HEALTH AND SAFETY AUTHORITY

Guidance on the Safe Handling of Cattle on Farms

Our vision:
A national culture where all commit to safe and healthy workplaces and the safe and sustainable management of chemicals.

contents

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> Every year farmers and family members are killed or maimed by cattle

> Every month hundreds on farms are injured by cattle

> Every day there are countless ‘near hits’ in handling cattle

Dangerous situations involving cattle are almost entirely avoidable – you or a family member needn’t become a ‘statistic’

The Golden Rules in Handling Cattle – Do's and Don'ts

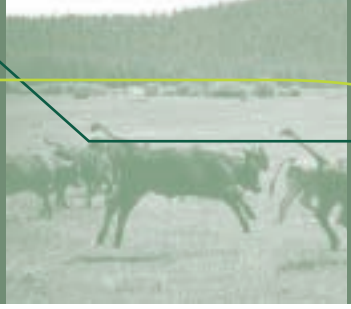
1.0

ALWAYS

- ✓ Make sure handlers are competent and agile.
- ✓ Work out an escape route or refuge in advance of working with cattle.
- ✓ Know and understand the basics of cattle behaviour.
- ✓ Maximise the use of Artificial Insemination to minimise the number of bulls required.
- ✓ Use bulls that produce docile offspring.
- ✓ Be careful around cows with new born calves, they are more likely to attack.
- ✓ Remember that cows that are 'on-heat' are unpredictable.
- ✓ Try to keep cattle calm when handling them.
- ✓ Use a stick to assist in directing cattle.
- ✓ Disbud calves early to prevent horn growth.
- ✓ Watch for warning signs of animal aggressiveness, especially bulls and newly calved cows.
- ✓ Cull fractious and difficult cattle as soon as possible.
- ✓ Exercise caution administering veterinary treatments.
- ✓ Protect yourself against biohazards with proper personal hygiene.
- ✓ Wear suitable protective clothing and footwear.
- ✓ Use well designed facilities.
- ✓ Regularly check and maintain facilities such as the crush, gate latches and fences.
- ✓ Keep ground surfaces clean, as far as possible.

NEVER

- × Put an inexperienced handler or a child at risk with cattle.
- × Handle cattle or get others to handle them if there is a lack of competence and confidence to do the work safely.
- × Turn your back on a bull or trust a bull, no matter how docile he may appear.
- × Stress or arouse cattle unnecessarily.
- × Turn your back on a cow following calving.
- × Keep dangerous cattle.
- × Suddenly enter the animal's 'Blind Spot'.
- × Rush into the animal's 'Flight Zone'.
- × Beat or shout at cattle unnecessarily – they remember bad experiences.
- × Move cattle on a public road at night.



2.0 Introduction

This Guidance Document has been prepared to provide general advice and guidance to all persons handling cattle on farms. The document was prepared in support of Goal 5 of the Farm Safety Partnership 'Action Plan 2009-2012' which is 'to achieve a reduction in the incidence of accidents involving livestock.'

2.1 The Risks from Working with Cattle

Any work with cattle involves some level of risk. Injuries from animals are by far the biggest cause of farm accidents and most of these arise from cattle. The general causes of injuries from animals on farms are listed here: (Finnegan UCD PhD thesis) (Ref: 21)

- Knocked over or attacked 54%
- Kicked 29%
- Crushed 11%
- Catching an animal 3%
- Fell from horse 3%

The effects can be severe with many cattle injuries causing fractures or internal injuries resulting in the farmer being unable to work for many months. The financial costs to the farmer of these injuries are very high.

The 2006 Teagasc National Farm Survey showed a marked increase in livestock related accidents with 65% of non-fatal injuries being caused by livestock, up from 27% in 2002. From 2000 to 2010 approximately 15% of all fatal farm accidents have involved livestock. Bulls and cows with newborn calves pose the greatest risk. Bull attacks account for approximately 54% of all the fatal accidents involving livestock. (Figure 1).

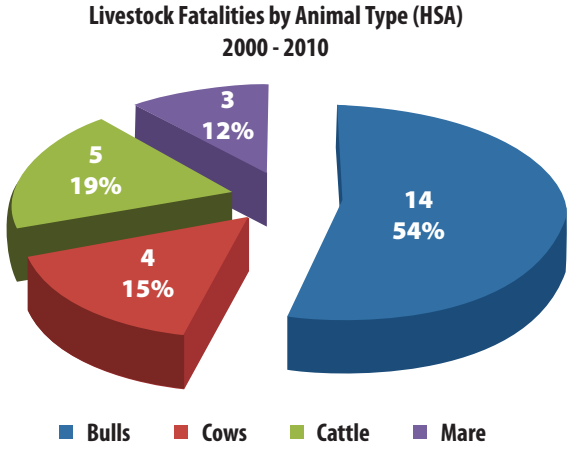


Figure 1: Livestock Fatal Accidents (2000-2010) (HSA 2010)

In addition to fatal accidents, there are an unknown number of deaths from illnesses arising from cattle, in particular from infections such as leptospirosis, salmonella and E.coli strain 0157.

The risks of injury are **higher**:

- When cattle are not handled frequently.
- When handling cattle with bad past experiences.
- When cattle are handled by unfamiliar persons.
- Where the handler lacks the necessary experience, agility or ability to assess the possible risks.
- When in unfamiliar surroundings.
- With some breeds.
- With bulls.
- With cows with newborn calves.
- With bad tempered or fractious cattle.
- When cattle are alone, isolated and away from their herdmates.
- When cattle are handled at close quarters, such as in a race or a crush.
- When cattle are being loaded and unloaded for transport.

2.2 The Animal Welfare Factor

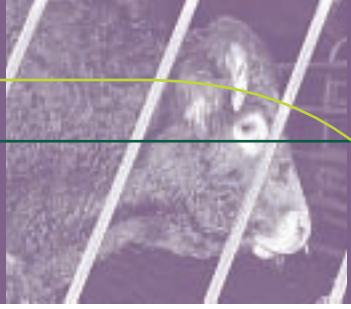
The welfare rights of farm animals are very clearly enshrined in legislation and are administered by the Farm Animal Welfare Advisory Council (Appendix 2). Essentially this means that any wanton mistreatment of any farmed animal is an offence. For further animal welfare information see www.fawac.ie, www.agriculture.gov.ie and www.teagasc.ie.

The **welfare of animals** is normally expressed in the **five freedoms**.

- *Freedom from hunger, malnutrition and thirst* - by ready access to fresh water and a diet to maintain full health and vigour.
- *Freedom from discomfort* - by providing an appropriate environment including shelter and a comfortable resting area.
- *Freedom from pain, injury and disease* - by the prevention or rapid diagnosis and treatment of disease and injury.
- *Freedom to express normal patterns of behaviour* - by providing sufficient space, proper facilities and company of the animal's own kind.
- *Freedom from fear and distress* - by ensuring conditions and treatment that avoid mental suffering.

While the "rights" of the animals must always be considered there is no situation where any person on a farm should be injured because of an Animal Welfare/Rights factor. Any handling system that reduces animal stress will be safer for the farmer. Rough or aggressive handling is not acceptable, nor will it help in creating a safe working environment.

3.0 Good Handling Facilities and Equipment



Well designed and maintained handling facilities are essential for the safe handling of cattle and prevention of injury to handlers. Facilities where cattle are handled must match the types and numbers of cattle present. Good cattle handling facilities provide for a high level of control and safe access for the various husbandry tasks. Many accidents involving cattle could be eliminated with better handling facilities.

3.1 Keep the Yard Clean and Tidy

A lot of accidents on farms result from simple trips, slips and falls. It is essential that handling areas should be kept tidy and clean. Debris such as sticks, rocks, pieces of wire or plastic and old tyres should be cleared away before any work starts.

3.2 Non-Slip Surfaces

Some muck is inevitable in the farm yard, especially in winter. Sheet ice can also be present and is very dangerous. These hazards lead to many slips and fall accidents. Concrete surfaces can be grooved to reduce the chance of slipping. Areas that are continually damp should be power-washed at the beginning of winter to maximise grip and to remove any accumulated dirt. Ice can be dissolved by spreading salt grit.

