **Inhalation of gases from decomposed organic matter** | Poisoning<br>Respiratory problems<br>Death | Schedule handling for windy weather<br>Improve ventilation<br>Exclusion zones<br>Mouth and nose protection | Chapter 13: Infrastructure<br>Chapter 16: Hazardous Substances<br>Chapter 9: Personal protective equipment | |
| Hazardous substances | 59 | **Inhalation of pesticides while mixing**, **loading**, **application**, **cleaning and maintenance of application equipment**, **transport**, **storage**, **re-entry etc**. | Poisoning<br>Respiratory problems | Automate procedures<br>Use approved pesticides<br>Use appropriate work equipment with pressurised filtering cabs with carbonic filter<br>Schedule for non-windy weather<br>Avoid leakages and spraying in direction of operator<br>Training<br>Keep SDSs<br>Ventilation<br>PPE (mouth, nose protection) | Chapter 9: Personal protective equipment<br>Chapter 13: Infrastructure<br>Chapter 16: Hazardous substances | |
| Hazardous substances | 60 | **Inhalation of slurry**, **welding fumes**, **disinfectants** | Inflammation of nasal passage, throat and lungs<br>Asthma aggravation<br>Death | Minimise exposure<br>Schedule for windy weather<br>Improve ventilation<br>Exclusion zones<br>Use face protection | Chapter 9: Personal protective equipment<br>Chapter 13: Infrastructure<br>Chapter 16: Hazardous substances | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Hazardous substances | 61 | **Involuntary intake of pesticides or veterinary medicines by children** | Poisoning<br>Death | Labelling<br>Store away from children<br>Locked locally<br>Never decant hazardous substances<br>Never use drinking/feeding bottles for pesticide<br>Warn children to be careful | Chapter 16: Hazardous substances<br><br>Chapter 11: Children | |
| Hazardous substances | 62 | **Involuntary intake of pesticides or injection of veterinary medicines** (due to inadequate labelling or while injected to animals) | Poisoning<br>Death | Labelling<br>Locked locally<br>Never decant hazardous substances<br>Never use feeding/drinking bottles for pesticides<br>Livestock handling facilities/ equipment<br>Assistance with livestock<br>Professional vet<br>PPE | Chapter 16: Hazardous substances<br><br>Chapter 19: Livestock | |
| Infrastructure | 63 | **Work in confined spaces** (e.g. silos, greenhouse) | Asphyxiation<br>Loss of consciousness<br>Panic attack<br>Death | Planning<br>Good access/egress<br>Testing of atmosphere<br>Training<br>PPE<br>Avoid using claustrophobic people always use minimum team of two<br>Emergency plan | Chapter 13: Infrastructure | |
| Infrastructure | 64 | **Contact with wet timber preservative while fencing** | Skin irritation | Use approved paints and preservatives<br>Wear gloves | Chapter 9: Personal protective equipment<br><br>Chapter 16: Hazardous substances | |
| Infrastructure | 65 | **Contract legionnaires' disease from contaminated water in aerosol to cool livestock and greenhouses** | Legionnaires' disease<br>Death | Check quality of water at the source and clean equipment<br>Use alternative cooling methods<br>Storage temperature control<br>Avoid stagnant water<br>PPE | Chapter 13: Infrastructure<br><br>Chapter 20: Greenhouse | |
| Infrastructure | 66 | **Crushed by collapsed structures** | Injury<br>Coma<br>Death | Systematic farm inspection and maintenance<br>Timely repairs<br>Avoid using temporary structures and sheds | Chapter 13: Infrastructure | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Infrastructure | 67 | **Drowning in silos, grain stores, hoppers** | Drowning<br>Death | Outsource activities requiring entry into silos to experts<br>Use method statement<br>Work in teams of two<br>Use warning signs<br>Ensure evacuation arrangements in place<br>Emergency plans<br>PPE | Chapter 9: Personal protective equipment<br><br>Chapter 10: Emergency preparedness and response<br><br>Chapter 13: Infrastructure | |
| Infrastructure | 68 | **Drowning in water tanks, pits and wells** | Drowning<br>Death | Fencing<br>Signage<br>Coverall tanks containing liquids<br>Instruction and training | Chapter 9: Personal protective equipment<br><br>Chapter 10: Emergency preparedness and response<br><br>Chapter 13: Infrastructure | |
| Infrastructure | 69 | **Electrocution from contact with overhead power lines while working at height or contact with underground lines** | Burns<br>Heart failure<br>Death | Request electricity authority to divert, move or bury power lines<br>Avoid working under<br>Power lines<br><br>Keep a safe distance from power lines<br><br>Avoid working outside the vehicle<br><br>Know the height of your vehicle<br><br>Training<br><br>Sign and barriers under the power lines | Chapter 13: Infrastructure | |
| Infrastructure | 70 | **Entanglement in barbed wire** | Cuts<br>Scratches<br>Amputation | Ensure visibility<br>Do not attempt to cross<br>Provide gates or crossing points<br>Signage | Chapter 13: Infrastructure<br><br>Chapter 17: Signs | |
| Infrastructure | 71 | **Entrapment in confined spaces** (e.g. silos) | Asphyxiation<br>Loss of consciousness<br>Death | Check the quality of air and presence of gases before entering<br>Provide good access and egress<br>Avoid lone working<br>Minimum of two in team<br>Training<br>Emergency plan | Chapter 13: Infrastructure | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Infrastructure | 72 | **Exposure to dirty toilets** | Infection<br>Hepatitis | Arrange for regular cleaning | Chapter 13: Infrastructure | |
