RABBIT CONTROL USING PHOSTOXIN

EUROPEAN RABBIT

Oryctolagus cuniculus

A fully-grown rabbit will weigh between 1.5 and 2kg (3.5 to 4.5lb) and can consume 500g (1.1lb) of green food a day. Rabbits breed from January to June although some breeding will occur in other months. A female rabbit born early in the year will be capable of producing litters herself in the same year. An adult will rear 2-4 litters each year, each litter consisting of 3-6 young.

After 3-4 weeks, the young are capable of finding their own food. Resistance to *myxomatosis*, together with the fact that weaker strains of the *myxoma* virus are replacing the more virulent strains, means that rabbits have become major pests again.

THE BENEFITS TO BE OBTAINED FROM RABBIT CONTROL:

Rabbit damage is a major economic problem for British agriculture, costing the industry an estimated £100 million annually by destroying wheat and other crops and grazing.

Farmers, foresters, growers and gamekeepers are all well aware of the destruction caused by rabbits. In forestry, rabbits often kill young trees and saplings in orchards, forests and on properties. Rabbits are also responsible for serious erosion; eating plants, leaving the topsoil exposed and vulnerable to sheet, gully and wind erosion. Extensive burrow systems also undermine banks, railway sidings and buildings.

As a general rule, gassing treatments against rabbits will be carried out most effectively during the months from October to February. Numbers will then be at their lowest and burrow entrances will be easier to find amongst the sparse vegetation. Earlier treatments may be required where autumn cereals are being heavily grazed.

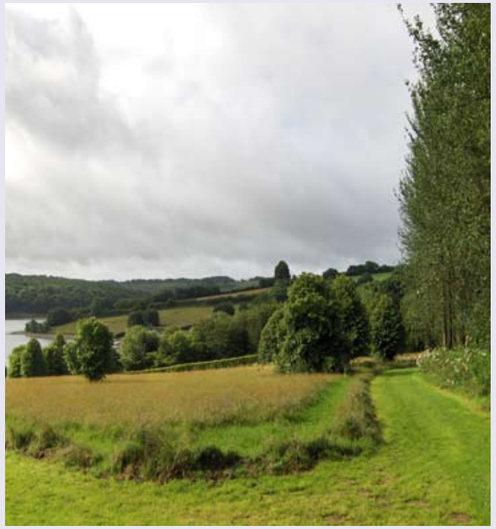
DIRECTIONS FOR USE:
The following procedure is recommended:

1. Survey the area to be treated thoroughly and locate all burrow entrances, even those in undergrowth. This will be worthwhile, although a little time-consuming, as any untreated or unblocked holes will provide a safe escape route. For large burrow systems, it may also be worth blocking all holes a few days before, leaving rabbits to un-earth holes in current use, this will reduce the number of 'dead' holes that are gassed and reduce wastage of tablets.

2. Rabbits which are lying out should be driven to ground before gassing commences.
3. Wearing appropriate protective clothing, including gloves, and using a Phostoxin applicator, place one or two tablets about 30cm (12 inches) inside each open burrow entrance, which must then be completely sealed with a thick turf, grass-side down. Care should be taken not to allow soil to fall on the tablet as this can reduce the rate at which the gas is produced. The tablets will react with moisture in the soil and in the air to produce phosphine gas, which will diffuse through the burrow system. Maximum gas concentration will be achieved about 8-10 hours after the tablets have been placed, depending upon temperature and humidity.
4. It is important that a tablet is placed in every open entrance to the burrow system.
5. After 48 hours, re-inspect the site. Any hole which has been re-opened must be treated again, following the same procedure. Revisit sites 4-7 days after treatment and re-treat any fresh or re-opened burrow entrances if required.

SAFETY – Children, domestic and farm animals should be kept away from the treated areas for at least two days to prevent any possibility of the tablets being dug up whilst they are active.

PHOSTOXIN TABLETS SHOULD ONLY BE USED TO TREAT RUNS OR BURROWS WHICH ARE AT LEAST THREE METRES FROM AN OCCUPIED BUILDING.



RAT CONTROL USING PHOSTOXIN

BROWN OR NORWAY RAT

Rattus norvegicus

The brown rat is the most common rat in the UK and is usually about 25cm (10in) in body length with a further 25cm (10in) of tail. They are usually active at night, can burrow well and are excellent swimmers. They are true omnivores and will eat almost anything. They can breed all year round if the conditions are suitable, with females producing up to five litters a year of up to 14 young (average of seven). These can be mature within in few months.