Fill in or cover holes that could cause you to trip and fall. Design is also a factor as steep slopes are always more risky.

Grooved concrete is less slippery

3.3 Suitable Size, Layout and Structure of Yards

Farmers must give strong consideration to the adequacy of their cattle handling facilities. Well designed and well maintained yards that take account of cattle characteristics and behaviour will greatly reduce the risk of accidents. The yard and equipment must be suitable for the type of cattle being handled. The essential components of good yards include the collecting pen, race, forcing pen, raised catwalk alongside the race, crush, skulling gate, dispersal pen, worker escape points, all with gates that swing and latch freely. The layout should always ensure there is always an 'escape' route for the handler, should that be required.

The layout and design must be appropriate to your needs for safe handling of cattle

The yard area must be larger by about 50% than the area occupied by the cattle. This gives adequate space for them to move when they are being sorted into groups.

Cattle have a strong herd instinct to 'follow the leader' and will stop moving if they lose sight of the leader. The cattle race should be of sufficient length to take account of this characteristic (see Ref: 1).

There are excellent detailed specifications for cattle handling facilities available on **www.agriculture.gov.ie** and from the Scottish Agricultural College publications TN564 and TN 565 **(www.sac.ac.uk)**.

3.4 Fences and Gates

The fences and gates on the farm must be able to contain the classes of cattle on the farm. In particular, all road boundaries must be stock proof and internal fences able to ensure that unplanned mixing does not occur. There are serious liability issues if your cattle get onto a road and a motorist is injured. Gates must be firmly latched and strong enough to resist the normal pressures from the cattle. Baling twine or rope is unacceptable for latching gates.

3.5 Cattle Winter Housing

There must be enough space and shelter for the number, size and class of cattle being held. The animal welfare regulations specify the minimum area requirements see **www.fawac.ie**

Cattle of broadly similar age and size should be penned together where possible. This social group should be allowed to develop and reallocation of animals to other pens should be minimised. Sick or weak cattle should be segregated where necessary for their welfare.

The wintering shed(s) for cows must have easy access to a calving pen that is clear of other cattle. Lighting must be strong enough to allow good vision for the farmer, particularly of the ground hazards. The lights must be waterproof complying with IP67 and the switches to IP45 specifications (IP is the Index of Protection level specified by the ETCI).

3.6 Bull Housing

A well designed bull pen is essential for the proper management of the bull(s) when he is away from the herd. The bull pen should be located so that the bull(s) can see other cattle and daily farm activity in the farmyard. The structure must be strong and high enough to stop them escaping. A well designed bull pen will allow the bull to be fed and watered from outside the pen.

Modern bull houses incorporate a feeding stand, loose house area, exercise area and service pen, all under the one roof and interlinked by gates. A drop gate operated remotely from outside the pen enables the stockman to isolate the bull inside the feeding stand so that he can work in the other areas free from danger. Detailed design specifications for bull facilities are available from the Department of Agriculture, Fisheries and Food. See S160 at **www.agriculture.gov.ie**

3.7 Calving Facilities

The calving area should provide adequate space, be tidy and well-bedded with clean dry straw, free of obstructions with good lighting. Well designed calving pens and gates minimise the direct physical contact between the cow/heifer and the farmer. The facility should provide the farmer with access to both sides of the animal. Other desirable features would include areas to perform Caesarean sections and for the suckling of newborn calves.

Calving jacks if properly used can reduce the risk of back injuries. Mechanical lifting aids such as a pulley system in the calving pen can also prevent back injury. The floor must be free of tripping hazards such as twines, rocks or pieces of timber.

3.8 Dairy Cattle – In the Milking Parlour

There is always close contact in the milking parlour between 'the milkers' and the cows.

While most farms have a herringbone type layout, many larger farms have adopted rotary parlours. Within the two basic designs are a wide range of designs and layouts. The design of the parlour and the yard must ensure that the cows can be milked safely and rapidly. It is most important that cows have adequate room in the milking parlour and that the Kick Rail is at the correct height to prevent the 'milker' getting kicked. A balance must be reached between 'milker' and cow comfort. A well designed layout with a comfortable milking position will reduce the risk of RSI (Repetitive Strain Injury) type injuries.

There are a number of important features (Stafford 2005).

> *"The milking pit should be deep enough for the milker to place the clusters on the cows with a straight back. The cows should be positioned close to the edge of the pit to allow the milker to reach under the kick bar to the udder. The rump rail should be in line with the pit edge, which should have a lip to stop cows slipping into the pit.*
>
> *The first bail should be large enough to allow a cow to stand comfortably on all four feet. The breast rail or feed trough must not be too high – it should be below the point of the shoulder so that large cows can lean over it and smaller cows will be pushed back in the bail to ease cluster placement. A zigzag breast rail or feed trough will show cows where to stand."*

Stray electrical current can be a problem in the milking parlour, causing the cows to become frightened and very nervous. This can cause cows that are otherwise very docile to kick out at the milker. Often this is caused by incorrectly earthed electric fence systems and can arise from a neighbour's farm some distance away. All milking parlours must be well earthed and if necessary checks made to measure any stray electrical current in the pipework or coming through the milking machines.

Further information at:
http://www.esb.ie/esbnetworks/downloads/esb_networks_farm_safely_booklet.pdf

3.9 Suckler and Finishing Cattle Housing

As a group, suckler and finishing cattle have less human contact than milking cows and hence are more likely to cause problems, especially with strangers. Often their major contact is with the tractor and feed trailer rather than directly with the farmer. This is especially the case on many part-time farms where the only real human contact may occur at the weekend. The quality of the housing facility to enable safe handling is no less important on small 'part-time' farms than on full-scale economic units.

The pens for housing suckler and finishing cattle during the winter period must provide:

- Adequate space. (specification at **www.agriculture.gov.ie**)
- Be well-bedded.
- Free of ground obstructions.
- Strong enough to contain the class of cattle.
- Have ready access to a race and crush for close work with the cattle.
- Have sufficient lighting especially where feeding is occurring at night.
- Be well ventilated for the cattle and to minimise persons breathing in the spores that cause "farmer's lung".

3.10 Calf Facilities

With housed calves there is always a lot of manual work in feeding, cleaning the pens, drenching and vaccinating or if a calf needs to be lifted. The basic requirements for calf housing have been defined in law. These specifications, also provide a safe facility for work with calves. See S124:2009 at **www.agriculture.gov.ie**:

- Construction which can provide clean, dry, warm and draught-free accommodation without risk of injury to the health of animals and workers.
- Design which allows feeding, cleaning, disinfection and general hygiene.
- Design which allows a thorough inspection of calves and easy stock management.
- Adequate ventilation provided at all times.
- Air circulation, dust levels, temperature, relative humidity and gas concentrations must be kept within limits, which are not harmful to the animal.
- Adequate unobstructed floor space.
- Facilities for storing and handling wastes.
- Accommodation for the isolation of sick calves.
- Adequate natural and artificial lighting.

- Adequate drinking water.
- Adequate drainage.

3.11 Loading and Unloading Ramps

Many injuries arise from loading and unloading cattle. A suitable loading ramp is essential for safe loading of trailers or trucks. All ramps must have ramp gates in place; gates must be strong and secure and must operate freely and lock in securely when closed. Cattle escaping to the sides at this time can create a huge problem. The cattle generally will dislike being loaded onto a trailer and understandably some will resist. The stockman should be patient and calm and allow adequate time for cattle to load.

When loading take care closing up the ramp gates, a lot of accidents occur when closing the gates as cattle can kick back or push back on top of the handler. Always stand to the side when lifting the ramp and seek assistance wherever possible so as to avoid back injury. A good facility that matches the trailer/truck is essential.

