THINK WILDLIFE
Campaign for Responsible Rodenticide Use
CRRU Stewardship

CRRU Guidance
Permanent Baiting

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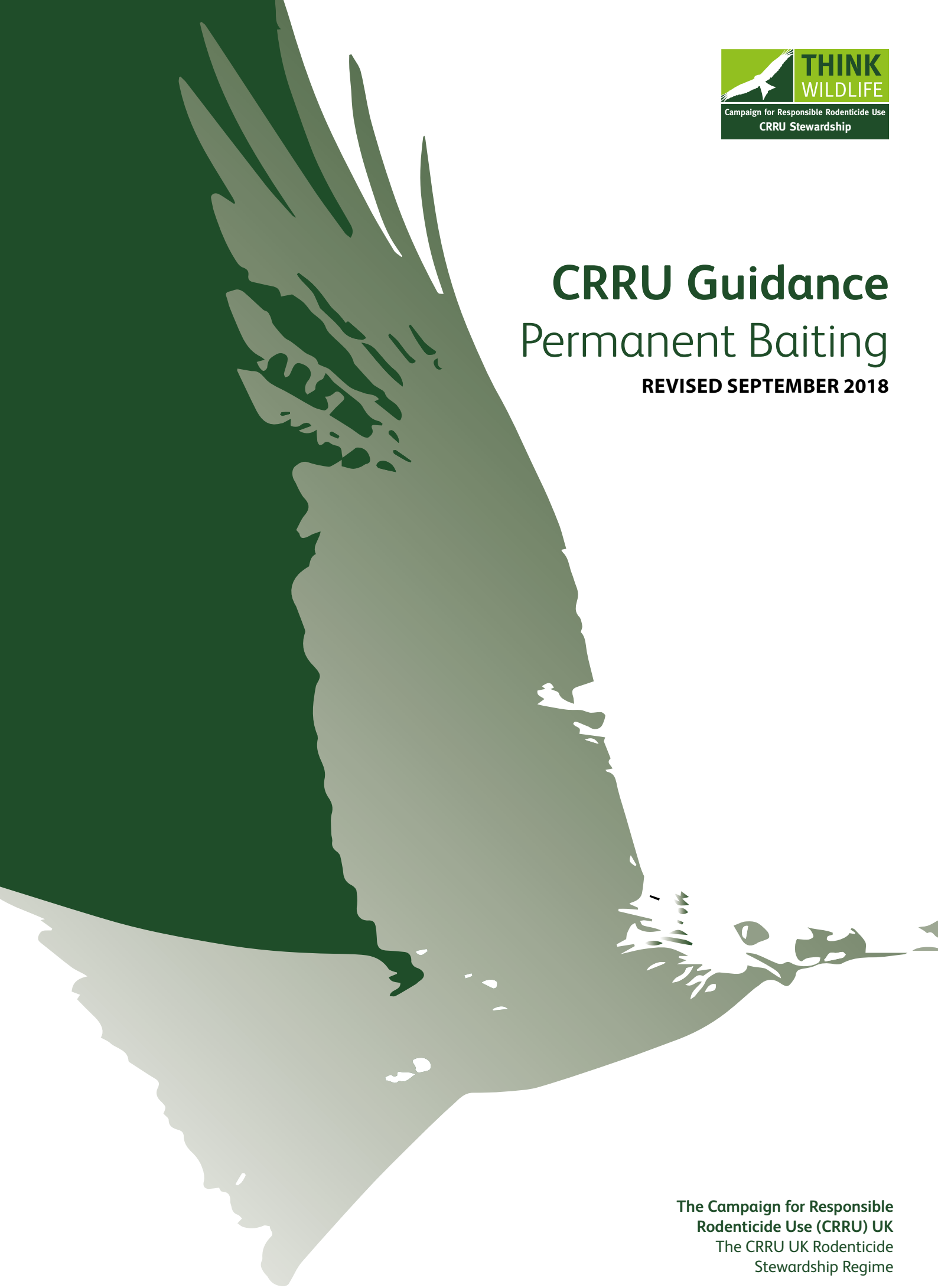

The Campaign for Responsible Rodenticide Use (CRRU) UK
The CRRU UK Rodenticide Stewardship Regime

The rules on permanent baiting have changed again to become even more proscriptive. This guidance from the Campaign for Responsible Rodenticide Use (CRRU) UK explains the changes, the situations in which permanent baiting may still be used, the products that can be used and the precautions necessary when it is employed.

