

STAYING HEALTHY ON YOUR FARM



ADVICE PACK FOR THE FARMING COMMUNITY

**Produced by the
South East Zoonoses Committee**

(The South Eastern Health Board, Department of Agriculture & Food, Department of Communications, Marine & Natural Resources, The City Council of Waterford and The County Councils of Carlow, Kilkenny, Tipperary South Riding, Waterford and Wexford)

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FOREWORD

This document is intended to give health advice to all farmers and those caring for animals. It is especially relevant for farmers in relation to all visitors to their farms and is particularly relevant to farmers who admit paying guests to their farms.

CONTRIBUTORS

The pack has been compiled by Dr. Marrita Mahon, Surveillance Scientist for Infectious Diseases with the assistance of Ms. Rita Hayden, Public Health Department, South Eastern Health Board, with contributions from members of the South East Zoonoses Committee. Advice was gratefully received from Mr. Frank Higginson, Health and Safety Authority and Mr. Samuel Harper on behalf of the Pet and Open Farm owners in the South East.



Kilkenny County Council



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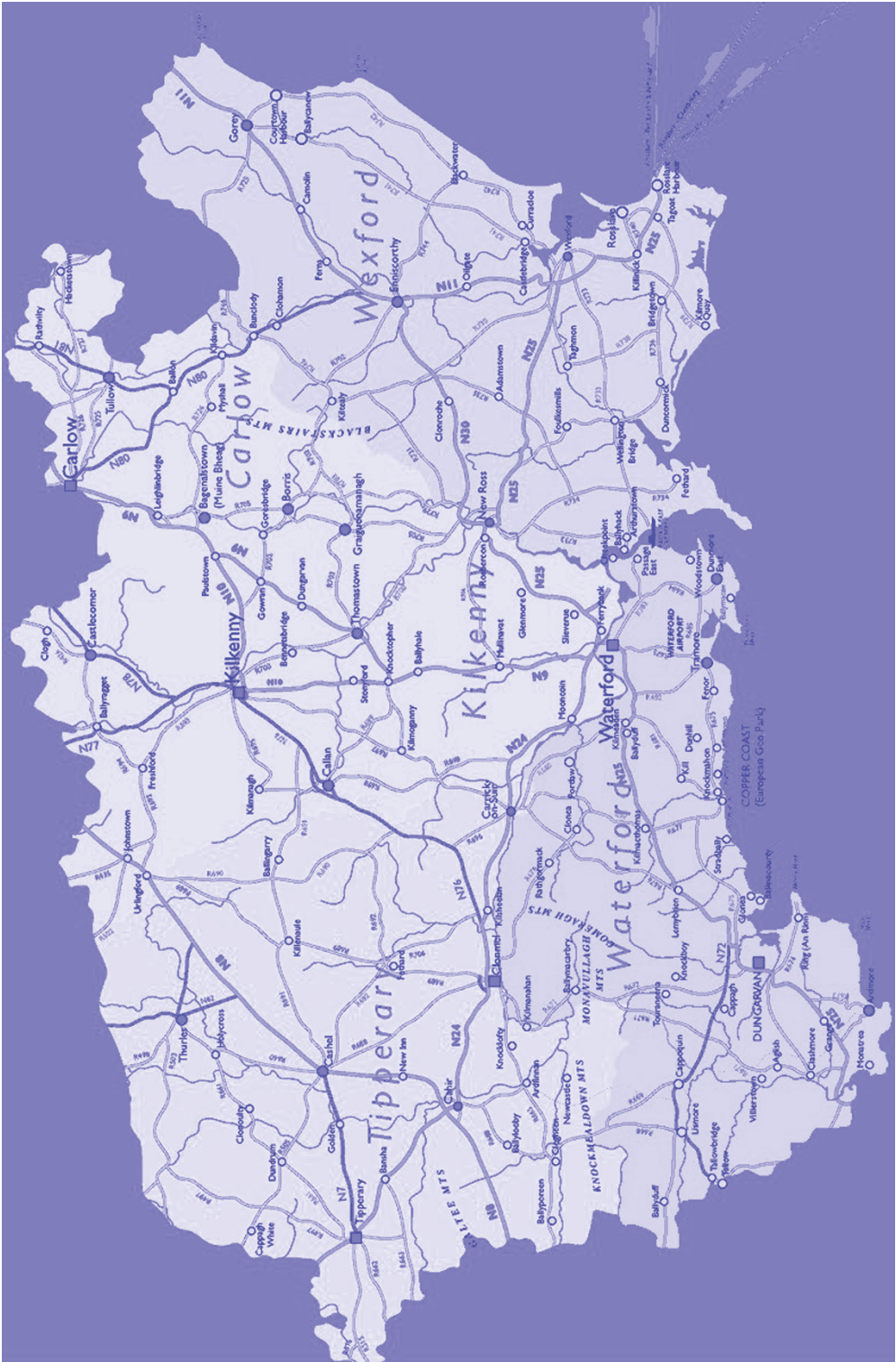
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The document is available on the Food Safety Promotion Board web site (www.safefoodonline.com) and the South Eastern Health Board web site (www.sehb.ie)

MAP OF THE AREA COVERED BY THE SOUTH EAST REGIONAL ZOOZOSES COMMITTEE



FARM VISITS AND ASSOCIATED INFECTION RISK AND CONTROL ISSUES

Introduction

In the sections that follow, for ease of reading, a distinction is not always made between farm families, visitors to private farms, paying guests staying at accommodation on farms and visitors to open farms or pet farms. Visitors of any type may be more prone to acquiring infections on farms for a variety of reasons. Such risks can be minimised.

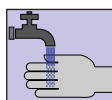
Visits to farms have grown in popularity over recent years; they are considered to be both educational and an enjoyable leisurely pastime. Ill health following a farm visit is uncommon, however it should be recognised that all animals naturally carry a range of organisms, some of which may be transmitted to humans and cause ill health. Such ill health may be potentially very serious. For example *E.Coli* O157 bacteria gives rise to diarrhoea and fever and may go on to cause more severe illnesses such as haemorrhagic colitis (bloody diarrhoea) or haemolytic uraemic syndrome (kidney failure).

There are a number of other organisms that cause diarrhoea and/or vomiting. These are usually mild or temporary. However some of these organisms can also cause serious complications. The purpose of this manual is to help prevent these illnesses through the use of simple practices.

Given the increasing popularity amongst the public for farm visiting, we feel it is important to assist the farming community in the prevention and control of the risk posed by these organisms to the general public, and indeed to the *farming community* itself. It is for this reason that this pack was produced by the South East Zoonoses Committee.

We recommend that appropriate guidance and advice should be readily available for any farm employees/workers or visitors including:

- Farmers/farm owners, their families and employees
- Teachers
- Parents
- Pupils/children



Remember - Hand-washing prevents infection

Farmers/farm owners should take into account the following:

Legal Aspects

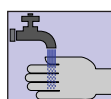
Local Environmental Health Departments are responsible for the food hygiene in farm shops and premises where food can be consumed, for example, a tearoom.

