Biosecurity Guidance

A good practice guide to minimising the risk of moving non-native species, pests and diseases

Date of issue: 1 December 2017

Table of Contents

1. Purpose

To provide advice of the biosecurity measures to follow to avoid the spread of invasive non-native species (INNS), plant and animal pests and diseases.

2. Who is this guidance for?

Natural England staff who visit or access land holdings, water bodies or any other premises during the course of their work should follow the biosecurity measures set out below.

Contractors and volunteers who carry out work or official visits for Natural England are required to follow the same biosecurity procedures.

The guidance does not cover public visitors to sites such Natural England owned National Nature Reserves.

3. Background

It is important that we do not unwittingly spread any harmful plants, animals and pathogens between land holdings, water bodies or any other sites as part of our normal day-to-day work. The economic impact and the environmental consequences of invasive non-native species and diseases such as Foot and Mouth and Phytophthera clearly demonstrate the importance of trying to prevent the spread of these.

It is not always obvious to see the signs of possible pests and diseases whilst on site visits. For example, many diseases are easily spread via spores that are not always evident. Because of this it is important to be proactive in helping to stop the spread.

Natural England has adopted a '*keep it clean'* policy that seeks to reduce significantly the probability of transferring harmful plants, animals and pathogens between sites by minimising the transfer of water, soil and vegetation on footwear, clothing, equipment and vehicles.

Epidemiologists have confirmed that in disease outbreaks, most disease '*walks onto and off sites'*, i.e. is carried on by the movement of people. Most pathogens will be carried in water, soil and organic material on footwear and vehicles and if this is removed it will significantly reduce the risk of spread. Clean footwear and equipment are also a prerequisite for effective disinfection, should this be required, so this is a basic requirement that can be built on when necessary.

4. What is biosecurity?

'Biosecurity' means a series of measures designed to prevent potentially harmful biological agents (non-native species, plant and animal pests, parasites and diseases) from entering or leaving a site or property. The measures can include:

1. the checking, cleaning and disinfection of footwear, clothing, equipment and vehicles;
2. working protocols designed to minimise movements, contact and therefore potential contamination of people, vehicles and equipment used.

5. Risk of spread and level of biosecurity control

'Appropriate' biosecurity measures will depend on the risk (of spread) associated with the visit. Factors that determine the level of risk include:

- the level of potential exposure - are there any restrictions applying to the area? (e.g. statutory plant health notices);
- the duration and the purpose of visits to different locations (e.g. on-farm inspection requiring close or direct contact with animals, aquatic survey or sampling work);
- the type of land or premises concerned (e.g. arable or livestock farm, freshwater, marine, coastal, heathland or woodland situations etc.);
- the site conditions at the time of the visit;

- weather conditions and time of year; and
- the type of contagion / invasive species and mechanism of spread.

6. Levels of biosecurity control

The biosecurity control measures required will vary according to the level risk (of spread) posed by the activity being carried out and the sensitivity of the site in which it is taking place. For example, moving Himalayan balsam seed to another site already containing balsam will have a lower impact than to importing crayfish plague to a new catchment. Where staff or contractors largely visit a single site day in, day out for a period of time will pose a lower risk than for staff who visit many sites. Biosecurity measures should therefore be practical to implement and not disproportionate to the risks involved.