| Infrastructure | 73 | **Falls from height from green/glass/farmhouse roof during maintenance** | Fracture<br>Concussion<br>Death | Outsource roof work to experts<br>Provide adequate Footbridge<br>Awareness training on fragile roofs<br>Safety signage<br>Install anchorage for protective guarding against falling<br>Use method statement<br>Make arrangements to secure yourself while working at height<br>PPE | Chapter 13: Infrastructure<br>Chapter 20: Greenhouse<br>Chapter 9: Personal protective equipment | |
| Infrastructure | 74 | **Falls from ladder placed on uneven or soft ground/slip off ladder** | Fracture<br>Death | Replace ladders with scaffolding<br>Correct use of ladder<br>Good condition of ladder<br>Appropriate footwear | Chapter 13: Infrastructure<br>Chapter 9: Personal protective equipment | |
| Infrastructure | 75 | **Handling asbestos** (roof replacement) **and other carcinogenic materials** | Cancer<br>Death | Subcontract replacement of asbestos elements | Chapter 13: Infrastructure<br>Chapter 16: Hazardous substances | |
| Infrastructure | 76 | **Heatstroke while working in greenhouse** | Asphyxiation<br>Loss of consciousness | Avoid working long hours<br>Avoid lone working<br>provide fresh water | Chapter 20: Greenhouses | |
| Infrastructure | 77 | **Hit by strained wire during fencing** | Scratches<br>Cuts<br>Eye injury | Outsource to experts<br>Training<br>Appropriate gloves<br>Eye protection | Chapter 13: Infrastructure<br>Chapter 9: Personal protective equipment | |
| Infrastructure | 78 | **Inhalation of legionnaires' bacteria while spraying using contaminated water** | Legionnaires' disease<br>Death | Ensure quality of water<br>Wear face protection covering nose and mouth | Chapter 13: Infrastructure<br>Chapter 9: Personal protective equipment | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Infrastructure | 79 | **Involuntary contact with gas from underground mains while digging** | Burns<br>Asphyxiation<br>Eye injury<br>Death | Signage<br>Keep original drawings and consult them in advance<br>Pipe detection device<br>Hand dig close to pipes | Chapter 13: Infrastructure<br>Chapter 17: Signs | |
| Infrastructure | 80 | **Slips**, **trips and falls due to lack of tidiness in farm** | Bruises<br>Fracture | Farm housekeeping<br>Safety shoes | Chapter 13: Infrastructure | |
| Infrastructure | 81 | **Workshop accidents** | Electrocution<br>Cuts<br>Amputation<br>Eye injuries<br>Death | Workshop housekeeping<br>Correct use of tools and equipment<br>Follow manufacturer's instructions | Chapter 14: Machinery and equipment | |
| Livestock | 82 | **Attacked by agitated animals during reproduction period** | Injury<br>Death | Use artificial insemination<br>Adequate bull-housing and handling facilities<br>Trained and fit stockman<br>Means of emergency escape<br>Awareness of behaviour<br>Use vehicle to enter field | Chapter 19: Livestock<br>Chapter 10: Emergency preparedness and response | |
| Livestock | 83 | **Attacked by animal due to not understanding animal behaviour** (e.g. raised or pinned ears, raised tail, pawing the ground and bellowing) | Injury<br>Death | Means of emergency escape<br>Trained and fit stockman<br>Use caution when approaching animals so as not to startle them<br>Know the animals and be patient with them<br>Dehorn dangerous animals | Chapter 19: Livestock | |
| Livestock | 84 | **Attacked by animal during examination**, **medication**, **hoof trimming**, **dehorning and mating** | Injury<br>Death | Means of emergency escape<br>Trained and fit stockman<br>Use caution when approaching animals so as not to startle them<br>Know the animals and be patient with them<br>Dehorn dangerous animals<br>Awareness of behaviour | Chapter 19: Livestock | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Livestock | 85 | **Contact with animal birth fluids** | Infection | Use face protection, gloves, overalls, boots<br>Good hygiene<br>Cover cuts with waterproof dressing | Chapter 19: Livestock<br>Chapter 16: Hazardous substances | |
| Livestock | 86 | **Contact with biological animal waste** | Infection | Use face protection, gloves, overalls, boots<br>Good hygiene<br>Cover cuts with waterproof dressing | Chapter 19: Livestock<br>Chapter 16: Hazardous substances | |
| Livestock | 87 | **Contact with pests while working with animals** | Anaphylaxis<br>Infection<br>Death | Farm housekeeping<br>Pest control<br>Hygiene measures | Chapter 9: Personal protective equipment<br>Chapter 19: Livestock | |
| Livestock | 88 | **Contract of pandemic viruses** | Disease<br>Death | Quarantine sick animals<br>Wash hands after contact with animals with diarrhoea<br>Use face protection, gloves, overall, boots<br>Cover cuts with waterproof dressing | Chapter 9: Personal protective equipment<br>Chapter 19: Livestock | |
| Livestock | 89 | **Contract zoonoses due to handling infected animals and ingesting their products** (anthrax, brucellosis, rabies, leptospirosis, orf, ringworm) | Disease<br>Death | Vaccinate animals, and quarantine sick animals<br>Wash hands after contact with animals with diarrhoea<br>Prompt treatment or proper disposal of infected animals<br>Adequate disposal of infected tissues<br>Proper cleaning of contaminated sites<br>Wear rubber gloves when treating sick animals | Chapter 9: Personal protective equipment<br>Chapter 19: Livestock | |