The Health and Safety Authority (HSA) is responsible for the introduction and enforcement of relevant health and safety legislation.

The Senior Area Medical Officer of each Community Care Area, on behalf of the Director of Public Health is responsible for the control of communicable diseases.

The Department of Agriculture and Food is responsible for the control of notifiable animal diseases (e.g. bovine tuberculosis, brucellosis etc.) on the farm. Many of these diseases are of public health importance.

Local Authority Veterinary Officers register and inspect milk production holdings. They are also responsible for the investigation, control and eradication of sheep scab, an infectious disease that is of animal welfare importance.



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The law

The Safety, Health and Welfare at Work (Biological Agents) Regulations, 1994 S.I. No. 146 (Amended by S.I. No. 248 of 1998) requires an employer to:

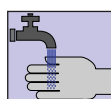
- Assess the risk to employees of exposure to hazardous substances, including micro-organisms (bacteria, viruses etc).
- Take appropriate action to prevent or control that exposure.

These regulations require employers to assess risks to the health and safety of anyone that may be affected by work activities.

Any farmer opening their farm to the public has duties under health and safety law. The Safety, Health and Welfare at Work Acts 1989 and 1993 give employers a general duty of care regarding non-employees who may be affected by work activities.

Risk assessment

Risk assessment means recognising that something is hazardous (i.e. *potentially* harmful), and then assessing the risk (i.e. the *actual* likelihood) of harm occurring. In doing so, employers should be able to identify control measures that will reduce the risk, hopefully to a point of abolishing it, although this may not always be possible. Such measures may include substitution of the hazardous exposure by a less hazardous one, minimising the number of exposed persons, segregation of those at risk of exposure from the source of exposure, and engineering control, e.g. mechanical ventilation. Where these are insufficient the employer may consider providing personal protective equipment (PPE). Additionally, amongst these control measures employers should identify what information and training is required to ensure that those exposed are best equipped to safeguard themselves. For some infectious hazards it may be necessary to consider excluding workers with certain health conditions that put them at greater risk, e.g. those with health problems that impair immunity.



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Further information can be found in the HSA information booklet entitled 'Guidelines on Preparing Your Safety Statement and carrying out Risk Assessments'. This booklet is available from the HSA, 10 Hogan Street, Dublin or <http://www.hsa.ie>.

Risk management

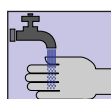
Risk management involves implementing the control measures necessary to reduce or eradicate the risk.

In the case of open/pet farms, parents/teachers should be able to liase with the farmer to discuss visit arrangements in advance to ensure that infection control measures are in place before, during and after the visit.

Pupils/children should be advised on how to behave near animals and told about farm hazards and where they can or cannot safely go.

If everyone involved in the visit is aware of infection hazards and risks and takes necessary steps or actions to reduce or avoid transmission, then the visit should be a pleasant one for all concerned.

Further information can be found in the South Eastern Zoonoses Committee information leaflet entitled 'Vistiors' Guide to Open Farms' (in this pack, or contact The Public Health Department, South Eastern Health Board. Tel. 056-7784100).



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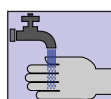
COMMON DISEASES THAT MAN CAN GET FROM ANIMALS (ZOO NOTIC INFECTIONS)

The diseases that follow have been selected by the European Zoonoses Group as those that are most likely to cause illness or have serious consequences if they occur.

The list is not exhaustive but attempts to be comprehensive. Particular attention has been given in choosing the language used. However, there is a glossary provided at the back of this pack for further clarification of the terms used.

Each disease has the following headings:

1. **What it is** – a simple explanation of the organism.
2. **What illness does it cause** – an explanation of the illness caused in infected humans and animals.
3. **Where does it come from** - what are the likeliest sources of the organism and how it can be passed on to humans.
4. **How you can prevent infection** – simple measures that can be taken to reduce the risk of becoming infected.



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BRUCELLOSIS

WHAT IS IT?

Brucellosis is a bacterial disease. It is caused in cattle by *Brucella abortus*, in goats by *Brucella melitensis*, in sheep by *Brucella ovis*, in pigs by *Brucella suis*, and in dogs by *Brucella canis*. In cattle this infection causes abortion and infertility. A Brucellosis Eradication Programme exists in Ireland. All herds have an annual blood test and, in addition, dairy herds have their milk tested throughout the year. Other surveillance measures include: testing cull cows at slaughter plants, testing all animals that abort, testing herds contiguous to reactor herds and testing eligible imported animals. Where active infection is identified a policy of compulsory depopulation of the herd is in place. Ireland's sheep flock is monitored on an annual basis to demonstrate freedom from infection.

WHAT ILLNESS DOES IT CAUSE?

The symptoms of brucellosis are variable and non-specific. Over 90% of patients experience malaise, chills, sweats, fatigue and weakness. The disease may last for several days, months, a year or more when not treated.

WHERE DOES IT COME FROM?

The main reservoirs of infection are cattle, swine, goats and sheep. The disease is transmitted to humans by contact with tissues, blood, urine, vaginal discharges, aborted fetuses and placentas, and unpasteurised milk and dairy products. The routes of entry include ingestion, access through broken skin, inhalation and aerosol contamination of the lips, nose and eyes.

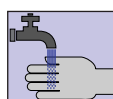
HOW CAN YOU PREVENT INFECTION?

Animal Health Precautions

- **By surveillance of animals.** There is a legal requirement that farmers must notify their local District Veterinary Office if they suspect that an animal has aborted. Immediate isolation of the animal is essential;
- **Any animals found to have the infection should be slaughtered.**

Human Health Precautions

- **Make sure any milk for human consumption is pasteurised;**
- **Farmers must exercise care in handling and disposal of placenta, discharges and foetus from an aborted animal;**
- **Contaminated areas must be disinfected.**



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CAMPYLOBACTER

WHAT IS IT?

Campylobacter are bacteria found in the guts of many animals. This bacteria is the main cause of diarrhoeal illness in the UK and is also common in Ireland. Although Campylobacter can be contracted from contaminated food, we can also become infected by contact with animals and their dung or droppings.

WHAT ILLNESS DOES IT CAUSE?

The symptoms include diarrhoea which maybe severe and abdominal pain that can last for about 7 days. Vomiting is uncommon. People usually make a full recovery.

WHERE DOES IT COME FROM?

Campylobacter live in the guts of many animals and are found in cattle, poultry sheep and pigs. Poultry are the main sources of the bacteria on farms. The animal may show no sign of illness (be asymptomatic). The bacteria are passed out in the animal's dung or droppings and the bacteria may then be transferred to bedding material, enclosures, fences, footpaths etc. If the Campylobacter then get onto people's hands they may be transferred into their mouths and cause illness. Only a few bacteria are needed to cause illness. Campylobacter may cause abortion in sheep flocks.

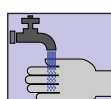
HOW CAN YOU PREVENT INFECTION?