CRRU UK Chairman Dr Alan Buckle says,

"Permanent baiting with rodenticides was routinely used by many professional pest controllers. But we think this practice is one of the main causes of wildlife contamination, because we know that wild small mammals, such as field mice and voles, enter bait stations to feed on bait. These are then taken by a wide range of predatory birds and mammals. Increasingly these issues are recognised by pest control professionals, whether they are using permanent baiting in either urban or rural situations. There is a place for permanent baiting, particularly indoors, but only after all other alternatives have been considered. Those who adopt external permanent baiting must first examine the risks to non-targets and make a conscious decision that those risks are justified by a continuing threat to human or animal health and hygiene."

What is 'Permanent Baiting'?

Permanent baiting means bait left out in protected, usually tamper-resistant, bait stations in places where there are no current signs of rodent infestation but where there is a threat of rodent infestation. Rodenticide baits were not originally intended to be used in this way. They were intended to be put down in places where there are rodents and taken away after the infestation is cleared. Many conventional rodenticide baits, based on grains and pellets, cannot be used in permanent baiting because of their rapid deterioration. But the introduction of bait formulations based on wax blocks permits baits to be put out for long periods, and remain in good condition, making them useful in permanent baiting.

The practice of permanent baiting has been very widely used both by professional pest control technicians and those who apply rodenticides on farms. Indeed, those who audit food storage and preparation premises and sales outlets for compliance with a range of retail quality certification programmes may mistakenly look upon a system of continuously-maintained rodenticide bait as a demonstration of compliance. The same may be done by those who audit farm premises for compliance with the standards of a range of Farm Assurance Schemes. However, these programmes of audit and accreditation no longer specify a requirement for routine permanent rodenticide baiting.

It is generally considered that, in normal circumstances, rodent infestations can be cleared up using anticoagulant rodenticides in 35 days or fewer. However, longer periods of baiting are sometimes necessary, for example when rodents are initially reluctant to take baits, where there is a continuing influx of rodents from a source that itself cannot be treated or where infestations are difficult to treat because of anticoagulant resistance. Where a baiting programme continues beyond 35 days in order to control an infestation, it may be called 'long-term baiting.'

Why is Permanent Baiting done?

Putting out bait where there is no current rodent infestation protects buildings, facilities and installations and may prevent infestations from developing. This fits into the scheme of rodent pest management conducted by many professional pest control contractors. The purpose of this is the prevention of infestation in the first place, rather than the removal of harmful infestation once established. Therefore, technicians visit facilities under contract at a frequency of between once every four and eight weeks. Permanent baiting is intended to protect facilities considered to be at risk of infestation between the visits of technicians.

Permanent baiting may perform a 'monitoring' function. When the bait stations are opened and checked, technicians can see whether there have been any rodent takes of bait and adopt appropriate measures to discover the cause of the infestation and treat it.

Why is Permanent Baiting a problem?

It would not be a problem if only pest rodents went into bait stations and took bait but this is not the case. It is now increasingly recognised that wild small rodents, such as field mice and voles, also go into permanent bait stations and take bait. These animals are the prey base of a very wide variety of species of mammals and birds in the UK. This prey base is then exposed to rodenticides and this contamination is passed to our wildlife up the food chain.

Figure 1. The percentage of different prey species in the food of barn owls in the UK.