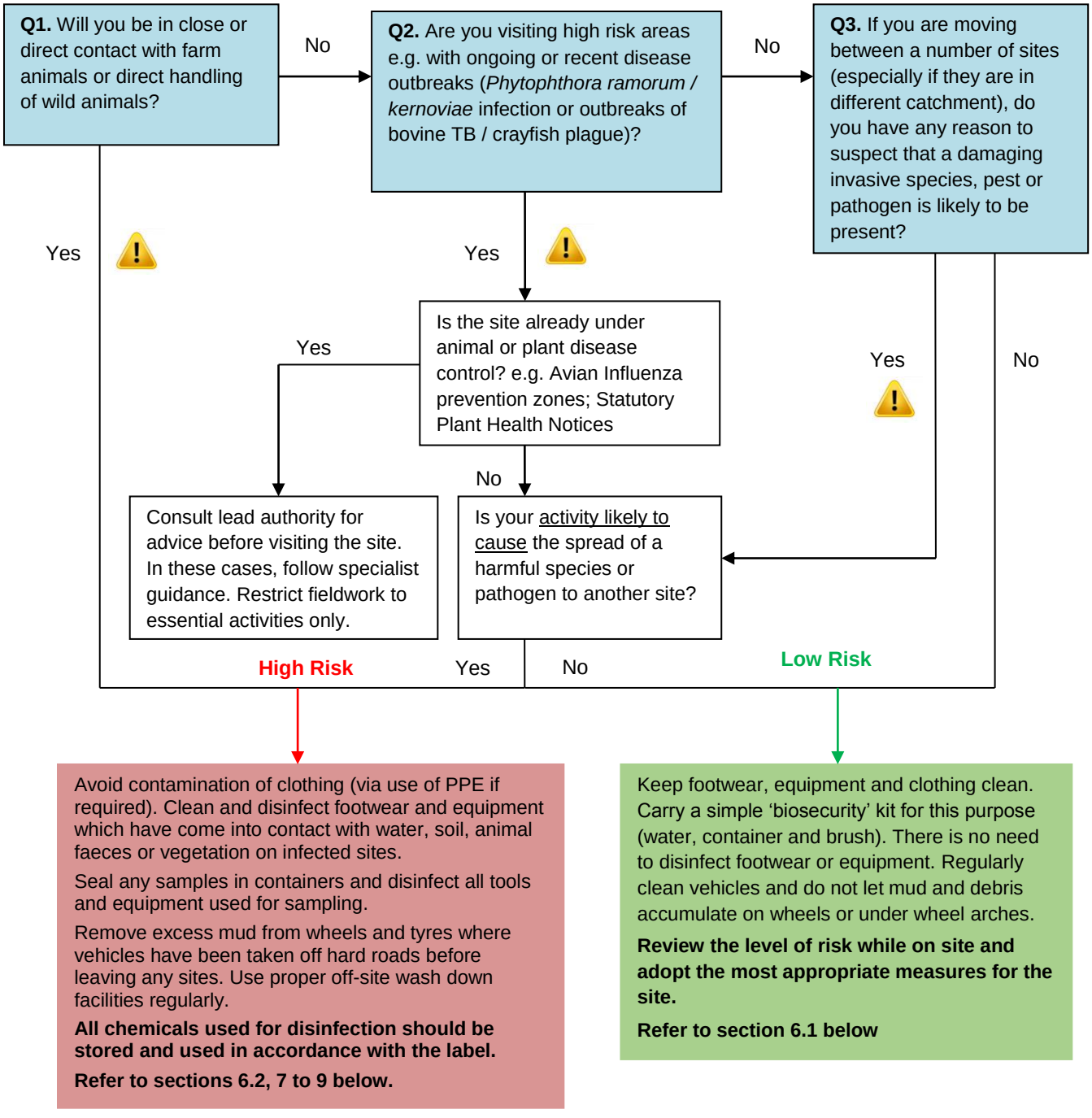
You may need to observe more rigorous controls, for example, if site manager/operator or survey organiser have more stringent biosecurity requirements. It is important to respect the safeguards they require.

We have categorised visits in terms of the risks they pose (low / high) and describe the precautions that should be taken to minimise them. The levels of biosecurity control are described in the following sections and **Figure 1** below provides a quick reference guide for applying them.

It is not possible to predict with certainty all of the circumstances, including practical constraints, that staff might come across. In many situations it will be necessary to undertake a risk-based approach in order to determine the appropriate measures to suit local conditions. If in doubt, seek advice from your manager.

Figure 1. Biosecurity control – quick reference

Before visiting any site location or other premises you should consider the following:



6.1 Basic level biosecurity control

This is the minimum level of biosecurity control you should adopt when entering or leaving any site or premises. Our activities are wide ranging so use your discretion and assess the biosecurity risks posed by the activity you are carrying out and the site you are working in.

What you must do:

- Arrive at the site with clean, dry footwear and equipment. If necessary brush or wash in soapy water before the visit. There is no need to disinfect footwear or equipment.
- Ensure footwear, clothing and equipment are cleaned (visually from soil and debris) before leaving the site.
- Make use of facilities provided on the site to clean footwear/equipment at the end of your visit.
- Ensure that vehicles and machinery are cleaned regularly to remove any accumulated mud, especially from tyres and wheel arches.
- Keep access to a minimum. If practical do not take vehicles off-road, keep to established tracks and park vehicles on hard standing.
- Respect any notices or instructions - whether statutory or from the landowner.

Some site visits may involve crossing several land holdings, on public rights of way or open access land for example. In these cases, it is normally only practical to start with clean footwear. Take particular care to avoid areas with livestock or INNS and ensure that your equipment is clean before the next visit.