Any steps for the cattle must be less than 20cm high and the ramp angle less than 15 degrees. Non-slip surfaces are important and in some instances straw or hay should be spread on the loading ramp. When the ramp is lowered to unload step well to the side in case a stampede occurs. If slow to unload let them come off in their own time. Don't rush them as they will always want to leave the trailer.

Position the trailer to avoid gaps like this

It is a good idea to build a plinth to assist in loading cattle

4.0 The Cattle Factor

While all cattle have an 'unpredictability factor', there are many things that farmers can do to minimise this. Dangerous behaviours can arise from several factors:

- From a genetic basis.
- From their past experiences – if you buy cattle that have been roughly handled in the past they can be more dangerous to you.
- Separation from their normal herd mates – cattle are highly social within their group.
- From the current activity – such as being cornered, isolated, confined in a crush or being milked for the first time.
- Hormonal – cows 'on-heat' or after calving are generally unpredictable.
- From a bull that sees you as his competitor.

The 'arousal level' is essentially a measure of cattle activity (Ref: 4). It varies from sleep through to a relaxed state, to a display of fight or flight. Arousal is increased by noise, beating, sexual activity, barking dogs and unfamiliar places and people. Farmers and stockpersons must always be keenly aware of the cattle's state of arousal as this will influence the response by cattle to them.

4.1 Culling Fractious Cattle

Cattle that are known to be fractious, dangerous or unpredictable pose a continuing risk. Cattle that have attacked once are more likely to do so again. Culling these cattle to the abattoir is always the safest course. Cattle known to be dangerous ***should not be sold*** through a mart or directly to other farmers.

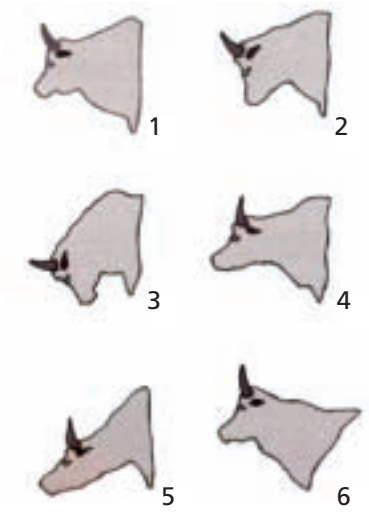
A worrying trend seen in recent times is the use of sedating medication to quieten animals for a period of time to facilitate presentation at a mart or place of sale. This is a very dangerous practice and could potentially lead to injury or even death on another farm. It is advisable when purchasing livestock to identify the temperament of animals on purchase day and be happy in the intervening days that the behaviour does not change adversely. Sedating substances are detectable for a period of time after administration and if there is any suspicion it is advisable to seek the assistance

of a veterinary surgeon. Returning the animals to the seller in such circumstances should be a priority.

4.2 Recognising Dangerous Behaviours

The demeanour of cattle usually tells of their state of arousal. This can be in the form of the head and tail positions, pawing the ground with its legs, or bellowing. Seriously distressed cattle often bellow loudly – a sure sign to the farmer to be especially careful and to its herdmates that there is danger.

The diagrams below show typical head and tail positions[1]:



The **head position** tells just how contented they feel....or otherwise

1 Neutral position

2 Slightly antagonistic position

3 Highly antagonistic position

4 Confident approach

5 Submissive approach

6 Alert before flight position

The **tail position** also says much about their state of arousal:

1 → Grazing or walking

2 → Cold, ill or frightened

3 → Threatening, curiosity or sexual excitement

4 → Galloping

5 → Kicking or playing

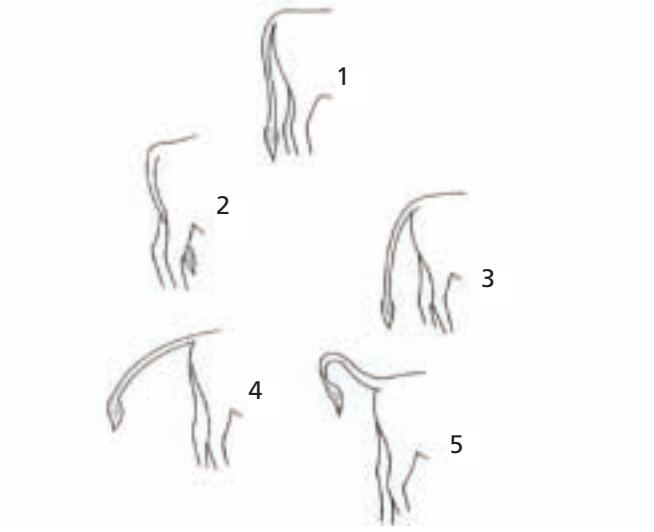


Figure 2 – Typical Head and Tail Positions

[1]*Albright and Arave, 1997, Mounaix et al.*

Watch out for:

- Head and Tail Positions
- Bellowing
- All Bulls
- All Cows with calves at foot
- All highly aroused or aggressive cattle
- Horned cattle

4.3 Breeding out Bad Behaviours

Fractious behaviour can have a strong heritable component. Thus this can be passed from one generation to the next. Not breeding from a dangerous bull or not saving the offspring of temperamental or dangerous cattle as herd replacements will improve the safety of the herd. Progress in improving temperament through breeding can be relatively fast. This can be applied to a whole breed or to individual farms.

For those breeding livestock it is recommended good practice to have a breed improvement strategy in place. Having a breed improvement plan will facilitate the identification of the more suitable animals for further breeding and the culling of those less desirable. Docility evaluation should be the top priority when deciding whether an animal is suitable to retain in the herd or not. With docility being highly heritable, positive gain can be made in a relatively short space of time when breeding for docility.

Following a procedure of selecting the more suitable cows to retain in the herd, use a bull with an appropriate docility that will ensure docility improvements. With an invaluable animal recording programme in place in this country comprehensive data on docility is now available. It is recommended to consult the Irish Cattle Breeding Federation (ICBF), the respective pedigree breed societies or a Farm advisor for expert opinion on breeding for docility.

4.4 Recognising How Cattle Respond

Anyone working with cattle should understand the principles of animal's response to movement. Further information is available at Dr. Temple Grandin's website, **(http://www.grandin.com/behaviour/principles/flight.zone.html).** (Ref: 3)

The ''Flight zone' **(Figure 3)** refers to how close you can get to an animal before it moves away (takes flight). This is essentially their own safety zone and its size is determined mainly by its genetics, and the amount and quality of contact/experience with people. Its size varies depending on the animal's degree of wildness or tameness.

For example, a dairy cow that has regular contact with people will have a very small 'flight zone' (less than 1m) while many suckler cows will have much larger 'flight zones' (6m or greater) i.e. they will move (take flight) once the stockman goes within 6 m of them.

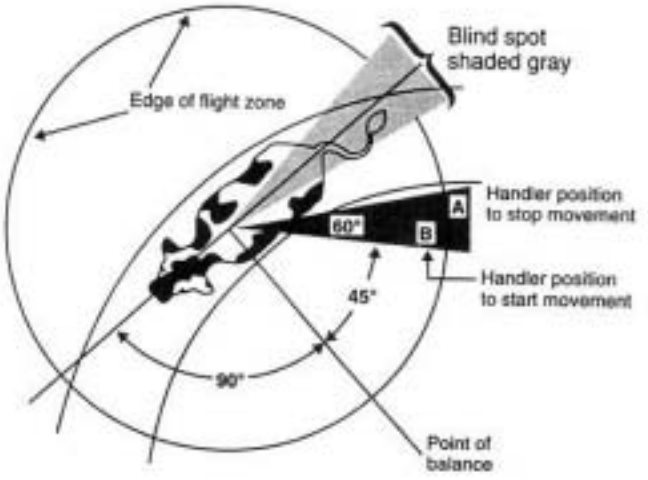


Figure 3 – Animal's 'Flight Zone' (Ref: 3). The best place for the stock handler to work is on the edge of the 'flight zone' whatever its size (Ref: 3). The animal will move in a slow orderly manner. To make the animal move forward the handler moves to position B just inside the 'flight zone'. By moving back to A, just outside the 'flight zone' boundary, the handler encourages the animal to stop again.