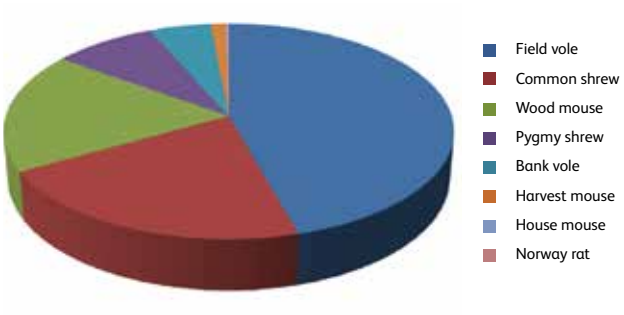

Figure 1. The percentage of different prey species in the food of barn owls in the UK. The figures are aggregate data from surveys conducted in the UK during the period 1974 to 1997 and are adjusted for mean prey weight. The contributions to the diet of owls of the rodent species that are the targets for anticoagulant treatments, Norway rats and house mice, are too small to register on the chart. This leads us to believe that the majority of rodenticide contamination of barn owls is caused by consumption of contaminated non-target small mammals. [Note: barn owl diets are very variable and the diets of individual owls may vary considerably from that shown in the figure.]

It may be no coincidence that it was during the 1980s and 1990s, as the practice of permanent baiting became more common in the UK, that barn owls were becoming increasingly contaminated with rodenticides. There is no other convincing explanation for this fact because the amounts of rodenticides being used were not increasing at that time, nor were there significant differences in methods of chemical analysis that would have made rodenticide residues in barn owls easier to find.

Figure 2. The percentage of barn owls that carry detectable residues of one or more of the five second-generation anticoagulants in use in the UK.

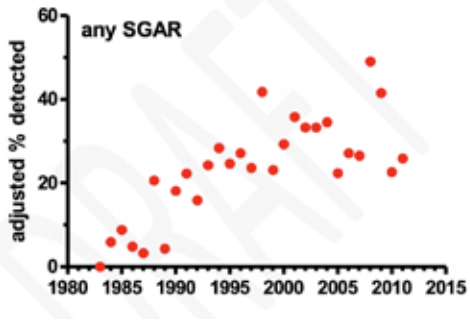

Figure 2. The percentage of barn owls that carry detectable residues of one or more of the five second-generation anticoagulants in use in the UK. There appeared to be a consistent increase in the numbers of owls with residues in the period 1985 to 2000. Thereafter the data are highly variable and show no reliable trend. The values are adjusted to allow consistent reporting in spite of improvements in analytical techniques. Surveys of rodenticide use during the period 1985 to 2000, conducted by government scientists, showed no significant increases in the overall quantities of rodenticides applied in UK during that period. [The figure is reproduced here with the kind permission of the Centre for Ecology & Hydrology.]

It is not just wild rodents that enter bait stations. Those that check them will sometimes see bird droppings in them because some birds overcome their reluctance to go into bait boxes, enter and take bait. This may partly explain why we find sparrowhawks and peregrines carrying residues of anticoagulants. These birds rarely take rodent prey and feed almost entirely on other birds taken in flight.

One of the main objectives of the UK Rodenticide Stewardship Regime is to reduce rodenticide residues in all UK wildlife. We believe that a reduction in the use of permanent baiting will significantly contribute towards achieving this objective.

Is there a difference between Permanent Baiting indoors and outside?

Yes, there are several important differences. Most permanent indoor baiting is done for mice and uses specific tamper-resistant bait boxes. That prevents the entry into the boxes of many more non-targets than when rat bait boxes are used.

Non-target wildlife is, of course, to be found indoors much less frequently than it is around buildings and outdoors. Consequently, the risk of non-target wildlife contamination is considerably less when permanent baiting is conducted indoors. Therefore, the balance between the risks and benefits of indoor permanent baiting for the control of persistent house mouse infestations is weighed significantly towards the use of this technique because the risks to wildlife are consequently less.

What are the alternatives to Permanent Baiting?