Photo 1. Simple cleaning procedure for footwear

6.2 High level biosecurity control

In addition to the basic biosecurity measures extra precautions are recommended for activities that carry a higher risk of introducing or spreading harmful species and pathogens. For example many of our activities involve the sharing of equipment and Personal Protective Equipment (PPE) in many sites and across different catchments, which represents a high biosecurity risk. Extra precautions will involve more rigorous cleansing and disinfecting of footwear, equipment and PPE.

This should be applied before entering any site or premises where:

- there is to be close or direct contact with livestock or poultry (incl. handling facilities / equipment);
- the direct handling of wild animals (e.g. amphibian, reptile, fish, invertebrate and mammal surveys);
- if working on land where there are known biosecurity risks e.g. Phytophthora outbreaks on heathland;
- if working in, or adjacent to, water bodies;
- if moving between sites your activity is likely to cause the spread of a harmful species or pathogen.

This higher level of control will apply to any sites where plant health or animal disease control measures are in place, for example where a Statutory Plant Health Notice has been served by APHA/FERA. Adopt this level if you are visiting any site where the owner or site manager requests that you take precautionary biosecurity measures.

Extra precautions will also be necessary if you handle plants or trees, soil or other material that is known or suspected to be infected, for example in invasive species removal operations.

Where moving around sites you should try to plan visits to areas where the risk of presence of a damaging species is thought to be lowest, before visiting those with the highest risk. This approach will help to reduce the risk of transmitting damaging species, especially pathogens which may be spread in soil or plant debris adhering to footwear. In some cases it may also be advisable to change other working practices. For example, reserving tools or equipment for use on specific areas of a site will help avoid the danger of transference.

What you must do:

- Clean and, where relevant, disinfect footwear before you leave the site (See Annex A on disinfection).
- Clean and, where relevant, disinfect tools, particularly cutting equipment such as chainsaws/ secateurs and equipment used for sampling after each use and before moving to another site.
- Remove excess mud from wheels arches and tyres where vehicles have been taken off hard roads before leaving any sites. Use proper off-site wash down facilities regularly.
- Inspect clothing, footwear and equipment that has been in contact with water, especially when moving between water bodies (see section 9). Just because you can't see it, it doesn't mean it's not there.
- Ensure you wear appropriate protective clothing which can be easily washed, disinfected or disposed of to minimise the risk of carrying any pathogen to another location when coming into direct contact with livestock or handling wild animals.
- Familiarise yourself with the priority non-native species and tree pests/diseases and their potential methods of spread.
- Where possible avoid all contact with potentially infectious material. If you do come into contact use appropriate protective clothing e.g. disposable gloves, washable boots and overalls. Examples include:
    - avoid handling dead amphibians, fish, crayfish, birds, mammals
    - avoid touching Rhododendron, especially if its looks wilted/dying
    - avoid entering water in an area of known crayfish plague or amphibian disease outbreak
    - handling plants, soil or other material that is known or suspected to be infected, e.g. in INNS removal operations.

Photo 2. Footwear can be quickly disinfected on site by spraying the bases

7. Working with farm animals

Biosecurity measures can help prevent the spread of farmed diseases - including notifiable diseases. This will involve controlling and reducing movements of animals, people and vehicles to and from areas where animals are kept. If you cannot avoid contact with livestock you must take a risk based approach to how you can minimise the spread of diseases. All farm animals naturally carry a range of diseases, some of which can also affect humans. These diseases are known as zoonoses, and if you work with animals your health may be at risk from them.

Disinfection is one of the main biosecurity measures to control the spread of animal diseases. Equipment, vehicles, protective clothing and footwear must all be cleaned and disinfected before and after contact with farm animals. Disinfectants can also be used as biosecurity barriers for vehicles and people at farm entrances.

What you must do:

- After direct contact with livestock wash your hands as soon as possible with soap and water. Hand gels should not be used as an alternative for cleaning hands.
- Clean and disinfect your footwear and equipment before and after contact. If you are in contact with pigs, intensive dairy cattle, sheep or poultry you should be particularly rigorous with your cleaning regime and always seek to disinfect using the landowner/site operator arrangements.
- Avoid moving between different groups of livestock without cleaning footwear.
- If you have your own livestock – change clothes and footwear before contacting your own animals after visiting other sites with livestock.
- Know and understand the symptoms of agricultural zoonoses. If you think that you or any of your acquaintances have become infected, seek medical attention immediately.

Detailed advice for preventing the spread of diseases in farm animals is available on the Defra website.

Further information on agricultural zoonoses – diseases that can be spread to humans is available on the HSE website.