| Livestock | 90 | **Contracting zoonotic illnesses by mishandling of carcasses** | Disease<br>Death | Quick disposal of carcasses<br>PPE<br>Good hygiene<br>Cover cuts with waterproof dressing | Chapter 19: Livestock<br>Chapter 8: Health management | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Livestock | 91 | **Crushed by animal during semen collection for breeding** | Injury<br>Death | Means of emergency escape<br>Trained and fit stockman<br>Use caution when approaching animals so as not to startle them<br>Know the animals and be patient with them<br>Dehorn dangerous animals<br>Boots and PPE | Chapter 19: Livestock<br><br>Chapter 10: Emergency preparedness and response | |
| Livestock | 92 | **Crushed by involuntary movement of animal** | Injury<br>Death | Means of emergency escape<br>Trained and fit stockman Use caution when approaching animals so as not to startle them<br>Know the animals and be patient with them<br>Dehorn dangerous animals | Chapter 19: Livestock | |
| Livestock | 93 | **Crushed by animals during loading for transport** (kicking, butting or goring) | Fracture<br>Concussion<br>Death | Use method statement<br>Means of emergency escape<br>Trained and fit stockman<br>Boots and PPE<br>Use stick or paddle<br>Calm and patient loading<br>Create one-way routes for the animals<br>Restraint facilities | Chapter 19: Livestock | |
| Livestock | 94 | **Drowning in slurry pit** | Asphyxiation<br>Drowning<br>Death | Signage<br>Keep pits covered<br>Replace all agitation point covers<br>Awareness training<br>Monitoring | Chapter 17: Signs<br><br>Chapter 19: Livestock | |
| Livestock | 95 | **Fire of bed and insulating material of the wall and ceiling of the livestock building** | Poisoning<br>Material damage<br>Death | No smoking policy<br>Emergency planning<br>Training<br>Living quarters at a safe distance<br>Fire prevention, detection and firefighting equipment | Chapter 13: Infrastructure<br><br>Chapter 10: Emergency preparedness and response<br><br>Chapter 19: Livestock | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Livestock | 96 | **Gas poisoning from slurry tanks** (hydrogen sulphide, methane, carbon dioxide, ammonia) | Asphyxiation<br>Poisoning<br>Death | Contract out to expert<br>Schedule work for windy days<br>Remove all livestock, pets and establish an exclusion zone<br>Ensure good ventilation<br>Stand up wind while agitating | Chapter 13: Infrastructure<br>Chapter 19: Livestock<br>Chapter 16: Hazardous substances | |
| Livestock | 97 | **Infection by chlamydia** | Abortion in pregnant women | Pregnant women should not contact infected animals | Chapter 19: Livestock | |
| Musculoskeletal | 98 | **Exposure to repetitive work and bending during planting, weeding, picking fruit from low rise plants and low branches** | Strain of spinal cord<br>Musculoskeletal disorders<br>Back pain<br>RSIs to hands | Automate work<br>Minimise strenuous postures<br>Adequate breaks<br>Avoid stress conditions<br>Job rotation | Chapter 8: Health management | |
| Musculoskeletal | 99 | **Exposure to strenuous activity from carrying spraying tank on the back** | Strain of spinal cord<br>Musculoskeletal disorders<br>Back pain<br>RSIs to hands | Training for lifting of weights<br>Do not exceed individual's lifting capacity<br>Pulled systems<br>Mechanise<br>Job rotation | Chapter 8: Health management | |
| Musculoskeletal | 100 | **Exposure to strenuous activity of carrying weighs** (e.g. fruit baskets, fertiliser sacks, feed sacks) | Strain of spinal cord<br>Musculoskeletal disorders<br>Back pain<br>RSIs to hands | Training for lifting of weights<br>Do not exceed individual's lifting capacity<br>Replace manual handling with mechanical handling<br>Substitute heavy bags with lighter ones | Chapter 8: Health management | |
| Musculoskeletal | 101 | **Exposure to strenuous activity of reaching** (e.g. Fruit picking from trees) | Strain of spinal cord<br>Musculoskeletal disorders<br>Back pain<br>RSIs to hands | Minimise strenuous postures<br>Adequate breaks<br>Job rotation<br>Training | Chapter 8: Health management | |
| Tools | 102 | **Contact with sharp or defective tools** | Cuts<br>Blisters<br>Scratches<br>Amputation | Housekeeping of workshop<br>Awareness training | Chapter 14: Machinery and equipment | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Tools | 103 | **Electrocution due to defective or improperly used electric tools** | Burns<br>Heart failure<br>Death | Training<br>Install circuit breakers<br>Use manufacturer's instructions<br>Systematic maintenance | Chapter 14: Machinery and equipment<br>Chapter 6: Training<br>Chapter 13: Infrastructure | |
| Vehicles | 104 | **Accident caused due to poor maintenance of vehicle** | Injury<br>Concussion<br>Coma<br>Death | Vehicle maintenance | Chapter 15: Transport and vehicles | |
| Vehicles | 105 | **Accident caused by children driving vehicles** | Injury<br>Concussion<br>Coma<br>Death | Prohibit children from driving vehicles | Chapter 11: Children | |
| Vehicles | 106 | **Accident caused by speeding or reversing of vehicles** | Injury<br>Concussion<br>Coma<br>Death | Driver selection<br>Training<br>Safe driving practices<br>Traffic management one-way systems<br>Speed ramps and roundabouts<br>Install warning signals for reversing | Chapter 15: Transport and vehicles<br>Chapter 5: Planning<br>Chapter 6: Training<br>Chapter 17: Signs | |
| Vehicles | 107 | **Accident caused to third parties due to driving unsuitable/unlicensed ATVs on public roads** | Injury<br>Concussion<br>Coma<br>Death | Training<br>Vehicles rules<br>License vehicles<br>Establish alternative routes avoid use of public roads and motorways | Chapter 15: Transport and vehicles | |