There is no direct replacement for permanent baiting. That is why the European Commission and Health and Safety Executive (HSE), the UK Competent Authority for biocides including rodenticides, permits its use in some circumstances. All alternatives are either less effective or more costly to implement, and sometimes both. But permanent baiting should not be a routine practice and, instead, it should be used only when a technician considers the site has “a high potential for reinvasion” and “other methods of control have proven insufficient”. (See the new label phrases given below.)

What are these other methods of control? First and foremost, the objective must be to have facilities that are effectively proofed against rodent ingress. In that way, the presence of a small number of rodents externally will not present a risk of entry, contamination and potential transmission of disease. Frequent and thorough inspection of all internal areas of buildings will also offer fast identification of the presence of rodents in areas where they are not acceptable.

Permanent baiting is often used at sites where neighbouring facilities are beyond the control of the practising technician and there is an uncontrolled infestation that may give rise to immigration onto the protected site. All available means should be used to control such infestations. Technicians should offer to extend their control programme to neighbouring infested premises and businesses. They should maintain records if such offers are unreasonably refused. They should also consider notifying local authority agencies. These are empowered to require owners and occupiers to take appropriate action against rodent infestations on their property.

Unpoisoned ‘placebo’ or ‘monitoring’ baits are now widely available and the use of these products may play a useful role in indicating when and where rodents are active. They also provide the opportunity to determine which rodent species are present and to take the necessary actions. This might be the placement of rodenticides if the signs are of rats. House mice are only very rarely encountered outside buildings and, therefore, if signs of takes at placebo bait points are of mice, the chances are they are wild small rodents and not pest rodents.

Of course, if sites treated with placebo products are visited only very infrequently there is the potential for an infestation to build up before appropriate action can be taken. One possibility is the involvement of a designated member of site staff to check placebo bait points between the visits of the professional pest control technician. Placebo baits are not pesticides and no specific training is required for their use. However, those checking rodent bait boxes should wear appropriate personal protective clothing to prevent disease transmission and be able to identify rodent activity.

Some technicians use rodent traps set inside bait boxes to take rodents that enter them. Once again, this permits species identification before further action. It is important that trapping protocols are strictly followed in respect of the frequency of trap checks, so that animals taken but not cleanly killed can be humanely despatched.

Equipment for the remote sensing and recording of rodent activity is increasingly cheap and easy to use. Some of these technologies are capable of remote reporting to technicians. At some sites, it may be possible to use this technology to provide monitoring of rodent activity between the visits of the technician.

New Permanent Baiting Label Phrases

New label phrases about rodenticide applications have been issued by the European Commission and adopted on rodenticide labels by HSE and product manufacturers. These are relevant to the practices of permanent baiting and to situations where baiting is prolonged beyond 35 days (i.e. long-term-baiting).

PLEASE NOTE THE FOLLOWING:

- Only products containing bromadiolone and difenacoum have been authorised for use in permanent baiting. Although not all bromadiolone and difenacoum products are authorised for this use.
- Products containing brodifacoum, difethialone and flocoumafen are never authorised for permanent baiting.
- Each specific product label will confirm whether permanent baiting is included by the presence or absence of the phrases listed below.

The following label phrases appear on products that ARE authorised for use in permanent baiting:

- Permanent baiting is strictly limited to sites with a high potential for reinvasion when other methods of control have proven insufficient.
- The permanent baiting strategy shall be periodically reviewed in the context of integrated pest management (IPM) and the assessment of the risk for re-infestation.
- Sites under a permanent baiting regime should be inspected regularly in accordance with product label directions. The period between visits should be determined by the technician in charge but will not be longer than every four weeks when permanent baiting is conducted outdoors.
- For permanent baiting follow any additional instructions provided by the CRRU Guidance on Permanent Baiting

This guidance document is intended to provide the 'additional instructions' referred to in the above label phrase. These instructions include the circumstances in which permanent baiting may be justified, who can conduct permanent baiting and the measures necessary to mitigate the inherent risks of this practice.