The **'Point of Balance'** is an imaginary line at the animal's shoulders (see Figure 4).To encourage the animals to move forward the handler must be behind the point of balance. Likewise, to encourage the animals to move backwards, the handler must be in front of the point of balance (Ref: 6, 7, and 8)

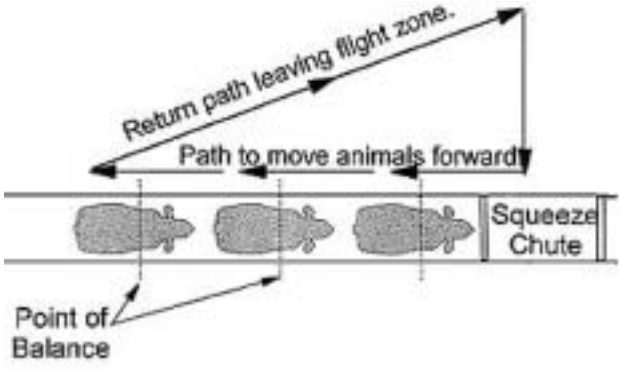
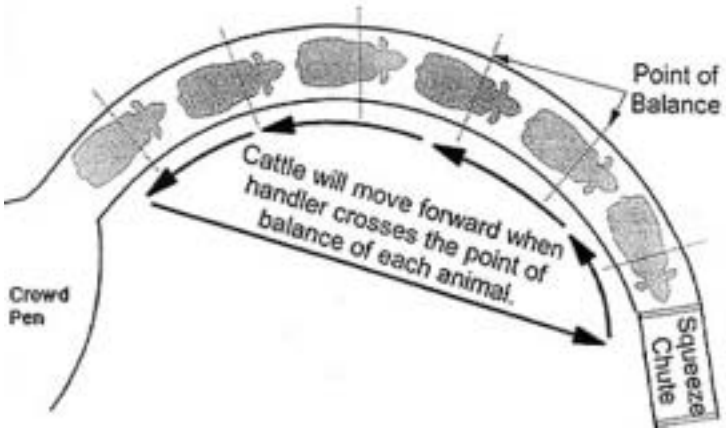


Figure 4 – Point of Balance

Grazing animals move forward when the handler walks past the point of balance in the opposite direction of desired movement (see Figures 4 & Figure 5) (Ref: 3)

The movement pattern indicated in Figure 4 can be used to induce animals to move into a chute. The handler walks inside the flight zone in the opposite direction of desired movement. In Figure 4 the animals move forward inside the Chute when the handler crosses the Point of Balance.

Figure 5 – Movement of cattle in curved chute (Ref: 3)



The movement pattern indicated in Figure 5 can be used to induce animals to move in a curved chute system.

4.5 Horned Cattle are a Higher Risk

While most herds are fully dehorned a proportion of horned cattle are found either in stud herds or where the legally required disbudding as calves did not occur (stud cattle for showing are exempt). Horned cattle learn to use their horns aggressively and are always a greater risk to handlers. All farmers (except those legally exempt) should disbud all calves or use polled breeds. For most farms horned cattle should not be a factor in farm safety.

4.6 Sex as a Safety Factor

Bulls:

Bulls cause over 50% of livestock related deaths on Irish farms. All bulls are potential killers even seemingly quiet bulls. Farmers and persons handling bulls must treat them with caution and respect at all times. Older farmers are most at risk due to reduced mobility and speed. Bull's temperament changes as it matures, from playful aggression as a yearling to defensive, territorial aggression as a 2-3 year old.

Persons handling bulls should be aged between 18 and 65 years, fit and agile. They should be fully aware of the dangers when handling bulls and properly trained. All bulls should be ringed in the nose when 10 months old and the ring should be examined regularly. From an early age the

bull should learn to associate the presence of people with pleasant things, such as feeding, grooming and exercise. In all cases, without exception, have an aggressive bull sent to the abattoir. When a bull is taken from a pen, he should be led using suitable equipment (head chains, bull poles and leading ropes). Never attempt to handle a bull on your own. At least two people should be available when handling a bull.

A Bull in an Open Field

The risk of attack from stock bulls running with the herd is greatest during the summer months when the most mating is occurring. Avoid grazing a bull in a field where there is a right of way or where members of the public may have access. A safety sign warning of the bull's presence should always be posted. Any field in which a bull is kept should be securely fenced and gates should be well maintained. Aggressive bulls should not be allowed to run with the herd.

Consider using a tractor or other suitable farm vehicle (i.e. Jeep) as a mobile sanctuary when you need to go into a field where the bull is running with the cows.

If cornered by a bull it is best not to move too fast but to slowly move out of the bull's 'flight zone'. Turning and running from the bull invites being chased. They will usually be faster than you. If there is no refuge point to escape then stepping sideways out of his best vision will confuse him as to where you have gone. No bull can be trusted and will be unpredictable at some time. This applies even to young bulls and seemingly quiet bulls.

The requirement to keep a bull for breeding purposes can be largely eliminated if artificial insemination is used for all mating. This is by far the safest option.

As illustrated in Figure 6 all breeds of bulls are potential killers.

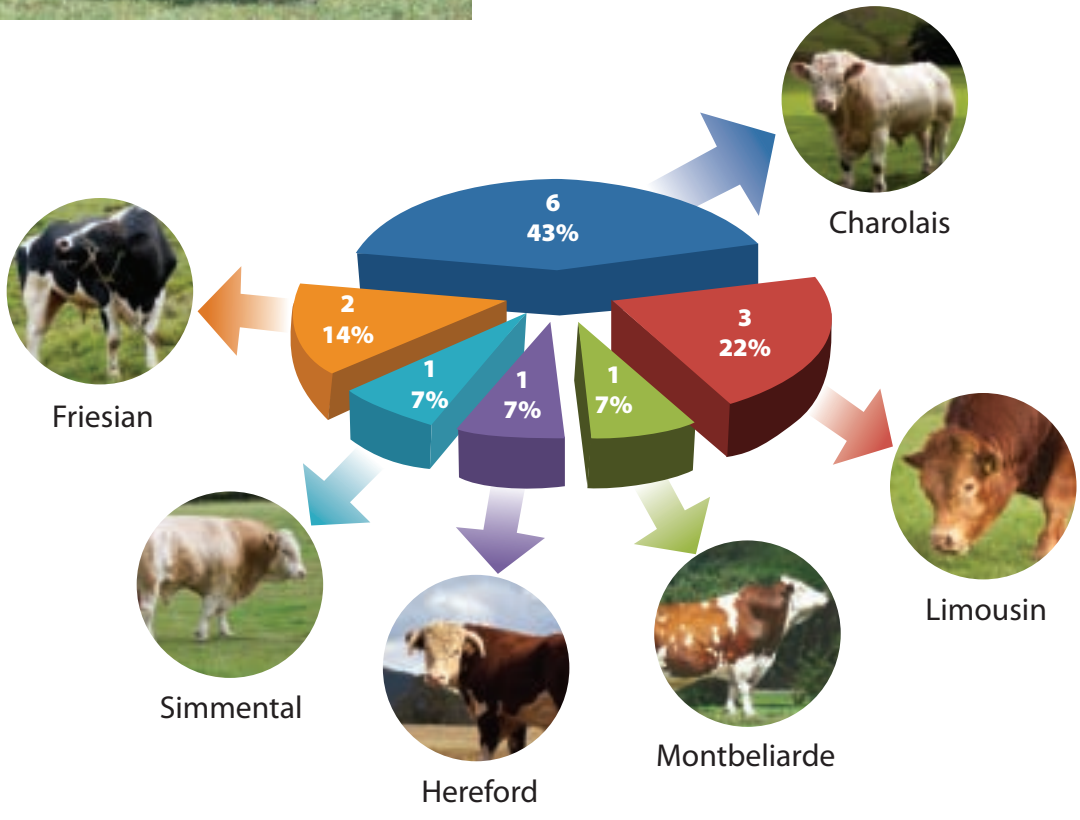


Figure 6: Bull related Fatal Accidents (2000-2010) by breed of bull (HSA 2010)

Cows:

Cows have attacked and killed several farmers. There have been countless serious injuries from cows. Cows and heifers are more unpredictable during stressful periods such as calving, weaning and at their first milking. Suckler cows which are handled less frequently generally pose a greater risk than dairy cows. However, some dairy cows are very protective of their calves. Continually aggressive cows should be culled. All cows with newborn calves should be treated with caution.