| Vehicles | 108 | **Accidents due to lack of segregation of pedestrian and vehicle movement** | Injury<br>Concussion<br>Coma<br>Death | Traffic management<br>One-way systems<br>Signage<br>Training<br>Minimise reversing<br>Segregation of pedestrian<br>And vehicle movement | Chapter 15: Transport and vehicles<br>Chapter 13: Infrastructure<br>Chapter 17: Signs | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Vehicles | 109 | **Accidents due to untrained or non-licensed driver** | Injury<br>Concussion<br>Coma<br>Death | Ensure training and licensing of drivers | Chapter 5: Planning<br>Chapter 6: Training<br>Chapter 15: Transport and vehicles | |
| Vehicles | 110 | **Crushed by falling load due to insufficient securing** | Injury<br>Concussion<br>Coma<br>Death | Contract out work<br>Training<br>Supervision<br>Secure loads on vehicles keep clear | Chapter 15: Transport and vehicles | |
| Vehicles | 111 | **Falls from vehicle while ascending or descending** | Injury<br>Concussion<br>Coma<br>Death | Safety boots<br>Training in three-point contact climbing<br>Vehicle maintenance<br>Clean steps | Chapter 15: Transport and vehicles | |
| Vehicles | 112 | **Injuries caused because of home-made accessories of ATVs** | Injury<br>Concussion<br>Coma<br>Death | Avoid using home-made accessories for ATVs | Chapter 15: Transport and vehicles | |
| Vehicles | 113 | **Injury caused by battery explosion** | Injury<br>Concussion<br>Coma<br>Death | Vehicle maintenance<br>Awareness training | Chapter 15: Transport and vehicles | |
| Vehicles | 114 | **Musculoskeletal strain caused by attempting to extricate vehicle from mud** | Strain of spinal cord<br>Rupture | Driver training<br>Use of suitable equipment | Chapter 15: Transport and vehicles | |
| Vehicles | 115 | **Musculoskeletal strain during loading vehicles with timber** | Strain of spinal cord<br>Back pain<br>Muscle strains | Mechanisation<br>Training on lifting of weights<br>PPE<br>Do not exceed individual's lifting capacity | Chapter 8: Health management<br>Chapter 21: Forestry | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Vehicles | 116 | **Overturning of vehicle while towing excessive loads with unbraked equipment** | Injury<br>Concussion<br>Coma<br>Death | Driver selection and training<br>Safe driving and use of vehicles<br>Match vehicles and trailers<br>Adequate braking systems<br>Provide vehicle with rollover protective structure and safety belt<br>Do not overload vehicles | Chapter 15: Transport and vehicles<br>Chapter 5: Planning<br>Chapter 6: Training | |
| Vehicles | 117 | **Overturning of vehicle due to unbalanced loading/ passenger reaching out of the cab** | Injury<br>Concussion<br>Coma<br>Death | Driver selection and training<br>Safe driving and use of vehicles<br>Fit vehicle with rollover protective structure and safety belt<br>Implement a 'no seat no passenger' rule<br>Balance loads | Chapter 15: Transport and vehicles<br>Chapter 5: Planning<br>Chapter 6: Training | |
| Vehicles | 118 | **Overturning of vehicle due to gradient** | Injury<br>Concussion<br>Coma<br>Death | Driver selection and training<br>Match vehicle to task<br>Safe driving<br>Provide rollover Protective structures | Chapter 15: Transport and vehicles | |
| Vehicles | 119 | **Vehicle accident due to fatigue of driver** | Injury<br>Concussion<br>Coma<br>Death | Driver selection and training<br>Safe driving<br>Refrain from driving when not fit<br>Adequate rest breaks<br>Reduce working time<br>Job rotation | Chapter 15: Transport and vehicles | |
| Vehicles | 120 | **Vehicle fall off cliff due to unstable ground** | Injury<br>Concussion<br>Coma<br>Death | Driver selection and training<br>Safe driving<br>Plan alternative route<br>Widen paths<br>Refrain from driving on cliff edge<br>Install rollover protective structures and safety belt | Chapter 15: Transport and vehicles | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Visitors | 121 | **Accident caused by unfamiliarity with site, movement of vehicles and operation of machinery and equipment** | Injury<br>Death | Driver selection and training<br>Traffic management and minimise reversing<br>Segregation of pedestrian and vehicle movement<br>Signage<br>Escort visitors<br>Avoid operating machines in the presence of visitors | Chapter 12: Visitors and third parties<br>Chapter 17: Signs | |
| Visitors | 122 | **Injury of children and others from trespassing** | Injury<br>Death | Adequate secure play areas<br>Adult supervision<br>Give children simple safety rules<br>Fencing | Chapter 13: Infrastructure<br>Chapter 11: Children<br>Chapter 17: Signs | |
| Visitors | 123 | **Poisoning due to uncontrolled consumption of recently sprayed fruit especially from children** | Poisoning<br>Death | Warning signs<br>Escort visitors<br>Adult supervision<br>Give children simple safety rules | Chapter 11: Children<br>Chapter 12: Visitors and third parties<br>Chapter 17: Signs<br>Chapter 16: Hazardous substances | |
| Visitors | 124 | **Uncontrolled contact with animals** | Injury<br>Contraction of zoonoses<br>Death | Warning signs<br>Escort visitors<br>Adult supervision<br>Give children simple safety rules | Chapter 12: Visitors and third parties<br>Chapter 17: Signs<br>Chapter 19: Livestock | |
| Workforce | 125 | **Accident due to language difficulties** | Injury<br>Death | Improve communication<br>Use illustrations and signs<br>Translate critical information | Chapter 7: Workforce<br>Chapter 17: Signs | |
| Workforce | 126 | **Accidents occurring due to lack of coordination of subcontractors working on site** | Injury<br>Concussion<br>Coma<br>Death | Contractor selection<br>Establish and coordinate responsibilities<br>Supervise subcontractors | Chapter 12: Visitors and third parties | |