Gassing is unlikely to provide the complete solution to any rat infestation, but it can be a valuable method of reducing the size of a rat population quickly; after which rodenticide baits can be used more effectively to control the remaining population.

THE BENEFITS TO BE OBTAINED FROM RAT CONTROL:

Banks, hedgerows and overgrown vegetation all provide ideal sites for rats to create burrows, from which they can spread to the surrounding farm buildings, poultry sheds and pig houses. Rat burrow systems can undermine buildings and banks, and cause problems in ornamental gardens and golf courses. They can also spread diseases.

DIRECTIONS FOR USE:
The following procedure is recommended:

As in rabbit control, it is important that all the entrance holes to the rat burrows are found before treatment begins. Dense vegetation should be cut back to allow access to the holes. Before treatment drive any rats above the surface into their burrows.

1. Wearing appropriate protective clothing, including gloves, and using a Phostoxin Applicator, place one tablet inside each open burrow entrance, which must then be completely sealed. Depending on the soil, this may be done either by heeling in the entrance or plugging it securely with a piece of turf, grass-side down. Take care not to allow loose soil to fall on the Phostoxin tablet as this could reduce the rate at which the gas is produced.
2. The Phostoxin tablets reacts with moisture in the soil and air to produce phosphine gas, which diffuses through the burrow system. Maximum gas concentration will be achieved about 8-10 hours after treatment, depending upon temperature and humidity.
3. After 48 hours, re-inspect the site. Any re-opened holes must be treated again, by following the same procedure. Revisit sites 4-7 days after treatment and re-treat any new entrances if required.

SAFETY – Children, domestic and farm animals should be kept away from the treated areas for at least two days to prevent any possibility of the tablets being dug up whilst they are active.

PHOSTOXIN TABLETS SHOULD ONLY BE USED TO TREAT RUNS OR BURROWS WHICH ARE AT LEAST THREE METRES FROM AN OCCUPIED BUILDING.

About Rentokil Products

We operate all over the UK through a network of dedicated professional distributors backed up by a small team of skilled technical experts.

THINK WILDLIFE
Campaign for Responsible Rodenticide Use

FURTHER INFORMATION

If you would like further information on any aspect of Phostoxin, we will be glad to hear from you. Whether your enquiry is of a technical nature or whether you would like to know where you can obtain the product or obtain training in the use of Phostoxin, we will be happy to assist. Phostoxin and Phostoxin applicators are stocked by specialist distributors nationwide.

The latest Safety Data Sheets are available from the Rentokil Products website below.

RAMPS UK

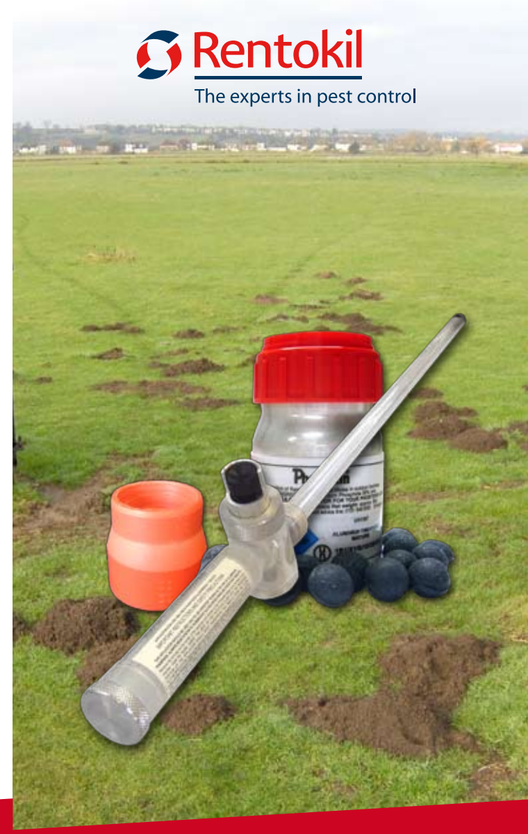
Register of Accredited Metallic Phosphide Schemes

Rentokil adhere to and support the RAMPS protocols. For further information please visit WWW.RAMPS-UK.ORG

enquiries: 0800 313 4619
email: products@rentokil.com
www.rentokilproducts.com/professional

Phostoxin®

Rentokil
The experts in pest control



FOR THE CONTROL OF MOLES, RATS & RABBITS IN OUTDOOR BURROWS

USER GUIDE

PEST CONTROL USING PHOSTOXIN - GENERAL INFORMATION

WHAT IS PHOSTOXIN?