These phrases appear on products that ARE NOT authorised for use in permanent baiting:

- Do not use the product as permanent baits for the prevention of rodent infestation or monitoring of rodent activities.
- If after a treatment period of 35 days baits continue to be consumed and no decline in rodent activity is observed, the likely cause must be determined. Where other elements have been excluded, it is likely that there are resistant rodents so consider the use of a non-anticoagulant rodenticide, where available, or a more potent anticoagulant rodenticide. Also consider the use of traps as an alternative control measure.
- Products shall not be used beyond 35 days without an evaluation of the state of the infestation and of the efficacy of the treatment.

These three phrases mean that although these baits are not authorised for permanent baiting and cannot be used to prevent infestation or in monitoring, long-term baiting campaigns (i.e. beyond 35 days) may be conducted with them provided the requirements set out in these phrases are met. (Please note that CRRU UK does not recommend the use of ANY anticoagulant bait solely for the purpose of monitoring infestation.)

There are a number of circumstances that may cause the need for baiting to be prolonged beyond 35 days. These include:

- Very large and extensive infestations and the possible failure to recognise the size and extent of the infestation during the initial phase of the baiting programme.
- An initial reluctance of rodents to feed on baits, often caused by bait-shyness and/or refusal to enter bait boxes. This causes the effective start of the treatment to be delayed until the rodents begin to take baits.
- Continuing immigration of rodents onto the treated site from a source that cannot be itself treated.
- Also, and in particular, the circumstances at the site to be treated with respect to anticoagulant resistance. An infestation containing a proportion of resistant rodents may go unrecognised in the initial phase of the treatment. This will cause a prolonged treatment until the presence of resistance is either suspected or confirmed and appropriate alternative steps are taken.

Please note that it is extremely unusual for any treatment to result in "no decline in rodent activity". Usually some decline is observed, even in cases in which one or more of the above conditions prevail. However, it is essential to determine the reasons for the failure of treatments to provide adequate levels of control. Also note that the labels of products containing brodifacoum, difethialone and flocoumafen may include the above phases, including that recommending the use of "a more potent anticoagulant rodenticide", although a more potent anticoagulant than these three does not presently exist.

Resistance and Permanent Baiting

The prevalence of anticoagulant resistance among rat and mouse infestations means that those who use anticoagulants must always consider resistance *(see https://www.thinkwildlife.org/downloads/)*. This is particularly true during permanent and long-term baiting programmes. The use of resisted anticoagulants against resistant infestations serves to spread resistance and to increase its severity. The new rules forbid the use of the resistance-breaking compounds brodifacoum, difethialone and flocoumafen in permanent baiting. This may have a detrimental effect on resistance management unless appropriate alternative steps are taken.

In situations where resistance is present, and if long-term baiting is necessary to prevent obvious risk to human and animal health, products containing the three more potent anticoagulants, brodifacoum, difethialone and flocoumafen, or a non-anticoagulant rodenticide if available and appropriate, should be used while following all relevant phrases on product labels.

The recommendations of the UK Rodenticide Resistance Action Group (RRAG) are relevant and are as follows:

> Bromadiolone and difenacoum should not be used at sites where there is resistance to them in rat and mouse infestations, either for permanent baiting or in any other application. (Refer to the appropriate RRAG guidelines for more details of rat and mouse resistance mutations and their locations across the UK.)
>
> In particular, bromadiolone and difenacoum should not be used across much of central-southern and south-east England, where two severe resistance mutations are prevalent in Norway rats. This recommendation applies in all circumstances, including the use of permanent baiting. These severe mutations are not restricted to southern England, however, and may be found almost anywhere in the UK.
>
> Also, bromadiolone is not recommended for the control of house mice, either in conventional or permanent baiting regimes, and difenacoum may also be ineffective against some mouse infestations.

When is Permanent Baiting acceptable and what should I do when I use it?