Calving:

Many farmers suffer serious injuries while attending cows at calving time. Several farmers have been killed by cows immediately after calving. Work practices such as taking a newborn calf from a cow, hand milking, navel dipping and stomach tubing pose a risk of injury. Never turn your back on cows with new born calves. She may perceive you as a threat and attack. A freshly calved heifer may present an even greater threat.

Long hours and regular night work increases the risk of accidents during this busy time of the year due to fatigue. If fatigued you should seek assistance. Back injuries are also common during this period. Keep children and dogs away from the calving area as they may spook the cow causing her to attack.

Other Classes of Cattle:

While stock bulls and recently calved cows and heifers pose the greatest risk, other groups such as heifers, bullocks, bull beef and young stock can also be dangerous.

Several aspects of cattle husbandry such as housing of animals during the winter, castration, scanning, freeze branding, drenching, vaccination, dehorning and transportation have the potential to cause serious injury if not managed correctly. Certain tasks such as castration, freeze branding and scanning will involve getting into the cattle crush with the animal. In these circumstances the following basic rules should be followed:

- Only allow one animal at a time into the crush.
- Restrain the animal's head in the crush gate.
- A second person should hold the tail straight up.
- Have a slip gate into the crush just behind the first animal.

- Have a suitable system for holding the scanner and other equipment.
- Have a person to restrain the animal's nose when castrating.

A good understanding of animal behaviour will help to heighten awareness and reduce livestock related accidents. Young animals should be treated gently but firmly. Replacement dairy heifers should be handled gently and allowed to get familiar with people and their surrounds. Wild or overly nervous heifers should be culled. All types of livestock are potentially unpredictable and should be treated with caution. Livestock are territorial, naturally will protect their young and may become aggressive during the mating season. An animal's **'first attack should be its last'** – aggressive animals should be culled from the herd immediately.

4.7 Effects of Cattle Breed

Cows of all of the dairy breeds are generally very docile though there will always be a proportion that are more fractious. Such cows should be culled. In contrast, Jersey bulls are highly territorial and are very dangerous. The safest way to obtain Jersey calves is by using artificial insemination. Amongst the beef breeds, the Limousin was acknowledged as being more flighty than the other main Continental breeds but some of this effect has been successfully 'bred out' in the last 10 years. Cattle should not be trusted on breed alone. All breeds have some fractious cattle.

4.8 Age of Cattle

Young cattle lack experience and until a routine is developed can be more unpredictable. The more they are handled then the more accustomed they become to being handled. At the other end of the scale, old cattle can get very stubborn, meaning they resent changes in routine.

Bulls can be dangerous at any age although they are generally less aggressive until they become highly territorial at age 2-3 years. After that they will 'fight' any animal or anyone they see as a threat to their domination in the herd. Special care is required!

4.9 Biohazards – Illnesses from Cattle (zoonoses)

Many serious diseases can be picked up from contact with cattle, however, they can generally be controlled by good personal hygiene. We have to accept that there are some biohazard risks that are 'part and parcel' of farm work. There is no data on the extent of illnesses transmitted by cattle, though anecdotal evidence suggests the effects are extensive.

The **main risks** are from:

1. **Gut Disorders:** A number of bacteria cause intestinal disorders. These include Campylobacter, E. coli, Salmonella and Clostridium perfringens. The risk is higher with housed cattle during the winter. The antibiotic resistant E. Coli strain 0157 would be very serious to farmers if it became widely established in cattle.

2. **Leptospirosis:** There are two forms, Weil's disease that is transmitted by rats and cattle leptospirosis usually transmitted by contact with infected urine. These can be fatal, if untreated. The risk to workers is significant.
3. **Cryptosporidiosis** is commonly transmitted by birds and cattle, causing diarrhoea.
4. **Bovine tuberculosis:** Some areas have endemic TB and there is some risk to cattle handlers.
5. **Brucellosis:** this is now eradicated so the risk is low.
6. **Q Fever:** The incidence in cattle is quite high, caused by the bacteria Coxiella burnetti and frequently causes influenza like symptoms that are not often recognised as Q fever.
7. **Ringworm:** Quite prevalent causing a white crusty skin lesion.
8. **Tape and Gut Worms:** The incidence is lowest in mature cattle and there will always be some carriers. The hazard is largely avoided with good personal hygiene and the risk overall is low.

Nearly all of the biohazard risks can be minimised by an active management programme that will involve vaccination of the cattle for diseases, practicing excellent personal hygiene to prevent organisms entering the body and the use of personal protective equipment such as waterproof gloves, barrier creams and calving gloves.

5.0 The Human Factor

Anyone handling cattle must be competent, fit and agile enough for the particular task they are doing. Excellent cattle handling skills will reduce the risk of injury. All persons working with cattle must have a good understanding of how they are likely to behave and be aware of the potential dangers from them. Stressed handlers will cause additional stress in the cattle. There is strong evidence that stressed cattle are less productive in both milk and meat production. If help is required then never attempt to start the job without the required help. There must be enough people to do the required task. Less competent handlers will benefit from training and instruction. Key points to note:

- Steel toe-cap boots will help prevent foot injuries.
- Those handlers most at risk of injury are older farmers (>65 years) and children.
- Never enter the cattle crush with cattle unless it is absolutely necessary.
- Stand aside while closing the gate when enclosing cattle in the collecting pen to avoid being crushed if an animal charges the gate.
- Keep cattle in their herd groups as far as possible.

Figure 7 below illustrates that older farmers are at greater risk of serious injury when handling livestock.

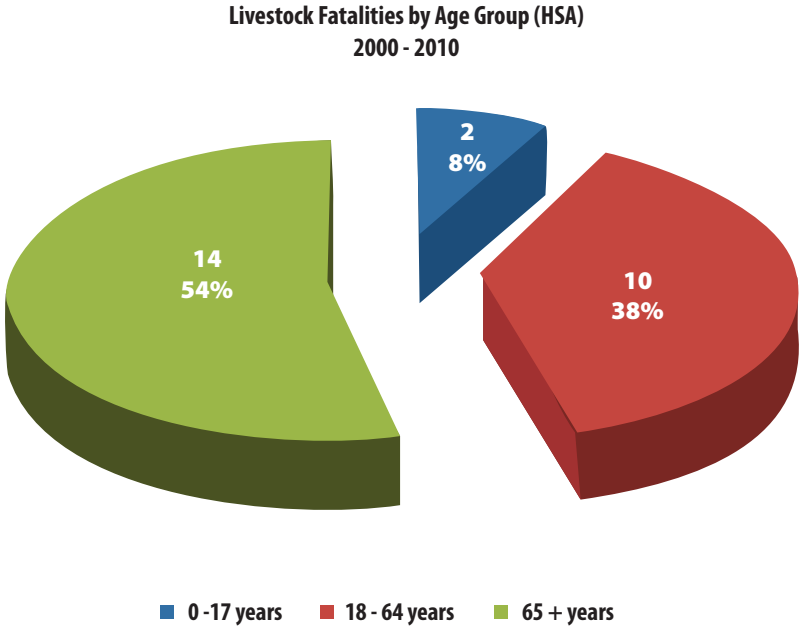


Figure 7: Livestock Fatal Accidents (2000-2010) by Age group of victim (HSA 2010)

5.1 Stockmanship

Good stockmanship is not an ability we are born with. Rather it is a learned skill. Excellent stockmanship involves a wide range of skills and knowledge. A competent stockman[2] will rarely have any conflict with the Animal Welfare regulations.