Animal Health Precautions

- **Keep animals with diarrhoea away from other animals.**

Human Health Precautions

- **Keep animals with diarrhoea away from visitors;**
- **Keep enclosures, fencing, pathways etc. as clean as practicable;**
- **Keep ewes that have aborted away from visitors;**
- **Discourage visitors from direct contact with the animals, especially kissing and licking;**
- **Ensure hand-washing facilities are available and are kept clean;**
- **Discourage eating and drinking during the visit or provide a separate area away from the animals with hand-washing facilities;**
- **Encourage and supervise hand washing at the end of the visit/before eating and drinking;**
- **Ensure visitors are properly supervised.**



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CHLAMYDIA PSITTACI

WHAT IS IT?

Chlamydia Psittaci is a parasite that is widespread in animals and can be transmitted to humans. The mode of transmission is by breathing in the agent from dried droppings, secretions and dust from feathers of infected birds.

WHAT ILLNESS DOES IT CAUSE?

This organism in humans is an uncommon cause of severe pneumonia, particularly when acquired from infected birds of the parrot (Psittacine) family.

Chlamydia Psittaci is the most commonly diagnosed infectious cause of abortion in sheep and may also cause abortion in goats and cattle. Since the 1980s exposure to *C. Psittaci* has been reported as a risk to pregnant women assisting at lambing due to the risk of causing miscarriage.

WHERE DOES IT COME FROM?

Psittacine birds are the most frequent source of exposure, but turkey, duck, pigeons and geese have also been recognised as sources of exposure together with sheep and less commonly, goats and cattle.

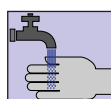
HOW CAN YOU PREVENT INFECTION?

Animal Health Precautions

- If birds are known to be infected they should be destroyed and the area where they were housed thoroughly cleaned and disinfected with phenolic compound;
- Vaccinate sheep used for breeding.

Human Health Precautions

- Ensure that pregnant women are kept away from lambing areas;
- Keep visitors away from animals that have recently aborted or given birth normally;
- Educate the public as to the risk.



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COXIELLA BURNETTI (Q FEVER)

WHAT IS IT?

Q fever is a disease caused by a species of rickettsia known as *Coxiella Burnetti*.

WHAT ILLNESS DOES IT CAUSE?

Only about half of all people infected with *C. Burnetti* show signs of clinical illness. Most acute cases of Q fever begin with sudden onset of one or more of the following: high fevers, severe headache, general tiredness, muscle pains, confusion, sore throat, chills, sweating, dry (non productive) cough, nausea, vomiting, diarrhoea, abdominal pain, and chest pain. Some individuals may develop a more chronic form of the disease. In general however, most patients will recover within several months without any treatment or earlier with appropriate treatment.

WHERE DOES IT COME FROM?

Cattle, sheep and goats are the main sources (primary reservoirs) of *C. Burnetti*. Infection does however occur in a wide variety of other animals and in domesticated pets. *C. Burnetti* does not usually cause clinical disease in these animals, although abortion in sheep has been linked to *C. burnetti* infection. Organisms are excreted in milk, urine, and dung or droppings of infected animals. Most importantly, during the birth process the organisms are shed in high numbers within the birth fluids and afterbirth (amniotic fluids and the placenta). Infection of humans usually occurs by breathing in these organisms from air that contains airborne barnyard dust contaminated by dried placental material, birth fluids, and dung or droppings of infected herd animals. Raw milk from infected cows and goats contains organisms and may be responsible for some cases. Humans may catch the disease if exposed, as few organisms only may be required to cause infection.

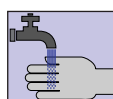
HOW CAN YOU PREVENT INFECTION?

Animal Health Precautions

- **Restrict access to cow, sheep and goat sheds and barns that contain potentially infected animals, i.e. those that have recently given birth or aborted;**
- **Avoid creating dusts when moving bedding contaminated with birth products, urine or dung;**
- **Dispose safely of animal waste, in particular afterbirths and bedding soaked in birth products.**

Human Health Precautions

- **Make sure any milk for human consumption is pasteurised;**
- **Persons at risk (i.e. those with valvular heart disease, women of child bearing age, persons who are immunocompromised) should be advised of the risk of serious illness that may result from Q fever;**
- **Avoid contact with raw milk from infected animals.**



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CRYPTOSPORIDIUM

WHAT IS IT?

Cryptosporidia are organisms (protozoan parasites) that colonise the gut of many animals, including humans. They cause illness in all animals. As with other bacterial gut infections we can become infected by contact with animals and their dung or droppings.

WHAT ILLNESS DOES IT CAUSE?

The symptoms are usually severe watery diarrhoea with vomiting and headache. The symptoms can last for up to 10 days. People who have immune systems which are not working properly (compromised) can suffer very serious illness, as their bodies cannot fight the infection. Healthy individuals usually make a full recovery.

WHERE DOES IT COME FROM?

Cryptosporidia live in the guts of infected animals for a short period and infective cysts (a form of the organism which is very resistant) are passed out in the dung or droppings of these animals. These cysts may then be transferred onto visitors' hands through contact with the animal or its environment. The cysts may then be transferred into people's mouths and illness may result.

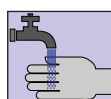
HOW CAN YOU PREVENT INFECTION?

Animal Health Precautions

- **Keep animals with diarrhoea away from other animals.**

Human Health Precautions

- **Keep animals with diarrhoea away from visitors;**
- **Keep enclosures, fencing, pathways etc. as clean as practicable;**
- **Discourage visitors from direct contact with the animals, especially kissing and licking;**
- **Ensure hand-washing facilities are available and are kept clean;**
- **Discourage eating and drinking during the visit or provide a separate area away from the animals with hand-washing facilities;**
- **Encourage and supervise hand washing at the end of the visit/before eating and drinking;**
- **Ensure visitors are properly supervised.**



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E. COLI O157

WHAT IS IT?

E.coli O157 are bacteria that are found in the gut of some animals. Cattle are the main source (principal reservoir) of infection, with other animals including pigs, horses, dogs and birds also being found to carry the bacteria. These bacteria may cause very serious illness in humans. Humans can be infected by contact with animals and their dung or droppings.

WHAT ILLNESS DOES IT CAUSE?

Severe diarrhoea may develop, sometimes with blood in the faeces. At all ages, but especially in children under five and adults over 65, very serious illness often occurs. These complications can result in loss of life or permanent kidney damage.

WHERE DOES IT COME FROM?

E.coli O157 can live in the gut of farm animals without causing illness to the animal. The bacteria are present in the animal dung or droppings and then contaminate bedding material, enclosures, fences, footpaths etc. If the bacteria get onto people's hands they may be transferred into their mouths and illness can result. Only a small number of these bacteria are needed to cause illness in humans.

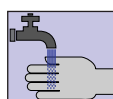
HOW CAN YOU PREVENT INFECTION?

Animal Health Precautions

- Keep animals with diarrhoea away from other animals;
- Keep enclosures, fencing, pathways etc. as clean as practicable.