8. Working with wild animals

Staff should follow biosecurity procedures when coming into direct or close contact with wild animals through survey and monitoring, training, research or education activities. Signs of infection are not necessarily evident on visual inspection and it is important that staff, volunteers and contractors are aware of the risks of introducing and spreading animal pathogens when out in the field.

What you must do:

- Ensure that all surveyors are aware of disease issues and precautions to be taken when working with wild animals.
- Keep the number of survey visits to the minimum necessary.
- Handle wild animals only when necessary.
- If handling amphibians wear disposable vinyl gloves. Use a fresh pair of gloves for each site visited.
- After contact with animals wash your hands as soon as possible with soap and water or an anti-bacterial hand sanitiser.
- Disinfect survey equipment or containers used to hold animals between each site visited.
- If entering water, footwear should be washed, disinfected and dried immediately after the site visit. If you do not enter the water, there is no need to disinfect footwear unless visiting a high risk site.
- If visiting several sites, bring a change of protective clothing and footwear (where possible).
- Only release animals at their place of capture.
- Treat dead or sick animals as a high infection risk and do not handle unless necessary.

Further information on amphibian disease precautions for fieldworkers is available on the Amphibian and Reptile Conservation website.

9. Working in freshwater or marine situations

Invasive non-native species and aquatic pathogens are a particular risk to the water environment as many species are easily overlooked and are able to propagate from small fragments. Staff and contractors may not be aware that they could be carrying an unwanted 'hitchhiker' on their clothing and equipment. Aquatic invasive species, fish diseases and crayfish plague can all be spread in any water or damp material and there is potential for transport between water bodies on clothing, equipment and vehicles. A number of invasive species and pathogens can survive for as many as 15 days in damp conditions (e.g. poorly stored equipment) and up to 2 days in dry conditions, so the drying process is important between site visits. Some examples:

- Zebra mussels – larvae invisible to the naked eye
- Ranavirus – a highly infectious amphibian disease that can be transmitted by contact with infected water.
- New Zealand pigmyweed (Crassula) – can regrow from a small fragment, such as may be wedged in a boot tread.

If you enter water, or move between water bodies, especially if they are in a different catchment, coastline, or estuary, there is a real risk that you could spread harmful organisms and pathogens unless you follow good biosecurity practice. All staff and contractors working in aquatic situations should follow the Check, Clean, Dry biosecurity procedures to help prevent the accidental transfer of non-native species and pathogens.

Check, Clean, Dry procedure

- **Check** - All clothing and equipment should be thoroughly inspected and any visible debris (mud, plant or animal matter) should be removed and left at the site where it was found. Particular attention must be paid to areas that retain water, remain damp or are hard to inspect. Any pockets of pooled water should be emptied.
- **Clean** - Equipment should be hosed down or pressure-washed on site. If facilities are not available equipment should be carefully contained, e.g. in plastic bags, until they can be found. Washings should be left on site where the equipment was used, or contained and not allowed to enter any other watercourse or drainage system (i.e. do not put them down the drain or sink).

  All biofouling must be completely removed and disposed of without contaminating watercourses or sea. If possible collect this into a bucket or bag for disposal on land.

  Where possible, cleaned equipment should be dipped in disinfectant solution (e.g. Virkon) to kill diseases, but note this is unlikely to kill non-native species.

- **Dry** - Thoroughly drying is the best method for disinfecting clothing and equipment. Boots, waders, wetsuits and nets should be hung-up to dry. Equipment should be thoroughly dry for 48 hours before it is used elsewhere.

10. Fundamentals of good biosecurity practice

As outlined in the above sections, the level of biosecurity control will vary from visit to visit. The kit that you need to carry will also vary according to circumstances but basic biosecurity principles apply in all situations.

Planning the visit

Try to clarify the following points with the site owner/ manager before your visit.

- Will water be available on site? If required, ask to have some water provided or carry a small supply.
- What parking facilities exist?
- If premises have high hygiene standards, do they apply their own additional biosecurity controls?
- Are the premises under any restrictions?
- Ensure all your equipment is clean and serviceable.
- Restrict the equipment taken onto sites; take only what you need.
- Do not take vehicles further into the site than necessary: try to leave them at designated car parking areas.

Personal biosecurity

At low risk visits (green) you are likely to need only minimal biosecurity kit. This may be just suitable footwear and outdoor clothing which you can clean easily.

In situations involving high risk activities (red) biosecurity precautions may involve adequate cleansing and disinfecting of footwear and other Personal Protective Equipment. It may also be necessary to clean and disinfect vehicle wheels and tyres and other tools and equipment used to collect samples.