Phostoxin contains aluminium phosphide, and comes in aluminium flasks containing approximately 30 three-gram solid greyish tablets (approximately 90 grams net weight). The recommended method of placing Phostoxin tablets in burrows and tunnels is by means of the Phostoxin applicator, which is designed to enable the operator to apply the tablets where they are required, whilst ensuring that the risk of exposure to the gas is reduced.

HOW DOES IT WORK?

Each tablet liberates one gram of phosphine (hydrogen phosphide) gas, which is lethal at low concentrations to rabbits, moles and rats in their burrows and tunnels. Depending upon atmospheric conditions, peak concentration if the phosphine gas is achieved about 8-10 hours after the tablets have been placed in holes and burrows, however, this will depend on the amount of moisture in the soil and air.

Phostoxin decomposes into a small pile of greyish powder, which has no residual effect on the soil, nor will it in any way harm plant life in the treated area.

WHO CAN USE PHOSTOXIN?

Phostoxin can be used by farmers, foresters, professional pest control operators, local authority professionals and gamekeepers. Phostoxin is a listed poison in Part 1 of the Poisons List and Schedule 1 to the Poisons Rules 1982.

When purchasing Phostoxin, users will be required to make an entry in the Poisons Register and must provide proof that they have been trained in the correct and safe use of aluminium phosphide. A list of individuals and organisations who carry out training in the use of Phostoxin is available from Rentokil Products or may be available from your local distributor. Any persons who apply Phostoxin must have either professional pest control training (for PCOs) or a DEFRA agricultural holding (CPH) number (for professional agricultural use).

STORAGE & TRANSPORTATION

Phostoxin should always be kept in its original container, tightly closed under lock and key in a cool, well-ventilated place away from dwellings. Appropriate warning signs should be placed on the storage area to notify other personnel of the content, these must include the phrase: '*Gassing Compound - Do Not Use Water*'. Keep away from food, drink and animal feeding stuffs. Only unopened flasks should be stored. Once opened, the entire contents of the flasks must be used up in a single application. Do not re-seal part-used flasks. Keep out of the reach of children. For more information see HSE '*Gassing of rabbits and vertebrate pests*', Agriculture Information Sheet No 22.

Care should always be taken when transporting Phostoxin to a site. The Phostoxin applicator and flasks should always be carried in a separate carriage compartment in the vehicle away from operators and animals such as dogs or livestock.

USING THE PHOSTOXIN APPLICATOR:

The Phostoxin applicator should be used for placing Phostoxin tablets in the ground, and this will help to reduce the operator's risk of exposure to phosphine gas. The applicator consists of several parts, and can hold the tablets from one flask of Phostoxin (about 30 tablets) in the main chamber. Use an adaptor (supplied) to transfer tablets from the flask to the applicator. Full instructions are located on the applicator handle. A probe is also available to help ensure tablets are inserted effectively into mole runs.

PERSONAL PROTECTIVE EQUIPMENT:

A full face respirator with appropriate gas filter cartridge MUST be worn (the filter must be a combination filter to protect against phosphine gas *and* particulates - contact your PPE supplier for advice). Overalls, gloves and sturdy boots MUST also be worn.

USAGE & DISPOSAL

Once opened, the entire contents of the flask must be used up in a single application. Do not re-seal part-used flasks. Once the treatment has been completed, any residual dust that is left in the Phostoxin flask and/or inside the chamber of the applicator should be dislodged by carefully tapping the flask and/or barrel against a solid object.

Empty flasks should be left in the open air in a secure place for several days then returned to the store. Do not re-seal flask, keep cap with flask for subsequent disposal. Empty flasks should be placed in a safe, dry, well-ventilated, secured storage area ready for disposal. Do not rinse empty flasks, and do not keep empty flasks inside occupied buildings. They should be disposed of in accordance with guidelines given in the HSE '*Code of Practice for Using Plant Protection Products*'. Containers should be treated as Hazardous waste and disposed of by a licensed waste-disposal contractor, or as directed by the relevant Approved Code of Practice.

APPLICATOR CARRY CASE - STORING AND TRANSPORTING YOUR APPLICATOR

The applicator can be stored and transported in a carry case. This can hold an applicator, spare tube, adaptor and probe, and has a pocket on the side to hold a flask. Please note that flasks SHOULD NEVER be stored in the bag pocket for any length of time, and should always be kept in a dry, lockable store until needed.