Human Health Precautions

- Keep animals with diarrhoea away from visitors;
- Make sure any milk for human consumption is pasteurised;
- Discourage visitors from direct contact with the animals, especially kissing and licking;
- Ensure hand-washing facilities are available and are kept clean;
- Discourage eating and drinking during the visit or provide a separate area away from the animals with hand-washing facilities;
- Encourage and supervise hand washing at the end of the visit/before eating and drinking;
- Ensure visitors are properly supervised;
- Work clothes should be left at the workplace for cleaning so that families of those working on the farm cannot contract the disease through contact with soiled clothes.



Remember - Hand-washing prevents infection

LEPTOSPIROSIS

WHAT IS LEPTOSPIROSIS?

Leptospirosis is an acute bacterial infection that affects humans and a wide range of animals. The causative organisms are known as leptospires. Farmers are currently the major occupational risk group.

WHAT ILLNESS DOES IT CAUSE?

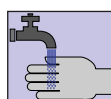
Human infection can range from a mild influenza-like illness to meningitis or kidney failure. In those cases where jaundice occurs, the illness is known as Weil's disease (caused by *Leptospira icterhaemorrhagiae*). Of the few cases who develop severe Leptospirosis with jaundice and kidney failure, 10-15% may die.

WHERE DOES IT COME FROM?

The natural host (reservoirs) for leptospires are wild animals, which recover from the infection but continue to excrete organisms in their urine. The most common leptospires are *Leptospira hardjo bovis* (the milder form), which is found in cattle, and *Leptospira icterhaemorrhagiae* (the more severe form), which is associated with rats.

Leptospires can survive in moist conditions for many days or weeks. Detergents and disinfectants readily kill Leptospires.

Man becomes infected through direct or indirect contact with infected animal urine, contact with contaminated milk, or less frequently, from animal bites, handling infected animal tissues or swallowing contaminated food or water. The bacteria can enter through skin abrasions or via the eyes, nose and mouth. Research carried out by the Veterinary College, UCD and Teagasc shows that 79% of non-vaccinated Irish dairy herds are infected by leptospires. More than 60% of herds of cattle in the UK are thought to be infected.



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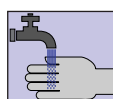
HOW CAN YOU PREVENT INFECTION?

Animal Health Precautions

- Segregate infected domestic animals;
- Recognise potentially contaminated waters and soil and drain such waters when possible;
- Check the status of your cattle by asking your vet to do a blood test on a sample of the herd. If evidence of infection is present then antibiotic treatment and vaccination should be considered;
- Reduce the risk of infection in your herd by checking the disease status of shared or hired bulls; allowing a two-month gap before grazing cattle on land last grazed by sheep; providing clean non-infected, drinking water; not mixing normally separated stock; and avoiding the use of rented keep unless other animals there are disease free.

Human Health Precautions

- Discourage visitors from swimming in potentially infected waters;
- Prevent contamination of human living, working and recreational areas by urine or unpasteurised milk of infected animals;
- Control rodents in human habitations, especially rural and recreational;
- Ensure hand-washing facilities are available and are kept clean;
- Discourage eating and drinking during the visit or provide a separate area away from the animals with hand-washing facilities;
- Encourage and supervise hand-washing at the end of the visit;
- Avoid being splashed with or inhaling aerosols from urine or unpasteurised milk when you work with cattle. If you are developing a new parlour, consider having a wide pit in a neighbouring parlour, which allows a low-splash zone in the centre, or floor grids behind cows in parlours to reduce urine splash;
- Consider using PPE – for example, during milking wear a water-resistant garment which covers the body and arms; when assisting in calving wear a parturition gown and obstetric gauntlets; and when handling foetal, placental or other contaminated material wear obstetric gauntlets. Thin gloves that may rip are not suitable.



Remember - Hand-washing prevents infection

ORF VIRUS

WHAT IS IT?

Orf is caused by a virus transmissible to humans by contact with infected sheep and goats, and occasionally wild ungulates (deer, reindeer). It is a common infection among shepherds, veterinarians and abattoir workers.

WHAT ILLNESS DOES IT CAUSE?

The presentation in man is usually as a single skin lesion located on the hands, arms or face. There may however be several lesions each measuring up to 3 cms (approx. 1 inch) in diameter. The lesions may persist for weeks and can be itchy and painful. With secondary bacterial infection, lesions may leak pus.

WHERE DOES IT COME FROM?

Humans contract the disease by direct contact with infected animals or contact with contaminated objects such as fences or feeding troughs.

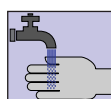
HOW CAN YOU PREVENT INFECTION?

Animal Health Precautions

- **Ensure general cleanliness of animal housing areas;**
- **Consult your vet on how to control the disease in your flock;**
- **Consider using a live vaccine for flocks with an Orf problem. In Ireland, most flocks are vaccinated.**

Human Health Precautions

- **Discourage visitors from direct contact with animals;**
- **Ensure hand-washing facilities are available and are kept clean;**
- **Encourage and supervise hand-washing at the end of the visit;**
- **Wash any known exposed area with soap and water.**



Remember - Hand-washing prevents infection

RINGWORM

WHAT IS IT?

Ringworm is caused by a fungal infection of which there are a number of species. It is probably the most common infection passed from animal to man.

WHAT ILLNESS DOES IT CAUSE?

The fungus causes a skin disease in both humans and animals that appear as a flat, spreading, ring shaped lesion that generally responds well to treatment or gradually disappears with time.

The fungal spores enter the skin through cuts and abrasions.

WHERE DOES IT COME FROM?

Ringworm is thought to be fairly common in farm animal species, particularly cattle, but may also occur in horses, cats and dogs. The fungal spores may survive in the environment, on gateposts, fences and on farm buildings for long periods. Cats are an important domestic animal host as lesions are difficult to see and infected animals have the potential to infect other pets, the household members and household environment.

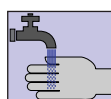
HOW CAN YOU PREVENT INFECTION?

Animal Health Precautions

- Prevent disease in animals by maintaining high standards of cleanliness in buildings, in particular calf pens, cattle crushes etc;
- Treat any infected cattle in accordance with advice from your vet.

Human Health Precautions

- Discourage visitors from direct contact with the animals, especially kissing and licking;
- Clinical (animal) cases should be isolated and visitors not allowed to access them;
- Ensure hand-washing facilities are available and are kept clean;
- Discourage eating and drinking during the visit or provide a separate area away from the animals with hand-washing facilities;
- Encourage and supervise hand washing at the end of the visit/before eating and drinking.



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SALMONELLA

WHAT IS IT?

Salmonellae are bacteria found in the guts of many animals. The bacteria can cause illness in humans. Although eating contaminated food most commonly spreads salmonella, we can be infected by contact with animals and their dung or droppings.

WHAT ILLNESS DOES IT CAUSE?

The symptoms are usually fever, headache, vomiting and severe diarrhoea. The symptoms commonly last for about seven days. People usually make a full recovery. However, the very young and old may become seriously ill and need hospital treatment and in extreme cases may die.

WHERE DOES IT COME FROM?

Salmonellae live in the guts of many animals, including farm animals such as cattle, horses, pigs and poultry. The animal may show no signs of illness but can pass on the infection to other animals and humans. The bacteria are passed out in the animal dung or droppings and the bacteria may then contaminate bedding material, enclosures, fences, footpaths etc. If the salmonella bacteria get onto people's hands they may be transferred into their mouths, for example when eating, and illness can result.