Details of appropriate contents of a biosecurity kit for cleansing and disinfection are given in **Annex A**.

Vehicle biosecurity

Your vehicle should be clean prior to each visit. This does not mean it needs to be completely washed or ‘show room clean’, just that significant contamination from plant debris, manure, slurry or similar material and accumulated mud, has been removed. Particular attention needs to be paid to tyres and wheel arches.

Consider where you park the vehicle and ideally park off-site if you can. Where you cannot park off site, try to park on a hard standing to avoid exposure to soil or plant material.

If using an off-road vehicle, avoid driving it through land that has or has recently had livestock on it, or where manure or slurry has been recently spread.

Efforts to keep the vehicle clean and avoid areas where livestock has access or plant disease are present will minimise the need to use disinfectants. If disinfectants are used, rinse or wash the disinfected areas with clean water once the recommended contact time (see product label) has passed. A portable power washer can be used to wash down contaminated areas. Ensure that any run-off does not enter watercourses or surface water drains.

Equipment biosecurity

Equipment includes anything taken onto the site to allow you to carry out your task. Make sure all equipment is clean and fit for purpose and that any equipment likely to become contaminated is capable of being cleaned and disinfected after use (unless disposable) and before taking them to another site.

Where equipment has been in contact with water and thorough on-site drying is impractical (if items are large, for example heavy machinery, survey boats and trailers) ensure that equipment is checked and drained before leaving the site.

Annex A – Personal biosecurity kit and disinfectants

Biosecurity kit for cleansing and disinfection

In order to practice simple biosecurity measures to help limit the spread of invasive species, pests and pathogens, you will need to have a biosecurity kit in your vehicle as you go about your work.

The kit and clothing you use will depend on the tasks you need to carry out, the type of site, the environment, the weather conditions etc. All equipment and protective clothing should be capable of being washed or disinfected unless it is disposable. If cleansing and disinfection is likely, you should carry the necessary equipment; see the following suggestions:

- Plastic storage box (to keep the kit together)
- Supply of clean water (approx. 5L)
- Bucket o**r** washing-up bowl
- Hard brush
- Approved chemical disinfectant (with appropriate label and safety data sheets etc.)
- Disposable gloves
- Means of applying disinfectant, for example brush or a portable sprayer
- Hand sanitiser / wipes and paper towels
- Changing mat (optional)
- Selection of re-sealable bags (for samples)
- Plastic bags and ties (for clothing or other PPE to be taken offsite for cleaning or disposal)

The basic biosecurity kit need not be expensive and all of the items are usually available from a local hardware store.

Photo 3. Biosecurity kit

Disinfectants

Good biosecurity measures include the use of disinfection where appropriate. There are several common ways of disinfecting footwear and equipment:

- Thoroughly drying for a minimum of 48 hours, preferably in direct sunlight.
- Hot water (submersion at 45˚C for 15 minutes). This is the best method for aquatic INNS but is not always practicable.
- Using chemical disinfectants.

Approved disinfectants for use within Natural England are Virkon S for animal/livestock applications and CleanKill Sanitising Spray and Propellar that can be used for plant and tree pathogens. Virkon and CleanKill can be safely stored in offices and transported easily in hire vehicles.

The AHVLA maintains a list of approved disinfectants for use in farming. The information provided includes supplier addresses and statutory dilution rates for use during disease control orders.

Preparation and use:

- Read and adhere to the instructions on the label.
- Follow the risk assessment instructions for the product you use and make sure you adhere to the dilution rates stated by the manufacturer on the label.
- Make sure surfaces to be disinfected are clear of mud, soil, leaves, faeces etc. by first washing with water or hosing down if necessary and where permitted.
- Once clean, spray the boot/sole or equipment with the chosen disinfectant solution until it runs off. Alternatively, dip footwear and equipment in disinfectant or hot water.
- After the required contact time (generally this is one minute or 5 minutes where an animal pathogen is suspected), the disinfectant should be rinsed off with clean water before drying.
- It is important to make sure you do not allow disinfectants or washings to enter any clean surface water drain or watercourse. You should carry out the disinfection process on a well vegetated flat area at least 10 metres away from any surface water drains or watercourses.
- Some disinfectants can be harmful, particularly if inhaled or if they come into contact with skin, and you should wear the appropriate protective equipment stated on the label and safety data sheets (such as gloves and eye protection) when making up and using the disinfectant mixture. COSHH assessments must be available for all chemicals with the potential to harm health.

Photo 4. Disinfecting footwear with hand-held sprayer