A good stockman will:

- Have the ability to understand and read the 'body language' of the livestock.
- Pay attention to detail and will never allow a situation to develop where the animals are unnecessarily aroused or stressed.
- Be able to read the animal's behaviour, recognise if animals are ill or not thriving.
- Ensure that the stock are kept in a secure environment and are not unduly stressed.
- Handle them in a firm but caring manner.
- Create an environment that will minimise the risk of injury to the stock and their handlers.
- Know when to get assistance.
- Know when to call in the veterinarian.

5.2 Training for Farmers in Safe Cattle Handling

Most farmers have learnt their cattle handling skills from their parents, other family members or employers. Observations of poor livestock handling and the vast number of injuries every year from cattle suggest that in many instances that learning is incomplete. Improving knowledge of safe practices and cattle behaviour is straight forward but the skills side can only be learnt from doing them.

Formal training courses in safe cattle handling are provided to clients and non-clients by organisations such as Teagasc (**www.teagasc.ie**) and the FRS Network (**www.frstraining.com**). Good international information on safety in handling cattle is also available on the internet.

[2]*The word stockman or stockmen is intended in a gender neutral sense*

Training should cover the specific areas where close contact with cattle is involved.

These are:

- Safe milking techniques including the initial milking of heifers
- Safe separation of individual cattle
- Safe drenching, injecting and vaccination
- Safe dehorning and disbudding
- Safe bull handling
- Safe calving practices
- Safe hoof paring
- Safe ear-tagging
- Safe castration techniques
- Safe loading and unloading
- Safe transport of cattle

5.3 Fatigue as a Safety Factor

The risk of injury increases markedly when we are tired. There are two main risk situations:

1. During the calving season farmers work very long hours, often with broken sleep. They can become very tired. This is a high risk time for all farmers.
2. 'Part-time' farmers will often do a normal days work elsewhere and then arrive home late in the evening to tend to the needs of their cattle. This is also a high risk time. Sometimes this pattern of work can happen for many years.

If you become very tired then you need to recognise that help is needed. The difficulty is knowing when to ask.

5.4 Children and Older Persons Handling Cattle

Children as a group are at much greater risk compared to adults as they receive more severe injuries and lack the required skills and experience to recognise risk situations. The Code of Practice for "Preventing Injuries to Children and Young Persons in Agriculture" (**www.hsa.ie**) specifies that children and young person's must:

1. Only work with cattle and other farm animals under direct supervision.
2. Never enter a bull pen.
3. Learn to practice excellent personal hygiene such as hand washing, after animal contact.

In essence the Code of Practice is the law.

Young people will mainly learn safe animal handling practices through assisting their parents or

other competent adults. Clearly this means they will be at some risk but this has to be controlled, and the key words are "only under direct supervision".

Very young children are at major risk around cattle and should never be allowed to enter yards or fields unless with an adult. They must not participate in any 'work activity'.

Elderly farmers (i.e. over 65 years) feature disproportionately in bull fatality statistics. Clearly they are at greater risk probably due to reduced mobility, agility and becoming too complacent. There is a blanket recommendation that older farmers do not handle bulls alone due to reduced agility and speed of movement. There are logical exceptions, such as with excellent bull facilities where no direct contact is required.

5.5 Sticks and Other Aids to Control Cattle

Farmers have used sticks for centuries as an aid in handling their cattle. Against this reality an EU Directive specifically forbids "striking" farm animals with sticks. The main function of having a stick is that it makes the handler appear much larger to the cattle and so helps in maintaining the dominance of the handler over them. As such it is very useful in turning and directing cattle. The second is for self defence in the occasional situation where that is needed. This is the only time when it is acceptable to hit livestock, and then is best around the nose or face. Indiscriminate use of sticks is unacceptable both in a welfare sense and also may bruise the carcass. It also raises the animal's arousal level, usually unnecessarily.

The best sticks are Ash, Blackthorn and Willow. Alkathene pipes can also be used. They are typically about 1m long. Alternatives to sticks are 'plastic sorting paddles' that are extensively used in the USA .They are generally not used in Ireland.

The use of electric prodders on farms is illegal under the animal welfare regulations.

5.6 Use of Dogs

Dogs are seen by cattle as a predator and any aggressive intentions are more likely to focus on the dog than the handler. A well trained quiet dog is extremely useful in moving cattle. Conversely, an untrained or uncontrolled dog will create chaos causing unnecessary stress to both the cattle and the handler. This could lead to the handler being at a greater risk of injury or attack.

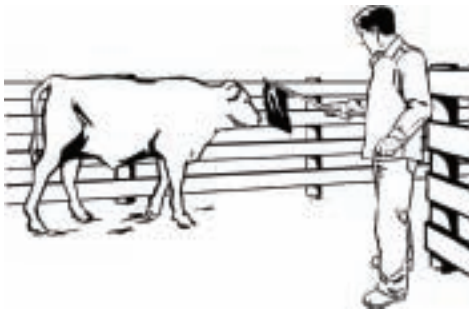
5.7 Safety when Drafting Cattle

Close work with cattle whether for drenching, weighing, veterinary treatment, hoof care, artificial insemination or to separate out individuals invariably requires close work, usually in the pen itself. It is essential that everyone involved in this work is physically able for the work, alert and competent to do the required task. The quality of the facility is also paramount to safely carrying out the job.

The more frequently cattle are handled by a person they recognise, the easier the work becomes. Even so, do not be surprised when they are reluctant to go into the crush. Just like us they remember bad or painful past experiences. If cattle are 'worked up' after they are herded into a pen, leaving them to settle down for 20-30 minutes makes working with them much easier.

If you need to separate a bull, bring him into the drafting pen with a group of cows or steers. Try to avoid going into the pen with him. Always ensure there is someone else present when working with a bull.

In any close work with cattle it is essential that they recognise who is in charge – you. Cattle instantly recognise your fear and may react unpredictably. When you are in the pen separating cattle, your stick is an extension of your arms and helps greatly in getting them to move in the direction you want.



Stay in control, use your voice, arms and stick to direct them (Stafford 2002) (Ref: 4)

5.8 Moving Cattle between Fields and Paddocks

The move is always easiest and safest if the cattle are not excessively aroused or stressed. At the time of movement, check for any abnormal behaviour, lameness, reluctance to move or animals isolated from the remainder of the herd.

- Plan the move in advance. Set the gates ahead and make sure the way is clear.
- The movement of cattle from one paddock to another, or to penning facilities, should be done without recourse to excessive force. Livestock are wary of new events and need to be gently handled to allow them adjust to a new situation. Beating cattle or having an untrained aggressive dog which causes panic should be avoided.
- The cattle need to see where they are expected to move to, i.e. if going indoors or into a truck make sure that lights are on and corridors are clear.

5.9 Crossing Roads with Cattle

There are two situations that may arise; moving cattle along a road to another field or crossing the road. The risks depend on the experience of the stockman and any helper, the experience of the cattle in knowing the route, the road layout, the amount and speed of traffic and the time of day.

There is always a legal duty to warn motorists of the impending risk of cattle on the road. This can be done by signs, with or without hazard beacons or by persons standing well back with a flag to wave the motorists down. If the road is a busy high-speed highway then all cattle movements must be well planned and controlled with sufficient people available to help. In this instance warning signs must be placed about 150m back from the crossing or entry/exit point.

- If possible never move an individual animal on the road as it will generally attempt to get back to its herd. Always move them as a group. If only one needs to be moved then take it on a trailer or move it with a group then move those not required back the way they came.
- Anyone on the roadway helping to move cattle on or across a road must be wearing a high visibility vest.
- Persons waving to slow down traffic must be highly visible and use a flag or similar to attract attention.
- Only move cattle on or across roads during daylight hours. Moving cattle at night is extremely dangerous.
- Do not attempt to move cattle without the required number of handlers. Small children must not be involved.
- With a dairy farm where the milking parlour is on the other side of the road away from most of the fields, consider getting an underpass constructed. The cows must not be allowed to drift individually across a road. They must be held until milking is finished then the whole herd moved as a group.