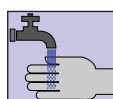
HOW CAN YOU PREVENT INFECTION?

Animal Health Precautions

- Keep animals with diarrhoea away from other animals;
- Keep enclosures, fencing, pathways etc. as clean as practicable.

Human Health Precautions

- Keep animals with diarrhoea away from visitors;
- Keep animals that have given birth or aborted recently away from visitors;
- Make sure any milk for human consumption is pasteurised;
- Discourage visitors from direct contact with the animals, especially kissing and licking;
- Visitors to equestrian centres and stud farms should beware of contamination of clothes and shoes by horse faecal material;
- Ensure hand-washing facilities are available and are kept clean;
- Discourage eating and drinking during the visit or provide a separate area away from the animals with hand-washing facilities;
- Encourage and supervise hand washing at the end of the visit/before eating and drinking;
- Ensure visitors are properly supervised.



Remember - Hand-washing prevents infection

STREPTOCOCCUS SUIS

WHAT IS IT?

Streptococcus Suis is a bacterial infection that is rare in humans. Infection in human is almost exclusively due to *S. Suis* type 2.

WHAT ILLNESS DOES IT CAUSE?

Usually the infection goes unnoticed (a subclinical infection), but may be a severe and serious disease with meningitis (inflammation of the lining of the brain) and septicaemia (blood poisoning), especially if the individual is immunocompromised or has had their spleen removed.

WHERE DOES IT COME FROM?

S. suis type 2, which is the type that causes most infections in humans, is mainly associated with diseases in pigs. In pigs it is a common cause of meningitis, inflammation of multiple joints (polyarthritis), septicaemia and pneumonia.

Transmission to humans is thought to be via broken skin through which the organism gains entry. Some think the bacteria may also be inhaled.

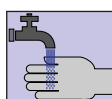
HOW CAN YOU PREVENT INFECTION IN HUMANS?

Animal Health Precautions

- Ensure appropriate treatment of infected animals.

Human Health Precautions

- Ensure hand-washing facilities are available and are kept clean;
- It is important that anyone who has had their spleen removed should be cautioned about contact with pigs and advised to seek medical attention promptly if they develop an illness with a high temperature (febrile illness).
- Farm workers who have had their spleen removed should contact their GP to seek advice about appropriate protection against infection (e.g. antibiotic cover)
- In the case of visitors, discourage eating and drinking during the visit or provide a separate area away from the animals with hand-washing facilities;
- Encourage and supervise hand washing at the end of the visit/before eating and drinking.



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TETANUS

WHAT IS IT?

Tetanus is an acute illness caused by the toxin of the bacterium, *Clostridium tetani*. In humans it is preventable by vaccination.

WHAT ILLNESS DOES IT CAUSE?

Tetanus is characterised by generalized rigidity and convulsive spasms of muscles. The muscle stiffness usually involves the jaw (lockjaw) and neck and then becomes generalized. The case-fatality rate ranges from 10% to 90%, and is highest in infants and the elderly.

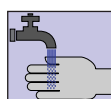
WHERE DOES IT COME FROM?

Clostridium tetani spores are ubiquitous. They are widely distributed in the soil and in the intestines and faeces of horses, sheep, cattle, dogs, cats, rats, guinea pigs and chickens. Manure treated soil may have large number of spores. The spores are resistant to heat and to common antiseptics. The spores usually enter the body through a puncture wound contaminated with soil, dust or animal or human faeces; through lacerations, burns, or even trivial or unnoticed wounds. Under conditions of low oxygen, the spores germinate and produce toxins, which circulate through the blood and lymph systems. The symptoms of illness are caused by these toxins interfering with the nervous system.

HOW CAN YOU PREVENT INFECTION IN HUMANS?

Human Health Precautions

- Tetanus vaccination is part of the primary vaccination schedule for babies in Ireland (2,4,6 months), with a booster dose at school entry and another at 10-14 years i.e. total of 5 doses. Active immunity persists for at least 10 years after full immunization;
- In the presence of a wound, seek medical attention. Depending on the nature of that wound, the person's age and history of immunisation, additional doses of the vaccine may be needed, as may specific anti-tetanus immunoglobulin.
- Recovery from tetanus doesn't guarantee immunity. Primary immunization is required after recovery.



Remember - Hand-washing prevents infection

TOXOCARIASIS

WHAT IS IT?

Toxocariasis is a chronic infection causing mild disease. It is caused by roundworms (nematodes) of dogs (*Toxocara canis*) and cats (*Toxocara cati*) that can be passed on to man. Dogs, more specifically puppies under one year old, are the main source (reservoir) of infection. Puppies are infected via the placenta and the mother's milk leading to the passing of eggs in their stools by the time they are three weeks old. Older animals develop immunity and carry only mild infections. A recent survey conducted by Cork County Council found *Toxocara canis* ova in samples from 3.6% of owned dogs and 25% of stray dogs surveyed. Humans may acquire the infection from soil contaminated with eggs, by direct ingestion, from unwashed hands or by consumption of contaminated vegetables.

WHAT ILLNESS DOES IT CAUSE?

Symptoms in humans are due to the migration of larval forms of the parasite into various tissues and include pneumonitis (inflammation of the lung tissue due to an immune reaction to the larvae), chronic abdominal pain and skin rash. Larvae may also enter the eye and cause blindness.

WHERE DOES IT COME FROM?

Eggs are shed in the faeces of infected dogs and cats; up to 30% of soil samples from certain parks in the USA and UK contained eggs. Figures for Ireland are not available. The eggs require 1-3 weeks' incubation to become infective, but remain alive and infective in soil for many months.

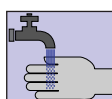
HOW CAN YOU PREVENT INFECTION?

Animal Health Precautions

- Deworm dogs and cats regularly.

Human Health Precautions

- Ensure hand-washing facilities are available and are kept clean;
- Discourage eating and drinking during the visit or provide a separate area away from the animals with hand-washing facilities;
- Encourage and supervise hand washing at the end of the visit/before eating and drinking;
- Prevent contamination of soil by dog and cat dung or droppings in areas immediately adjacent to houses and children's play areas;
- Remove dog and cat faeces from public areas specifically children's play areas.



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TOXOPLASMA

WHAT IS IT?

Toxoplasma is a small parasite. The main species responsible for human illness is *Toxoplasma gondii*.

WHAT ILLNESS DOES IT CAUSE?

The illness caused is toxoplasmosis. Toxoplasmosis is a common infection in both animals and man throughout the world. In humans the infection is usually asymptomatic (i.e. no symptoms are present) or has only mild symptoms such as aches and pains, a slightly raised temperature and/or 'swollen glands'. However infection in immunocompromised individuals (people whose immune system is not working properly) i.e. those on oral steroid treatment (possibly after treatment for cancer or after an organ transplant) or those with HIV infection, can be more severe resulting in infection of the brain, the heart, the lungs, the eye or in more severe cases death.