| Source of hazard | No | Hazard | Consequences | Suggested prevention measures | Chapters | My farm |
|---|---|---|---|---|---|---|
| Workforce | 127 | **Injury due to loading or transportation of people with produce, animals or equipment** | Bruises<br>Fracture | Driver selection and training<br>Match vehicle to task<br>Establish transport rules<br>Never load people with products or animals | Chapter 15: Transport and vehicles | |
| Workforce | 128 | **Violence among workers** | Injury<br>Rape<br>Death | Careful selection and training of workforce<br>Awareness of cultural differences<br>Grievance procedures<br>Supervision | Chapter 7: Workforce | |

APPENDIX 4.4:

# Risk assessment models

↑ back to Chapter 4

Once you have identified and listed the hazards, you need to select an assessment model to proceed with your own risk assessment.

To **determine risk** two (**2**) models of risk assessment are demonstrated:

- a **Qualitative** and
- a **Quantitative** model.

**The steps to take to determine risk are:**

## 1. Select assessment factors (parameters)

Risk depends on several factors. For practical purposes, only **two** of these factors (assessment parameters) are used: **likelihood** and **severity**.

## 2. Predetermine levels and/or scores of assessment factors (likelihood and severity)

The **Qualitative** model means that you describe likelihood and severity in **words**:

**Likelihood** can be described as:

- **improbable**,
- **unlikely**,
- **possible**,
- **very likely**,
- **almost certain**.

**Severity** can be described as:

- **insignificant**,
- **moderate**,
- **serious**,
- **disabling event**,
- **life-threatening**.

The **Quantitative** model means that you describe likelihood and severity in **numbers**:

**Likelihood** can be described as:

- **1** for improbable,
- **2** for unlikely,
- **3** for possible,
- **4** for very likely,
- **5** for almost certain.

**Severity** can be described as:

- **1** for insignificant,
- **2** for moderate,
- **3** for serious,
- **4** for disabling event,
- **5** for life-threatening.

## 3. Assess hazards and determine risk

### The scores for the Qualitative model

The combination of the two will establish the risk level:

| | Likelihood | | | | |
|---|---|---|---|---|---|
| Severity | Improbable | Unlikely | Possible | Very likely | Almost certain |
| Insignificant | Trivial | Trivial | Trivial | Minimal | Minimal |
| Moderate | Trivial | Minimal | Minimal | Moderate | Substantial |
| Serious | Trivial | Minimal | Moderate | Substantial | Substantial |
| Disabling event | Minimal | Moderate | Substantial | High | High |
| Life-threatening | Minimal | Substantial | Substantial | High | High |

### The scores for the Quantitative model

The multiplication of Likelihood x Severity will establish the risk level:

| | Likelihood | | | | |
|---|---|---|---|---|---|
| Severity | 1 | 2 | 3 | 4 | 5 |
| 1 | 1-3 | 1-3 | 1-3 | 4-6 | 4-6 |
| 2 | 1-3 | 4-6 | 4-6 | 7-9 | 10-15 |
| 3 | 1-3 | 4-6 | 7-9 | 10-15 | 10-15 |
| 4 | 4-6 | 7-9 | 10-15 | 16-25 | 16-25 |
| 5 | 4-6 | 10-15 | 10-15 | 16-25 | 16-25 |

(RISK) R

=

(LIKELIHOOD)

X

(SEVERITY) (Likelihood of incident occurring) (Severity of the outcome/the loss/damage)

Measures taken Nature of activity

## 4. Determine corrective and preventive measures and set a time plan depending on risk rating

### Interpretation of results

| Risk rating | Remedial action and timescale |
|---|---|
| 16-25 High | **STOP activity immediately** until control measures are taken and the level of risk has been reduced |
| 10-15 Substantial | Make the situation safe **within a week** — meanwhile, take temporary measures |
| 7-9 Moderate | Make the situation safe **within a month** |
| 4-6 Minimal | Make the situation safe **within a year** |
| 1-3 Trivial | Continue implementing current protective and preventive measures — **keep under review** |

APPENDIX 4.5:

# Hazardous activities

↑ back to Chapter 4

| No | Sector | Activity | Hazard No |
|---|---|---|---|
| 1 | General | **Cleaning of facilities** | 1, 2, 3, 4, 12, 13, 22, 26, 27, 31, 33, 51, 55, 56, 57, 59, 60, 63, 65, 66, 67, 68, 70, 71, 72, 74, 75, 76, 80, 81, 86, 90, 94, 96, 98, 100, 102, 125, 126, 128 |
| 2 | General | **Maintenance of facilities** | 1, 2, 4, 5, 6, 8, 9, 12, 13, 15, 16, 22, 26, 27, 29, 30, 31, 36, 51, 54, 55, 57, 59, 60, 63, 64, 65, 66, 67, 68, 69, 70, 71, 72, 73, 74, 75, 76, 77, 79, 80, 81, 94, 95, 96, 98, 100, 102, 103, 122, 125, 126, 128 |
| 3 | General | **Setting, maintenance, cleaning, preparation and storage of machinery and equipment — both small and big machinery** | 1, 2, 3, 4, 5, 7, 15, 16, 25, 27, 29, 31, 54, 60, 72, 81, 101, 102, 103, 125, 126, 128 |
| 4 | General | **Coupling and uncoupling and driving of tractors, vehicles and loads** | 2, 5, 7, 27, 29, 30, 31, 55, 72, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 125, 127, 128 |
| 5 | General | **Deliveries and pick up of supplies by third parties** | 22, 29, 30, 31, 70, 80, 100, 106, 108, 110, 116, 121, 124, 125, 126, 127, 128 |
| 6 | General | **Pick up of waste by third parties** | 29, 30, 31, 33, 58, 60, 63, 68, 71, 75, 80, 94, 96, 98, 100, 106, 108, 110, 116, 121, 124, 125, 126, 127, 128 |
| 7 | Agriculture/ horticulture/ forestry | **Plot and soil preparation — manual** (including weeding and application of fertilisers) | 1, 2, 18, 19, 20, 21, 24, 26, 27, 31, 32, 33, 35, 37, 50, 52, 53, 57, 58, 70, 72, 76, 98, 100, 101, 102, 125, 128 |
| 8 | Agriculture/ horticulture/ forestry | **Plot and soil preparation — automated** (including weeding and application of fertilisers) | 1, 2, 5, 6, 7, 8, 9, 11, 14, 15, 16, 24, 26, 27, 29, 30, 31, 33, 35, 52, 53, 57, 58, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 125, 127, 128 |
| 9 | Agriculture/ horticulture/ forestry | **Seeding and planting — manual** | 1, 2, 18, 20, 21, 24, 26, 27, 31, 32, 33, 35, 37, 65, 70, 72, 76, 98, 100, 101, 102, 125, 128 |
| 10 | Agriculture/ horticulture/ forestry | **Seeding and planting — automated** | 1, 2, 5, 6, 7, 8, 11, 16, 24, 26, 27, 29, 30, 31, 35, 72, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 125, 127, 128 |
| 11 | Agriculture/ horticulture/ forestry | **Mixing, loading and application of pesticides — manual** | 1, 2, 17, 18, 19, 20, 21, 24, 26, 27, 31, 32, 33, 35, 37, 51, 52, 59, 61, 62, 65, 70, 72, 76, 78, 99, 100, 101, 123, 125, 128 |