The new label phrases shown above are clear about when permanent baiting is permitted. This is when all alternatives have been properly considered, and are not thought to provide comprehensive protection of human and animal health. The process of consideration of the alternatives, and reasons for the conclusion that they either would be or have been ineffective, should be documented and a record kept.

If permanent baiting is to be conducted outdoors, as with other external rodenticide applications, an environmental risk assessment should be undertaken. Guidance for this procedure is available from CRRU *(http://www.thinkwildlife.org/downloads_resources/)*. The practice should only be carried out by a trained professional pest control technician or other competent person (see below).

Permanent baiting should only be conducted as a result of the potential infestation of a building. Sites that are permanently baited should be visited regularly. The frequency of inspection is a matter for the technician in charge of the application and will depend on the risks identified. Sites with permanent bait points should be inspected at least once every four weeks. More frequent visits would be required at sites were the risk of disturbance of bait points was considered to be high. When signs of pest rodents are discovered in permanent bait boxes it will be necessary to modify the rodent management programme to accommodate an ongoing infestation. This is likely to require more frequent site visits *(http://www.thinkwildlife.org/crru-code/).*

The areas to be baited should be as limited as possible. In particular it is likely that permanent bait points might reasonably be set out near to points of access to buildings that cannot always be kept secure from rodent ingress. Where possible, areas of rough grass, shrubs and overgrown hedgerows should not be baited, as these are favoured habitats for non-target small mammals.

If signs of takes by small mammals are found, usually clearly indicated by the size of droppings present in the bait stations, the poisoned bait should be removed. Poisoned bait should also be removed from permanent bait points when a series of records shows no takes of bait by rats. In such cases the reasons for conducting permanent rodenticide baiting should be reviewed. A sequence of four to six checks at monthly intervals without takes by pest rodents would typically suggest that the immediate threat of rodent ingress had not been realised and the rodenticide baits should be removed. Depending on circumstances, it may be that a shorter sequence of clear checks would justify removal of poisoned bait.

Who can carry out Permanent Baiting?

The labels of products containing bromadiolone and difenacoum describe who can carry out permanent baiting with the following phrase, and a similar phrase appears on the labels of products containing brodifacoum, difethialone and flocoumafen:

"For professional users with demonstrated competence."

The CRRU UK interpretation of this phrase is that anyone who is considered competent to purchase and apply professional rodenticides, under the conditions set out by the UK Rodenticide Stewardship Regime *(http://www.thinkwildlife.org/stewardship-regime/)*, is able to employ permanent and long-term baiting. However, this should not be a routine practice and should be carried out only when there is a risk to human or animal health posed by rodent infestation that cannot be overcome by one of the alternative measures described in this document.

Outline Protocol for Permanent Baiting

- Only trained pest control operators or other competent persons should carry out permanent and long-term baiting programmes.
- Permanent and long-term baiting should not be used as a routine practice.
- Permanent and long-term baiting should be considered only when a building is considered to have an ongoing rodent infestation, or in the case or permanent baiting the threat of one, that might cause unacceptable risks to human and animal health.
- All other means of prevention of rodent infestation of vulnerable areas around the building should be considered before permanent baiting is undertaken.
- Reasons why alternatives have failed, are impractical or unlikely to be effective should be documented.
- If the source of a risk of infestation is from neighbouring land or premises all methods should be explored to treat the risk at source.
- As with other rodenticide applications conducted outside, an environmental risk assessment should be conducted before external permanent and long-term baiting is implemented.
- The areas of the site that are permanently baited should be kept to a necessary minimum.
- Areas that provide obvious habitats for non-target small mammals, such as field mice and voles, should not be baited with rodenticides.
- Sites under a permanent baiting regime should be inspected regularly. The frequency of visits should be determined by the technician in charge but should not be less than every four weeks.
- Bait points that only show signs of bait take by wild small mammals, such as field mice and voles, should either be removed or the bait in them replaced by placebo bait.
- Rodenticide should be removed from bait points that show a series of consecutive no-takes by pest rodents. In such cases the justification for permanent/long-term baiting should be reviewed. The bait boxes may be left in place and placebo baits applied.