Another risk group is pregnant women. Infection in the unborn child is called congenital toxoplasmosis. This is the result of an acute, usually asymptomatic infection acquired by the mother in pregnancy and passed on to the baby in the womb. The result of this infection can be a miscarriage, or brain or/and eye damage in the newborn child.

WHERE DOES IT COME FROM?

Although commonly found in many animals, it is in the cat gut that the male and female parasites come together to produce one of the infective forms. If a suitable host such as a human swallows these then infection may follow. Sheep that are aborting, or lambing may also present a hazard.

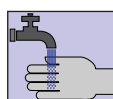
HOW CAN YOU PREVENT INFECTION?

Animal Health Precautions

- **Vaccinate sheep used for breeding.**

Human Health Precautions

- **Ensure hand-washing facilities are available and are kept clean;**
- **In case of visitors, discourage eating and drinking during the visit or provide a separate area away from the animals with hand-washing facilities;**
- **Encourage and supervise hand washing at the end of the visit/before eating and drinking. Handling raw meat or having contact with soil possibly contaminated with cat faeces are the main risks;**
- **Dispose of cat faeces and litter daily, remembering to wash hands afterwards;**
- **Control stray cats and prevent them from gaining access to sandboxes and sandpits used by children for play. Sandboxes should be covered when not in use;**
- **Ensure that pregnant women and immunocompromised individuals are aware of the risks;**
- **Discourage visitors from direct contact with animals, especially kissing and licking.**



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TUBERCULOSIS

WHAT IS IT?

Tuberculosis is an infection caused by various species of bacteria known as Mycobacterium. Most species of Mycobacterium generally cause illness in one group of animals only (host specific), for example *M. tuberculosis* causes TB in humans but only rarely in other animals. *M. bovis* (bovine TB) is the type that principally affects cattle, but it is able to cause disease in other animals, for example badgers, and in the past it was a major source of disease in humans.

WHAT ILLNESS DOES IT CAUSE?

The tuberculin mycobacterium causes small cheese-like nodules (tubercles) to spread in healthy tissue. A variety of tissues can be infected with the end result being a weakening of the patient or in the worst case death if not treated effectively. When the mycobacterium invades lung tissue and causes local damage (open cavity) the opportunity for airborne spread can occur when the patient coughs.

WHERE DOES IT COME FROM?

Prior to pasteurisation of milk, *M. bovis* (the form dominant in cattle) spread easily to humans and was a major source of tuberculosis in humans. Airborne infection for this type of tuberculosis was and still is rare or non-existent. A Bovine Eradication Programme is in place in Ireland. This comprises of an annual test for all herds. Where tuberculosis is identified, there is compulsory slaughter of all animals deemed positive. Additional testing is then carried out, both in the positive herd and in contiguous herds. Other measures in place include meat inspection at point of slaughter, and a wildlife programme looking at tuberculosis levels in badgers and deer. To reduce the public health risk, all milk sold for human consumption is pasteurised. Nowadays most tuberculosis in humans in Ireland is caused by *M. tuberculosis* with *M. bovis* accounting for less than 1% of all TB cases in humans where TB has been isolated.

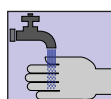
HOW CAN YOU PREVENT INFECTION?

Animal Health Precautions

- **Make sure your herd records on TB testing are up to date.**

Human Health Precautions

- **Make sure any milk for human consumption is pasteurised.**



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CONCLUSION

The following points are a summary, outlining how you can help prevent the majority of zoonotic illnesses by taking simple precautions. These include: -

The Farm Environment

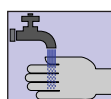
- **Keep enclosures, fencing, pathways etc. as clean as practicable;**
- **Ensure hand-washing facilities are available and are kept clean;**
- **Prevent contamination of soil by dog and cat faeces or droppings in areas immediately adjacent to houses and children's play areas;**
- **Remove dog and cat faeces from public areas specifically children's play areas;**
- **Control rodents in human habitations, especially rural and recreational.**

Animal Health

- **Keep sick animals, especially those with diarrhoea away from other animals;**
- **Keep good written records of routine preventative measures e.g. vaccination, blood tests, TB tests, etc so that the health status of your animals can be easily checked;**
- **Deworm dogs and cats regularly;**
- **Follow good husbandry practices including:**
 - **Ensure good standards of hygiene in young-stock housing;**
 - **Avoid contaminating animal drinking water with dung;**
 - **Keep animals especially young, as stress-free as possible – particularly important on farms that open to the public;**
 - **Have regular stock health checks by a vet.**

Visitors to the Farm

- **Keep sick animals, especially those with diarrhoea away from visitors;**
- **Discourage visitors from direct contact with the animals, especially kissing and licking;**
- **Keep animals giving birth, whether premature or normal, away from visitors and other animals and restrict access to such animals for 2-3 weeks afterwards;**



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- In the case of visitors, discourage eating and drinking during the visit or provide a separate area away from the animals with hand-washing facilities;
- Encourage and supervise hand washing at the end of the visit/before eating and drinking;
- Make sure any milk for human consumption is pasteurised;
- Discourage visitors from swimming in water that is potentially infected with leptospira.

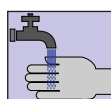
General Measures

Follow safe working practices by considering the following:

- Avoid or minimise the use of equipment or tools likely to cause cuts, abrasions or puncture wounds, and use safe working practices and PPE where appropriate;
- Do not use mouth-to-mouth resuscitation on new-born animals – use traditional husbandry methods of resuscitation such as massaging or clearing nostrils with straw;

Personal hygiene: make sure that you and your staff:

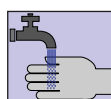
- Wash cuts and grazes immediately with soap and running water,
- Cover new and existing wounds with a waterproof dressing before beginning work,
- Wash hands and arms before eating, drinking or smoking after having contact with animals, or working in areas with animal dung or droppings;
- Work clothes should be left at the workplace for cleaning so that families of those working on the farm cannot contract the disease through contact with soiled clothes;
- Anyone who has had their spleen removed should be cautioned about contact with animals and advised to seek medical attention promptly if they develop a febrile illness.



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SPECIAL PRECAUTIONS FOR PREGNANT WOMEN

Pregnant women should stay away from areas where animals have given birth or are giving birth.



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**When in doubt on issues regarding animal health contact your veterinary surgeon.
He/she can advise you on zoonotic disease control and prevention in your animals.**

When concerned about particular signs and symptoms in yourself or your child, contact your General Practitioner.

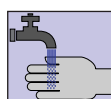
**When in doubt on issues regarding risks to human health please contact your local
Community Care Office.**

Carlow/Kilkenny Community Care,
James Green,
Kilkenny.
056-7784600

Waterford Community Care,
Cork Road,
Waterford.
051-842800

Wexford Community Care,
Grogans Road,
Wexford.
053-23522

South Tipperary Community Care,
Western Road,
Clonmel,
Co.Tipperary.
052-77000



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EXTRA ADVICE FOR PET FARMS

Hand washing facilities

All farms, but especially those to which visitors are admitted should have hand-washing facilities. Facilities can be individual basins, or troughs or pipes with a number of running water outlets. At open farms, washing facilities must be easily accessible to all age groups and people with disabilities. At those farms where visitors are allowed to pet the animals, facilities should be placed immediately adjacent to the exits from petting areas. Where eating areas are provided, the hand washing basins should be placed at all entrances.