| No | Sector | Activity | Hazard No |
|---|---|---|---|
| 12 | Agriculture/ horticulture/ forestry | **Mixing, loading and application of pesticides — automated** | 1, 2, 5, 6, 7, 8, 16, 17, 18, 19, 24, 26, 27, 29, 30, 31, 33, 35, 51, 52, 59, 61, 62, 65, 69, 72, 78, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 123, 125, 127, 128 |
| 13 | Agriculture/ horticulture | **Fumigation** | 1, 2, 17, 18, 19, 21, 24, 26, 27, 31, 32, 33, 35, 37, 51, 59, 65, 70, 72, 76, 99, 100, 125, 128 |
| 14 | Agriculture/ horticulture | **Irrigation — manual** | 1, 2, 16, 17, 18, 19, 20, 21, 24, 26, 27, 31, 32, 33, 35, 37, 65, 68, 70, 72, 76, 78, 98, 100, 125, 128 |
| 15 | Agriculture/ horticulture | **Irrigation — automated** | 1, 2, 5, 16, 17, 18, 19, 20, 21, 24, 26, 27, 29, 30, 31, 32, 33, 35, 37, 65, 68, 70, 72, 76, 78, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 125, 127, 128 |
| 16 | Horticulture/ forestry | **Pruning — manual** | 1, 2, 8, 13, 17, 18, 19, 20, 21, 23, 24, 26, 27, 29, 30, 31, 32, 33, 35, 37, 44, 51, 65, 69, 72, 74, 76, 98, 100, 101, 102, 125, 127, 128 |
| 17 | Horticulture/ forestry | **Pruning — automated** | 1, 2, 6, 7, 8, 10, 13, 16, 17, 18, 19, 20, 21, 23, 24, 26, 27, 31, 32, 33, 35, 37, 44, 47, 51, 65, 69, 74, 98, 100, 101, 102, 103, 125, 127, 128 |
| 18 | Horticulture | **Manual thinning** | 1, 2, 8, 13, 17, 18, 19, 20, 21, 23, 24, 26, 27, 29, 30, 31, 32, 33, 35, 37, 44, 51, 65, 69, 72, 74, 76, 98, 100, 101, 102, 125, 127, 128 |
| 19 | Horticulture | **Chemical thinning** | 1, 2, 13, 16, 17, 18, 19, 20, 21, 23, 24, 26, 27, 29, 31, 32, 33, 35, 37, 54, 60, 65, 70, 72, 76, 78, 98, 99, 100, 101, 123, 125, 128 |
| 20 | Agriculture/ horticulture | **Crop surveillance or monitoring** | 18, 19, 20, 21, 24, 26, 27, 29, 31, 32, 33, 35, 37, 65, 70, 72, 76, 123, 128 |
| 21 | Agriculture/ horticulture | **Harvesting — manual** | 13, 17, 18, 19, 20, 21, 23, 24, 26, 27, 29, 31, 32, 33, 35, 37, 50, 51, 56, 65, 67, 70, 72, 74, 76, 98, 100, 101, 102, 123, 125, 126, 127, 128 |
| 22 | Agriculture/ horticulture | **Harvesting — automated** | 1, 2, 4, 5, 6, 7, 11, 16, 19, 24, 26, 27, 29, 30, 31, 33, 35, 37, 56, 72, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 125, 126, 127, 128 |
| 23 | Agriculture/ horticulture | **Removal of crop residues — manual** | 1, 2, 16, 17, 18, 19, 20, 21, 22, 24, 26, 27, 29, 31, 32, 33, 35, 37, 50, 51, 53, 56, 58, 63, 65, 67, 70, 72, 74, 76, 98, 100, 101, 102, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 123, 125, 126, 127, 128 |
| 24 | Agriculture/ horticulture | **Removal of crop residues — automated** | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 16, 19, 22, 24, 26, 27, 29, 30, 31, 32, 33, 35, 37, 56, 58, 65, 67, 72, 76, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 125, 126, 127 |
| 25 | Agriculture/ horticulture | **Storage of crops** | 8, 12, 22, 31, 53, 54, 55, 57, 66, 67, 71, 78, 98, 99, 100, 110, 125, 128 |
| 26 | Agriculture/ horticulture | **Transport of crops** | 29, 30, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 12, 125, 127, 128 |
| 27 | Forestry | **Drilling — manual using hand tools** | 1, 2, 18, 19, 20, 21, 24, 26, 27, 31, 32, 33, 34, 35, 37, 39, 41, 42, 43, 46, 49, 98, 100, 102, 125, 126, 128 |