5.10 Safe Drenching of Cattle

It is safest to drench small cattle in a cattle crush. Large cattle should be held in the gate or given a pour-on anthelmintic. Never get into the race with large cattle. The drenches used will affect the farmer so be very careful not to 'treat yourself' or others in the vicinity.

It is also possible to drench large cattle tightly packed into a cattle crush over the top rail, by catching the head and using a standard drench gun. However, this is very strenuous work with high risk of musculoskeletal injury. A hook drench gun makes catching the head unnecessary but may be wasteful. Pour-on anthelmintics are especially easy and safe to apply and are recommended for large cattle. You must not get any pour-on anthelmintic on your skin. Be fully protected and wash off any splashes immediately. Intrarumenal, injectable anthelmintics require a removable section of the crush on the left side of the cattle.

There are many injuries while drenching cattle. Pour-ons are much safer to use (Stafford 2002) (Ref: 4)

Securing large cattle in the head crush makes drenching of them slow but safe. When drenching at a head crush, approach from the side of the head, not from the front.

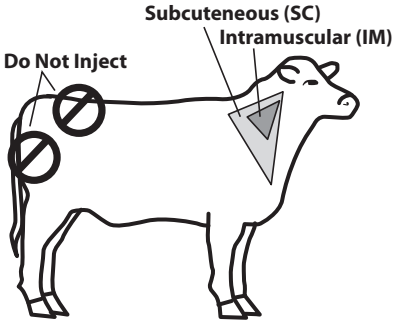
Cattle handlers drenching small cattle in a cattle crush should:

- Pack them tight as this reduces their movement and makes it a safe if tighter job; if packed tight they can be drenched from front to back or back to front, whichever is easiest (most people recommend drenching from front to back).
- Wear boots with protective toe caps but try to keep feet out of the way.

- Keep close to the animal to be drenched.
- Being stood on is a common injury when drenching small cattle; toecaps will not protect the rest of the foot from the sharp toes of a lively weaner.
- The head should be grasped under the jaw and held while drenching. Fingers should not be put into the animal's mouth. Do not hold the animal by the nose when drenching as it needs the nose to breathe through when swallowing. Make sure the nozzle is on top of the tongue and do not insert it so far that the drench can go down the windpipe.

5.11 Safe Vaccination

Vaccination always requires sharp needles and with that comes the risk of injecting yourself or a workmate instead of the animal. Some vaccinations can be dangerous to humans and should be done by a veterinarian. e.g. the leptospirosis vaccination of heifers and the toxoplasmosis vaccine. This risk is greater if the animal is not adequately restrained. Cattle should always be injected in the anterior neck area to reduce the cost of carcass damage, should an abscess develop. When the work is finished the needles must be placed in a secure container and locked away, especially from children.



To vaccinate, first place the hand with the syringe against the neck. For a subcutaneous injection (under the skin) 'tent the skin' with the other hand. Then twist the needle hand and complete the injection making sure there is no air in the needle and that the label instruction re dose level are followed.

If the cattle are tightly packed in the race it may be possible to do from above the top rail. If not the cattle will need to be restrained in the crush and it may be necessary to get a second person to hold the head with the nose grip technique.

Farmers who want to carry out vaccination themselves should learn vaccination techniques under supervision until they are competent.

Vaccination is a skilled task. Avoid jabbing yourself (Stafford 2002) (Ref: 4)

5.12 Safety When Dehorning Cattle

Horned cattle are a risk that is best controlled by disbudding calves at a young age. This is by far the simplest and safest method and it is recommended this is done by three weeks of age. The main methods of disbudding calves are by cauterisation (heat) or by applying a caustic paste. Both of these methods have the capacity to create 'burns' to the operator. There are also polled cattle in all breeds meaning that the need to disbud calves or dehorn adult cattle is avoided entirely. If this budding is not carried out, horns that develop must be removed under local anaesthetic. The head must be fully restrained in a crush and the horns then removed by embryotomy wire, hacksaw or loppers.

These horns are illegal in most cattle

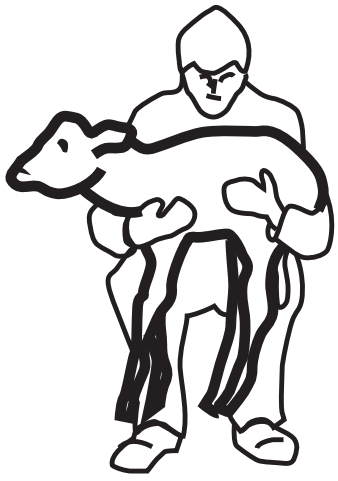
5.13 Safe Castration of Cattle

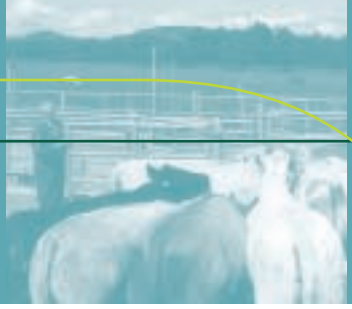
Castration is a very important safety factor on all farms. Unless the farm is specifically raising bulls for breeding or beef then all other bull calves should be castrated other than those required for breeding. It should be done as early as possible. It is easy to place a rubber ring on young calves, preferably less than a month old. This minimises the stress on the calf and is the safest method for the farmer.

Testes are usually cut out of weanlings. They should be held tightly in a race by a helper who pushes their left knee into the animal's flank while holding the tail in a tail jack directly above the animal's back. Similar restraint is required if a Burdizzo clamp is used.

5.14 Lifting Calves Safely

Often it becomes necessary to lift a new borne calf. This results in many back injuries to farmers. The key is to lift using your legs and to keep your back as straight as possible. To lift, squat down bedside the calf, pull it in close with one arm around the front and the other around the hind legs. Then straighten your knees to lift it. Hold it firmly and don't let it struggle loose. If you are moving it any distance tie the legs and put it in a barrow or trailer. Of course, consider cow attacks if the cow is in the same pen.





6.0 Emergency Planning

A little planning helps greatly in managing emergency situations.

When handling cattle:

1. Keep a fully charged mobile phone in your pocket so you can call for help, if needed.
2. Have emergency numbers easily accessible on your mobile.
3. Think about what you will do if attacked or injured.
4. Assess the job before you start and get help if needed.
5. Ensure someone else knows where you are and when you expect to return.
6. Keep a First Aid kit handy in your vehicle or sheds, with supplies of plasters, bandages and disinfectant to treat minor cuts and grazes.
7. Ensure Public Liability Insurance is in place and it covers transport of cattle on the road.
8. Keep feed reserves readily available in case temporary staff need to tend to your cattle if you are unable to do so for any reason.

Cattle rely heavily on their senses of smell and hearing and to a lesser extent their sight (Ref: 2). Cattle have a very highly developed sense of smell. Their sense of smell is particularly important to animals, and they often react to odours that people cannot detect. Cattle may be lured by the smell of freshly mown hay, or a bull may become aggressive if he detects a cow in heat. Odours can trigger defensive reactions in livestock, especially females with newborns.

Cattle are sensitive to noises that people cannot hear. Shouting at cattle or introducing new smells can make them aggressive or fearful and therefore increasing the risk of injury to themselves and people around them. People working around animals should speak with a low tone of voice (Ref: 3). High pitched noise is disturbing to animals.

Cattle's sight is significantly different to humans. Contrary to popular belief cattle and horses can see colour (Ref: 1,15) as shown in **Figure 1 (a)** cattle have panoramic vision, they can see all around them without turning their heads.