Background context available at **www.thinkwildlife.org.**

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CRRU Code is:

1. ALWAYS HAVE A PLANNED APPROACH

- Before treatment begins, a thorough survey of the infested site is an essential key to success when using any rodenticide.
- Environmental changes which could be made to reduce the attractiveness of the site to rodents should be noted for implementing after the treatment. Usually this will involve rodent proofing and removing rubbish and weeds that provide harbourages and cover. However, the site should not be cleared before treatment since this will disturb the rodent population and make bait acceptance more difficult to achieve.
- Obvious food, such as spilled grain, should be removed as far as possible and any food sources covered.
- Rodenticide baits should only be used for as long as is necessary to achieve satisfactory control.
- In most cases, any anticoagulant bait should have achieved control within 35 days. Should activity continue beyond this time, the likely cause should be determined and documented. If bait continues to be consumed without effect, a more potent anticoagulant should be considered. If bait take is poor, relative to the apparent size of the infestation, consideration should be given to re-siting the bait points and possibly changing to another bait base, as well as making other environment changes.

2. ALWAYS RECORD QUANTITY OF BAIT USED AND WHERE IT IS PLACED

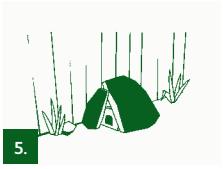
- A simple site plan or location list identifying areas of particular concern pertinent to the site should be drawn up and retained on file.
- A record of all bait points and the amount of bait laid should be maintained during the treatment. Activity should be noted at each bait point, including any missing or disturbed baits, as the treatment progresses.
- By carefully recording the sites of all bait points responsible users of rodenticides are able to return to these sites at the end of the treatment and remove uneaten bait so that it does not become available to wildlife.

3. ALWAYS USE ENOUGH BAITING POINTS

- Users should follow the label instructions regarding the size and frequency of bait points and the advice given regarding the frequency and number of visits to the site.
- By using enough bait points the rodent control treatment will be conducted most efficiently and in the shortest possible time. This will restrict the duration of exposure of non-target animals to a minimum.

4. ALWAYS COLLECT AND DISPOSE OF RODENT BODIES

- The bodies of dead rodents may carry residues of rodenticides and, if eaten by predators or scavengers, may be a source of wildlife exposure to rodenticides.
- It is essential to carry out regular searches for rodent bodies, both during and after the treatment period. Bodies may be found for several days after rats have eaten the bait and rats may die up to 100 metres or more away from the baited site.
- Any rodent bodies should be removed from the site and disposed of safely using the methods recommended on the label.



5. NEVER LEAVE BAIT EXPOSED TO NON-TARGET ANIMALS AND BIRDS

- Care should be taken to ensure that bait is sufficiently protected to avoid accidentally poisoning other mammals and birds. Natural materials should be used where possible.
- Bait stations should be appropriate to the prevailing circumstances. They should provide access to the bait by rodents, while reducing the risks of non-target access and interference by unauthorised persons. They should protect the bait from contamination by dust or rain. Their design, construction and placement should be such that interference is minimised.

6. NEVER FAIL TO INSPECT BAIT REGULARLY

- Where the risk assessment or treatment records show that multiple visits are required, then those should be made as frequently as is considered necessary. Daily inspection may be required in some circumstances.
- At each visit, baits should be replenished according to the product label and a thorough search made to ensure that bodies and any spilled bait are removed and disposed of safely. Records of such visits should be maintained.

7. NEVER LEAVE BAIT DOWN AT THE END OF THE TREATMENT

- Bait left out at the end of a treatment is a potential source of contamination of wildlife.
- On completion of the treatment, records should be updated to signify that the infestation is controlled and that, as far as reasonably practical, all steps have been taken to ensure that the site is now free of rodenticide bait.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