Hand washing facilities should:

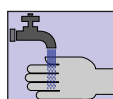
- be accessible to all visitors, i.e. at the correct height for children and adults, or should have raised standing areas for children;
- have running water, preferably warm with temperature control to prevent accidental scalding. It is easier to create soap lather with warm water and people are much more likely to wash thoroughly when warm water is available;
- have liquid soap. Anti-bacterial soaps are not necessary;
- have single use towels. Hot-air hand dryers can be used, but queues at these may discourage visitors from washing their hands. Reusable hand towels are not suitable;
- be properly maintained and cleaned at least daily. It is important to remember that contact with contaminated tap faucets can lead to the transfer of bacteria from the tap to the user. Paper towels should be replaced as necessary;
- should have signs giving full instructions on correct hand washing procedures (see poster pp 38).

Free roaming animals

- Free roaming animals should not be allowed access to outdoor eating areas, play areas, sand pits and toy area.
- It is important that animal dung from these animals be removed from walkways and green areas.

Sand pits, play area and toys

- Play areas and sand pits should be fenced off or animals should be excluded from these areas.
- The sand used in sand pits should be washed and changed regularly.
- Toys such as footballs, model tractors, buckets and spades, etc., should be cleaned and disinfected regularly. Toys must be stored appropriately so as to prevent contamination by vermin and pests. Free roaming animals should be kept away from toys.



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INFORMATION LEAFLET AND POSTERS

The “Visitors’ Guide to Open Farms” leaflet on the next page was produced by the South East Zoonoses Committee. It can be obtained free of charge from the Public Health Department, South Eastern Health Board. Telephone: 056-7784100.

The posters which follow are examples of signing that can be used. These can be freely copied.

Further reading

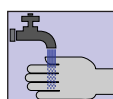
“Code of Practice on Preventing Accidents to Young Children and Young Persons in Agriculture” Health and Safety Authority, 10 Hogan Place, Dublin 2. <http://www.hsa.ie>

“Children and Safety on Farms” Health and Safety Authority, 10 Hogan Place, Dublin 2. <http://www.hsa.ie>

“Farm Safety Handbook” Health and Safety Authority, 10 Hogan Place, Dublin 2. <http://www.hsa.ie>

“Common Zoonoses in Agriculture” Health and Safety Executive, U.K. <http://www.hse.gov.uk>

“Avoiding Ill Health on Open Farms”. Health and Safety Executive, U.K. <http://www.hse.gov.uk>



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South
Eastern
Health
Board



This leaflet is published by the
South Eastern Regional Zoonosis Committee
(including the South Eastern Health Board, the Dept. of Agriculture &
Food, the Dept. of Communications, Marine & Natural Resources, the
City Council of Waterford and the County Councils of Carlow,
Wexford, Kilkenny, Waterford and South Tipperary),
in conjunction with
Pet and Open Farm owners in the South East.



Visitors' Guide to Open Farms



Visits to farms have grown in popularity over recent years. Farm visits provide both education and enjoyment and are undertaken by families and by organised groups. Such visits give children the chance to see where food comes from and to have contact with animals they otherwise might not see. There are many potential hazards (as with domestic pets) on all open farms, including pet - and animal - farms. The following is a list of precautions that should be taken:-

Visitors Guidelines:

1. OBSERVE FARM NOTICES.
2. Do not eat or drink unpasteurised produce (such as milk or cheese). Do not taste animal feedstuffs.
3. Ensure that all cuts/broken skin are covered with waterproof plasters.
4. When handling animals, make sure they do not come in contact with your face.
5. Eat only in a designated eating area.
6. Before eating and drinking and after contact with animals or animal feed, wash and dry your hands thoroughly.
7. Do not eat anything that may have fallen on the ground.
8. Children should be discouraged from putting fingers in their own mouths or in the mouths of animals.
9. Do not touch manure or slurry, as it may be a source of infection.
10. Feeding of animals should be supervised.
11. Pregnant women should not handle sheep or new-born lambs.
12. Visitors should keep away from farm equipment and machinery.
13. Before departure, wash hands thoroughly and ensure footwear is free from animal dung.

IN THE INTEREST OF PERSONAL SAFETY



ALWAYS
WASH YOUR HANDS
BEFORE LEAVING THE FARM

**IN THE INTEREST
OF PERSONAL SAFETY**

**DO NOT
CONSUME FOOD
ON THE FARM TRAIL**

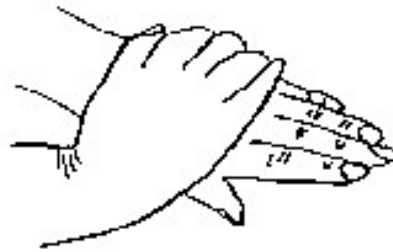


**ALWAYS
WASH YOUR HANDS BEFORE
EATING**

HAND WASHING POSTER



Palm to Palm



Right palm over back of left hand & vice versa



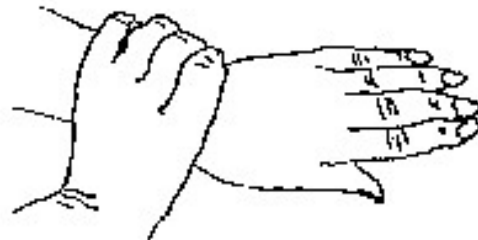
Interlace fingers of right hand over left & vice versa



Rotational rubbing, backwards & forwards with clasped fingers of right hand in left palm. Change hands & repeat.



Rotational rubbing of right thumb clasped in left palm, change hands & repeat



Grasp left wrist with right and work cleanser into skin, then vice versa

Rub hands and wrists for 30 seconds, then rinse and dry thoroughly.

SELF AUDIT TOOL

The following audit tool was used successfully when seven open-to-the-public farms were visited, in the UK in 2000.

The findings of these visits were compiled into a report, which concluded that:

“The first visit to these seven open-to-the-public farms highlighted several areas that need improvements. In many cases, small changes such as better information about hygienic measures to follow and more signs would improve the situation. Other times a better supervision and monitoring of the premises will be needed. In a few cases, major structural changes are required including re-fencing and re-laying of pathways.”

We hope this audit tool provides an insight into the avoidable risks to watch out for and general measures that can be taken to avoid zoonotic infections on your farm.

The aim of this audit is to:

- Identify the risk of infection to the general public who visit the farm
- Assist the farmer in creating a safe environment
- To offer support in the form of advice to the farmer on aspects of infection control.
- To assist the farmer protect the health and safety of staff and visitors.

OPEN TO THE PUBLIC FARM SELF AUDIT TOOL

Adapted from the Audit Tool produced
by Humberside Health Protection Agency, U.K.

Name of Farm:

Address:

Contact number :

Owner:

Give a brief description of farm.