| No | Sector | Activity | Hazard No |
|---|---|---|---|
| 28 | Forestry | **Drilling — automated, using a drill** | 1, 2, 3, 4, 5, 6, 7, 8, 9, 11, 16, 18, 21, 26, 27, 31, 32, 33, 34, 35, 37, 39, 41, 42, 43, 46, 49, 72, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 125, 126, 128 |
| 29 | Forestry | **De-branching — manual, using an axe** | 2, 17, 18, 19, 21, 24, 26, 27, 31, 33, 34, 35, 37, 39, 41, 42, 43, 46, 49, 72, 98, 100, 101, 102, 125, 126, 128 |
| 30 | Forestry | **De-branching — automated, using chainsaw** | 1, 2, 4, 6, 7, 8, 10, 11, 16, 17, 18, 19, 21, 24, 26, 27, 31, 33, 34, 35, 37, 39, 41, 42, 43, 46, 47, 49, 72, 98, 100, 101, 102, 103, 125, 126, 128 |
| 31 | Forestry/ Agriculture | **Felling and log splitting — manual with axe** | 1, 2, 12, 13, 17, 18, 19, 21, 23, 24, 26, 27, 31, 33, 34, 45, 37, 38, 29, 40, 41, 42, 43, 44, 45, 48, 49, 72, 98, 100, 101, 102, 125, 126, 128 |
| 32 | Forestry/ Agriculture | **Felling and log splitting— automated with chainsaw** | 1, 2, 6, 7, 8, 10, 11, 12, 13, 16, 17, 18, 19, 21, 23, 24, 26, 27, 31, 33, 34, 35, 37, 38, 39, 40, 41, 42, 43, 44, 45, 46, 47, 48, 49, 72, 98, 100, 101, 103, 126, 128 |
| 33 | Forestry | **Debarking — shredding** | 1, 2, 4, 5, 6, 7, 8, 10, 11, 16, 18, 19, 21, 24, 26, 27, 31, 33, 34, 35, 37, 39, 41, 42, 43, 46, 47, 49, 72, 78, 101, 102, 103, 125, 126, 128 |
| 34 | Forestry | **Collection and skidding** | 1, 2, 5, 8, 16, 18, 21, 24, 26, 27, 31, 33, 34, 35, 36, 37, 38, 42, 43, 46, 49, 72, 98, 100, 101, 125, 126, 127, 128 |
| 35 | Forestry | **Stacking — manual** | 18, 19, 21, 24, 26, 27, 31, 33, 34, 35, 37, 38, 39, 41, 42, 43, 46, 48, 49, 72, 98, 100, 101, 125, 126, 127, 128 |
| 36 | Forestry | **Stacking — automated** | 1, 2, 5, 16, 18, 19, 21, 24, 26, 27, 29, 30, 31, 34, 35, 36, 37, 38, 39, 41, 42, 43, 46, 48, 49, 72, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 125, 126, 128 |
| 37 | Forestry | **Transport and unloading** | 5, 6, 7, 8, 11, 12, 16, 18, 19, 21, 24, 26, 27, 29, 30, 31, 34, 35, 36, 37, 38, 39, 41, 42, 43, 46, 48, 49, 59, 72, 98, 100, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 125, 126, 127, 128 |
| 38 | Forestry | **Removal of residues** | 17, 18, 19, 20, 21, 24, 26, 27, 31, 32, 33, 34, 35, 37, 38, 39, 40, 41, 42, 43, 46, 48, 49, 72, 98, 100, 101, 123, 125, 126, 127, 128 |
| 39 | Livestock farming | **Fencing** | 1, 2, 3, 5, 6, 8, 9, 11, 16, 21, 24, 27, 31, 33, 64, 70, 72, 77, 79, 98, 100, 102, 103, 122, 124, 125, 126, 128 |
| 40 | Livestock farming | **Filling of silos** | 2, 12, 13, 20, 24, 26, 27, 31, 33, 53, 56, 63, 66, 67, 68, 71, 72, 73, 74, 100, 101, 125, 128 |
| 41 | Livestock farming | **Distributing and feeding of animals** | 20, 22, 24, 26, 27, 31, 33, 56, 58, 72, 83, 100, 101, 125, 128 |
| 42 | Livestock farming | **Milking — manual** | 1, 27, 31, 33, 66, 72, 83, 87, 88, 89, 92, 97, 98, 100, 101, 125, 128 |
| 43 | Livestock farming | **Milking — automated** | 1, 27, 31, 33, 66, 72, 83,87, 88, 89, 92, 97, 125, 128 |
| 44 | Livestock farming | **Vaccination, shearing, branding, dehorning, ring application, hoof trimming, castration, semen collection** | 1, 2, 4, 27, 31, 33, 62, 72, 82, 83, 84, 86, 87, 88, 89, 91, 92, 97, 102, 125, 128 |

| No | Sector | Activity | Hazard No |
|---|---|---|---|
| 45 | Livestock farming | **Assisting birth or ill animals** | 27, 31, 33, 72, 82, 83, 84, 85, 86, 87, 88, 89, 90, 92, 97, 98, 125, 128 |
| 46 | Livestock farming | **Handling of carcasses** | 27, 31, 33, 52, 58, 72, 87, 88, 89, 90, 97, 100, 125, 128 |
| 47 | Livestock farming | **Pickup poultry and eggs** | 27, 31, 33, 65, 66, 72, 86, 87, 88, 89, 96, 97, 98, 100, 101, 125, 128 |
| 48 | Livestock farming | **Loading, unloading and transport** | 27, 31, 33, 72, 83, 87, 88, 89, 92, 93, 97, 98, 101, 104, 105, 106, 107, 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 125, 126, 127, 128 |
| 49 | Livestock farming | **Livestock surveillance or monitoring** | 18, 19, 21, 24, 26, 27, 31, 32, 33, 34, 35, 42, 43, 49, 82, 83, 87, 88, 89, 92, 97, 124, 125, 128 |
| 50 | Livestock farming | **Herding and moving livestock along a road** | 18, 19, 21, 24, 26, 27, 31, 32, 33, 34, 35, 42, 43, 49, 82, 83, 87, 88, 89, 92, 97, 106, 124, 125, 128 |