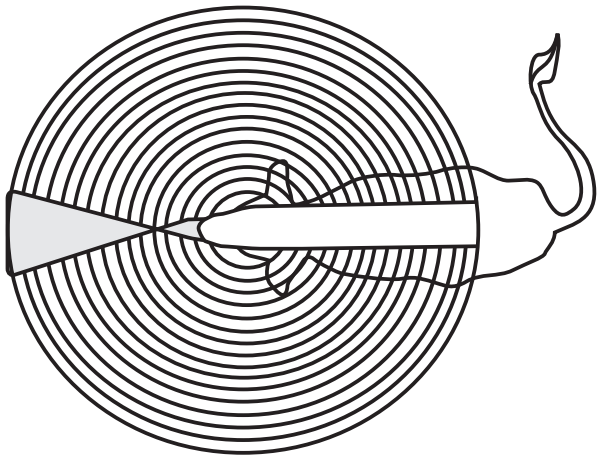


Figure 1(a) – Field of vision of Cattle

The coarse concentric circles in Fig 1 (a) represent the animal's field of vision.

They have limited depth perception and poor judgement of distance.

Appendix 1: Characteristics of Cattle

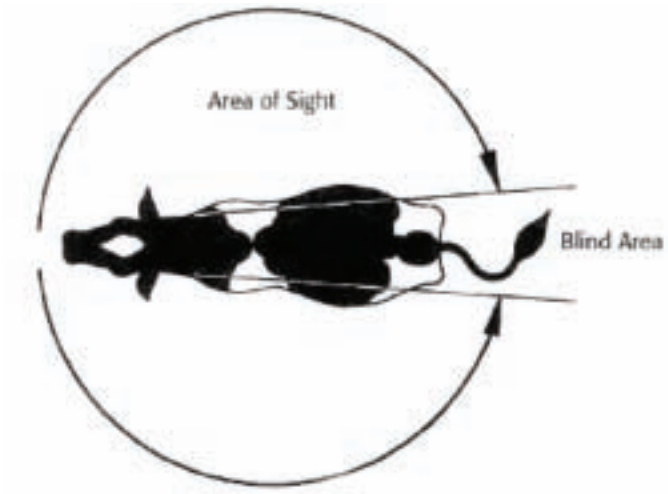


Figure 1(b) – Area of Sight for Cattle

Cattle can see through almost 360 degrees. It is worth noting that cattle have a blind spot as shown in **Figure 1 (b)** at their rear and also a small blind spot in front of their nose, where they have no vision (Ref: 2). Walking into an animal's blind spot can cause the animal to become startled and lead to sudden movements. Cattle have binocular vision (where they see with both eyes) for a small angle in front but only have monocular vision (see movement only) on their sides. Therefore sudden movements of people or objects to their sides will startle cattle.

Cattle fear harsh contrasts of light and dark (Ref: 1). Alternative light and dark patterns cause cattle to balk and they may refuse to cross a shadow. Cattle have limited depth perception and are a poor judge of distance (Ref: 2). A shadow may appear as a hole so this can cause an animal to sometimes balk. Farmers and stockpersons should attempt to reduce the effects of light on cattle. Livestock move more comfortably from dark to light areas than the reverse (Ref: 2).

A herd of cattle on the farm is a social group with dominant and subordinate animals in the group. Cattle prefer to stay with the herd and isolated animals are easily stressed and are potentially more aggressive. This is in contrast to the normal situation where the herd of cattle can be seen moving casually in a field often in single file with a leader animal leading the herd. It is worth noting that cattle are more relaxed and easier to work in groups.

The temperament of livestock is influenced by several factors (FAWAC, Ireland, Appendix 2). The way cattle were handled and treated by humans from a young age will influence their temperament. Animals will remember painful or unpleasant experiences into the future. Breed also influences temperament and it is well recognised that dairy breeds are quieter and easier to handle than beef breeds. Dairy cows are handled at least twice a day and are accustomed to people. However, recently calved cows of all breeds with young calves are very protective and potentially dangerous. All bulls are dangerous in particular stock bulls on dairy farms that are likely to be housed alone for long periods of time. Generally dairy bulls for breeding are more aggressive than bulls of the beef breeds. However, accident statistics confirm that all bulls irrespective of breed are highly dangerous and should never be trusted.

Appendix 2: Farm Animal Welfare Advisory Council

The Farm Animal Welfare Advisory Council (FAWAC) in Ireland was established in February 2002 on a non-statutory basis. It has been instrumental in promoting animal welfare in a practical way and providing a forum for different interest groups to meet, exchange views and reach consensus on the broad mandate of challenges facing farm animal welfare.

Main Functions

- Publish reports and opinions advising the Minister on specific topics, together with formal meetings with relevant officials.
- Provide a forum for different interest groups to meet, exchange divergent views and reach consensus on the broad mandate of challenges facing farm animal welfare.
- Building relationships, all members have a common purpose and share the view that animal welfare is an issue of very high importance.

See also **http://www.fawac.ie/publications.htm**

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Mr Neil Percival, North East Safety

Mr Ray Doyle, ICOS

Mr Michael Naughton, Roscommon Mart

Mr Michael Spellman, ICOS Marts Committee

Mr Pat Griffin, HSA

Mr Anthony Morahan, HSA

Mr. Thomas Browne, Inspector, Health and Safety Authority

Farm Safety Partnership Advisory Committee members (FSPAC)

Dr Kevin Stafford for permission to use diagrams from Cattle Handling Skills handbook, ACC, New Zealand, 2005

1. Beef Cattle Handling Facilities **http://www.agr.gov.sk.ca**
2. National AgSafety Database **http://www.cdc.gov**
3. Safe Handling of Large Animals (Cattle and Horses)
   Dept. of Animal Sciences, Colorado State University
   http://www.grandin.com/references/safe.html
4. Stafford, Kevin J. Cattle Handling Skills.2002, 2005. Accident Rehabilitation and Compensation Corporation Bulletin 517 (2nd Ed.). 56pp
5. Cattle behaviour and the human-animal relationship: Variation factors and consequences in breeding. Leonardo Livestock Safety Group France
6. Grandin, T. 1998. Review: Reducing handling stress improves both productivity and welfare. Prof. Anim. Sci. 14: 1-10.
7. Grandin, T. 2003. Transferring results of behavioural research to industry to improve animal welfare on the farm, ranch and the slaughter plant. Applied Animal Behaviour Science, 81: (3) 215-228.
8. Grandin, T. 2006. Progress and challenges in animal handling and slaughter in the U.S. Applied Animal Behaviour Science, 100: (1-2), 129-139.
9. HSE Agriculture Information Sheet No 35 Handling and housing cattle **www.hse.gov.uk**
10. Safe Cattle handling equipment HSE **www.hse.gov.uk**
11. HSE Agriculture Information Sheet No 34 Preparing cattle for slaughter www.hse.gov.uk
12. Purdue University, West Lafayette Ind.USA – Animal Sciences
    http://www.ag.purdue.edu/ansc/Pages/default.aspx
13. Preventing Bull Accidents (Temple Grandin Colorado State University)
    http://www.grandin.com
14. Recommended Animal Handling Guidelines and Audit Guide 2005 Edition
    http://www.animalhandling.org
15. Thines, G.; Soffie, M.: Preliminary Experiments on Color Vision. in Cattle. Br. Vet J. '33:97-98; 1977.
16. Design of Chutes, Ramps and Races for Cattle, Pigs and Sheep. By Dr. Temple Grandin
    http://www.grandin.com/
17. Design of Non Slip Flooring for Animal Handling by Temple Grandin
    Colorado State University **http://www.grandin.com/design/non.slip.flooring.html**
18. Code of Practice for Preventing Injury and Occupational Ill Health in Agriculture
    http://www.hsa.ie
19. Farm Animal Welfare Advisory Council (Ireland) Appendix I
20. Albright, J.L., Arave, C.W. 1997. The behaviour of Cattle, CAB International, Walingford, pp306
21. Finnegan, A., (2007) An Examination of the Status of Health and Safety on Irish Farms. Unpublished Ph.D., UCD, Dublin
22. Mounaix, B., Bovin, X., Brule, A., Schmitt, T. Cattle Behaviour and the Human Animal Relationship: Variation Factors and Consequences in Breeding.

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