CRITERIA	METHOD	Y	N	N/a
General	Ask and observe			
The owner /manager has a copy of the farm Safety Statement for the farm (as per 1989 legislation).				
A one-way system operates through the farm.				
All children are supervised. There are signs advising that eating is forbidden in animal areas.				
'No smoking' signs are visible and appropriately located.				
There are facilities for hand washing prior to eating.				
There are signs advising that hands must be effectively washed before eating and after changing footwear.				
There are facilities for cleaning foot wear.				

CATERING	METHOD	Y	N	N/a
The areas designated for food consumption are away from the animals.				
Food is prepared on site.				
Visitors do not pass through the eating areas.				
Food is consumed inside.				
Food is consumed outside.				
Pets do not frequent the eating areas.				
There are no fish pools in the eating area.				
Fixtures and fittings in the café are visibly clean.				
Visitors cannot access the café from the animal areas.				
Floors are visibly clean.				
Floors are regularly cleaned and disinfected.				

WASTE MANAGEMENT	METHOD	Y	N	N/a
There is not a build up of rubbish in waste bins.				
The waste bins have lids.				
Manure is collected regularly.				
Manure is held away from visitor areas and well away places where food is consumed.				

TOILETS	METHOD	Y	N	N/a
There are male and female toilets.				
They are not malodorous.				
They are visibly clean and free from faecal contamination.				
There is a supply of hot and cold running water.				
There is a supply of soap(liquid).				
There are foot operated waste bins.				
The toilets are cleaned regularly.				
There is a supply of toilet paper in each cubical.				
There are signs depicting effective hand washing.				

Animal areas and location:	Faecal contamination of contact sites	H	M	L
Animal area:				
Animal area:				
Animal area				
Animal area				
Animal area				

H = High Risk, visitor is likely to come in contact with faecal matter in this area

M= Medium Risk, visitor may come in contact with faecal matter in this area

L= Low Risk, visitor unlikely to come in contact with faecal matter in this area

Other	Contamination with animal saliva with contact sites.	H	M	L
Animal areas:				
Animal area:				
Animal area:				
Animal area:				
Animal area:				
Animal area:				
Animal area:				
Other:				

Comments:

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SOME USEFUL CONTACTS

Carlow/Kilkenny:

Senior Area Medical Officer,
Carlow/Kilkenny Community Care,
James Green,
Kilkenny
056-7752208

Local Authority Veterinary Officer,
Carlow County Council,
The Court House,
Barrack Street,
Carlow
059-9151213

Superintending Veterinary Inspector,
Dept. Of Agriculture and Food,
Government Offices,
Hebron Road,
Kilkenny.
056-7772400

Superintending Veterinary Inspector,
District Veterinary Office,
Athy Road,
Carlow.
059-9170022

Principal Environmental Health Officer,
Carlow/Kilkenny Community Care,
James Green,
Kilkenny
056-7752208

Local Authority Veterinary Officer,
Kilkenny County Council,
County Hall,
John Street,
Kilkenny
056-7752662

Superintending Veterinary Inspector,
District Veterinary Office,
Government Buildings,
Hebron Road,
Kilkenny.
056-7772400

Director of Public Health,
Regional Public Health Department,
South Eastern Health Board,
Head Office,
Lacken,
Kilkenny
056-7784100

Tipperary South Riding

Senior Area Medical Officer,
South Tipperary Community Care,
Western Road,
Clonmel,
Co. Tipperary.
052-77000

Local Authority Veterinary Officer,
Tipperary S.R. County Council,
County Hall,
Clonmel,
Co. Tipperary.
052-25399

Principal Environmental Health Officer,
South Tipperary Community Care,
Western Road,
Clonmel,
Co. Tipperary.
052-77000

Superintending Veterinary Inspector,
District Veterinary Office,
St Michael's Road,
Cashel,
Co. Tipperary.
062-80100

Waterford

Senior Area Medical Officer,
Waterford Community Care,
Cork Road,
Waterford.
051-842800

Local Authority Veterinary Officer,
Waterford County Council,
Civic Offices,
Dungarvan,
Co. Waterford.
058-22056

Superintending Veterinary Inspector,
District Veterinary Office,
Government Buildings,
The Glen,
Waterford.
051-301700

Wexford

Senior Area Medical Officer,
Wexford Community Care,
Grogan's Road,
Wexford.
053-23522

Local Authority Veterinary Officer,
Wexford County Council,
County Hall,
Spawell Road,
Wexford.
053-42211

Principal Environmental Health Officer,
Waterford Community Care,
Cork Road,
Waterford.
051-842800

Local Authority Veterinary Officer,
Waterford Corporation,
The Mall,
Waterford.
051-309900

Principal Environmental Health Officer,
Wexford Community Care,
Grogan's Road,
Wexford.
053-23522

Superintending Veterinary Inspector,
District Veterinary Office,
Vinegar Hill Lane,
Templeshannon,
Enniscorthy,
Co. Wexford.
054-42100

Useful addresses and websites

Food Safety Promotion Board
Safefood Headquarters,
7 Eastgate Avenue,
Eastgate,
Little Island,
Co. Cork
021 230 4100
<http://www.safefoodonline.com>

Health and Safety Authority
10 Hogan Place
Dublin 2
01 614 7000
<http://www.hsa.ie>

The Irish Farmers Association,
Irish Farm Centre,
Bluebell,
Dublin 12.
01 4500266
<http://www.ifa.ie>

Irish Countrywomen's Association
<http://www.ica.ie>

Veterinary Ireland
www.iol.ie/~ivahq

Food Safety Authority of Ireland
Abbey Court
Lower Abbey Street
Dublin 1
01 817 1300
<http://www.fsai.ie>

Teagasc Head Office
19 Sandymount Avenue,
Ballsbridge,
Dublin 4.
01 6376000
<http://www.teagasc.ie>

Irish Creamery Milk Suppliers Association,
<http://www.icmsa.ie>

Macra Na Feirme
<http://www.macra.ie>

National Disease Surveillance Centre
01 8765300
www.ndsc.ie

GLOSSARY

Acute infection –	an infection of rapid onset usually with severe symptoms and of brief duration.
Bacteria -	a group of micro-organisms which are considered more primitive than animal or plant cells. They are capable of reproducing by division of themselves.
Chronic infection –	describing an infection of long duration often involving very slow changes.
Immunocompromised -	a person whose immune system isn't working properly, this can be due to them taking medication, for example steroids, or due to an illness, for example HIV.
Meningitis -	Inflammation of the lining of the brain. Often presents as a severe headache, temperature, dislike of bright lights and sound, stiffness of the neck and vomiting. Can be due to either infection with bacteria or viruses.
Parasite -	an organism that lives in or on another living organism.
PPE -	personal protective equipment
Protozoa -	a group of single-celled animals.
Septicaemia -	blood poisoning, presence of bacteria and their poisons in the bloodstream causing illness.
Virus -	a minute particle that is capable of replication only when in a living cell. Antibiotics are ineffective against them.
Zoonosis -	an infectious disease of animals that can be transmitted to humans.

South East Zoonoses Committee

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