APPENDIX 5.1:

# Safety method statement form

↑ back to Chapter 5

**Description of the activity:**

**Issue date:** **Name of issuer:**

Things to considering when planning the activity

| Working aspects | Working parameters | | | | Notes |
|---|---|---|---|---|---|
| **Location** | Define where: | Near or far? | Difficult or easy access? | Rough or smooth terrain? | |
| **Timing** | Define when: | Too tight, too long? | Extreme pressure? | Mandatory breaks | |
| **Weather** | Define weather: | Hot or cold? | Weather extremes? | Emergencies? | |
| **Equipment and machinery needed** | List equipment: | Own or hired? | Maintained or not? | Needs repair or not? | |
| **People** | Select who: | Sufficient numbers? | Trained, experienced or not? | Supervision needed or not? | |

| | Select PPE: | Sufficient quantity? | Fit to use? | People know how to use them? |
|---|---|---|---|---|
| PPE | | | | |
| | | | | |
| | | | | |
| | | | | |
| | | | | |

## Hazards identified

Define basic hazards

## Decide on the working method — give instructions

Define who is going to do what and when

## Emergency contacts and arrangements

Local emergency numbers

**Hospital** .....

**Own Doctor** .....

**Fire brigade** .....

**Police** .....

**Rescue services** .....

**Local authority council/borough** .....

# What to do in an emergency

| Define emergency | Define actions |
| --- | --- |
| **Fire** | |
| **Serious injury** | |
| **Flood** | |
| **Fatal accident** | |

APPENDIX 19.1:

# Zoonotic diseases

↑ back to Chapter 19

↑ back to Chapter 8

| Disease | Animals affected | Contracting routes | Repercussions |
|---|---|---|---|
| ***Escherichia coli* O157** | Cattle, sheep, deer, goats | Mouth | Diarrhoea<br>Kidney failure<br>Death |
| **Cryptosporidiosis** | Calves, lambs, deer, goats | Contact with animal dung<br>Water contaminated with dung<br>Hand-to-mouth contact | Diarrhoea<br>Abdominal pain<br>Flu–like symptoms |
| **Leptospirosis** | Rats, cattle | Cuts and grazes<br>Contact of infected urine with eyes, nose or mouth<br>Placental products entered through broken skin<br>Inhalation of droplets of urine | Fever<br>Headache<br>Vomiting<br>Muscle pain<br>Jaundice<br>Meningitis<br>Kidney failure<br>Death |
| **Bovine tuberculosis** | Cattle, badgers, deer | Inhalation<br>Hand-to-mouth contact | Chest pain<br>Coughing up blood<br>Fever<br>Chills<br>Night sweats<br>Appetite loss<br>Weight loss<br>Pallor |
| ***Salmonella*** | Farm animals | Contaminated food<br>Contact with animal dung<br>Hand-to-mouth and hand-to-hand contact | Diarrhoea<br>Fever<br>Abdominal pain |
| ***Streptococcus suis*** | Pigs | Cuts and grazes<br>Inhalation | Meningitis<br>Death |
| **Orf** | Sheep, goats, lambs | Contact with lesions on animals or infected wool<br>Fencing or hedges | Ulcers on face, hands and arms |
| **Ovine chlamydiosis (*Chlamydia psittaci*)** | Sheep, goats | Handling or contact with infected afterbirth | Flu-like symptoms<br>Abortion risk to pregnant women |

| | | | |
|---|---|---|---|
| **Psittacosis** | Ducks, poultry | Inhalation of dust from dung | Flu-like symptoms<br>Pneumonia<br>Endocarditis<br>Hepatitis<br>Death |
| **Q fever** | Sheep, cattle | Inhalation of dust contaminated with urine, faeces or birth products<br>Drinking unpasteurised milk<br>Tick bites<br>Skin abrasions | Flu-like symptoms<br>Pneumonia<br>Liver and heart valve damage<br>Death |
| **Ringworm** | Cattle, pigs, sheep, horses, dogs | Entering the skin through cuts and abrasions | Inflammation and swelling<br>Crusty skin<br>Skin lesions on hands, forearms, head and neck |
| **Cryptosporidiosis** | Poultry, cattle, sheep, small mammals | Ingestion of animal faeces (water or food contamination) | Diarrhoea<br>Stomach pain and cramps<br>Low fever |
| **Campylobacter** | Poultry, cattle | Ingestion of contaminated food, water, milk | Bloody<br>Diarrhoea<br>Periodontitis or dysentery syndrome<br>Cramps<br>Fever and pain |
| **Brucellosis (undulant or Maltese fever)** | Cattle, swine, goats, sheep | Contact with placenta and other contaminated tissues; consumption of unpasteurised milk and soft cheeses made from the milk of infected animals | Intermittent fevers<br>Sweating<br>Weakness<br>Anaemia<br>Headaches<br>Depression and muscular and body pain<br>Septicaemia |
| **Rabies** | Wild carnivores, dogs, cats, livestock | Exposure of virus-laden saliva to breaks in the skin, bite from an infected animal | Flu-like symptoms<br>Anxiety<br>Insomnia<br>Confusion<br>Agitation<br>Abnormal behaviour<br>Paranoia<br>Hydrophobia<br>Death |
| **Tularaemia** | Wild animals, swine, dogs | Inoculation from contaminated water or flesh | Swollen and painful lymph glands<br>Fever chills<br>Headache<br>Exhaustion<br>Vomiting<br>Diarrhoea |

European Commission

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This non-binding guide provides information and examples of good practice in connection with the implementation of health and safety directives, together with other necessary elements such as explanations and practical examples of the hazards and risks during all stages of farming, horticulture and forestry work.

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