Always store your applicator in a safe place out of the reach of non-trained personnel and in a place where it cannot be knocked or damaged.

MOLE CONTROL USING PHOSTOXIN

EUROPEAN MOLE

Talpa europaea

Moles are insectivores, and are well adapted for burrowing underground with large, muscular forelimbs. Moles weigh up to 140g (5ozs), and reach a length of 15cm (6in). The fur is silver-grey to black with a distinctive sheen. Their eyesight is generally poor, and their sense of smell is thought to be poorly developed. Moles probably find their food by an acute sense of touch and vibration.

Moles prefer to inhabit areas rich in insects and worms. Earthworms make up 80 to 90% of the mole's diet. One litter is produced each year with an average of four young. They are born in April/May, and these spread out during July/August and may re-infest areas previously treated. Moles can live for three years, sometimes longer. They are solitary and avoid contact with others, except when mating.

The mole's burrow system is complex, and consists of an extensive area of tunnels with many runs which provide easy access to check regularly for food. As well as feeding runs, a nest is formed as an extension of one of the tunnels. It is thought that moles feed at about four-hourly intervals, returning to their nests to rest and sleep. There are usually two types of tunnel:

PERMANENT TUNNELS (A)
Used for travelling to different parts of the working territory and usually about 15 to 30cm (6 to 12in) below the surface. Some of these tunnels may be much deeper depending on the water table and the depth of available food.

A

FEEDING TUNNELS (B)
Just below the soil surface, which may occasionally break through the surface.

B

Mole hills are produced by the soil of underground excavations. On inspection, they appear quite haphazard in distribution; this is because mole hills remain as distinct piles for many months. In spring, however, hunting males may produce a large number of hills in a straight line, extending up to 100m (90yd) in length.

There is constant antagonism between moles for territory, and as soon as a mole in a particular territory is killed, its workings may be taken over by moles from adjacent areas. Re-infestation often takes place from adjacent woodland and banks. Because of this antagonism, an average heavy infestation consists of only eight to ten moles per acre. Autumn cultivation forces moles to leave arable land for adjacent pasture land. Moles may cover considerable distances above ground; they can swim well and streams present no barrier to movement.

THE BENEFITS TO BE OBTAINED FROM MOLE CONTROL:

- Prevention of loss of soil fertility. Moles bring up sub-soil, which prevents grass from growing and leads to deterioration of pasture.
- Prevention of damage to machinery. Moles bring up stones that can damage mowing machines and harvesters.
- Prevention of crop loss. Moles damage vegetable production by disturbing the roots and allowing the soil to dry out.
- Improvement in the appearance of turf. Especially on lawns, playing fields, golf courses and pastures.
- Protection of silage/meadow ground. Moles can contaminate silage and meadows.
- Prevention of accidents to horses. Mole workings on rides and gallops pose a very real danger to horses in training. There is, of course, the additional hazard to riders when horses fall.

It is important to locate the areas in which the moles are "live" before treatment commences. A large number of mole hills does not always mean many moles - often there is only one. It is important to recognise that the mole is a solitary animal and its workings from neighbouring animals are usually distinct. Careful walking will tell you how many moles/burrow systems there are. Remember that even heavy infestations contain only eight to ten moles per acre and in most instances there are fewer.

Within each group of workings (which may cover many square metres), find those mole hills made within the last 24 hours. There will probably be fewer than half-a-dozen. The biggest is not necessarily the most recent.

USE THE FOLLOWING CLUES:

new mole hill

old mole hill

a. On a newly formed mole hill, the loose, damp soil bridges the gaps between blades of grass; on older hills the soil has trickled between the blades.
b. A newly formed mole hill tends to be "cupped" by the surrounding grass, bending the grass blades outwards. In older mounds the grass blades will have straightened up (see illustration).
c. The presence of germinating weed seedlings on the hill indicates that it is at least three to four days old. Similarly, any blades of grass or plant leaves that have pushed up through the mound indicate that the hill is not recent.
d. The soil of a recently formed mole hill is soft and fine in texture and dries rapidly in the sun and wind to a powdery surface. The soil of an older hill has had time to be flattened, compacted by rain, and is far less susceptible to wind drying.
e. The presence of cattle hoof marks on mole hills, when there are no animals present, also indicates that the workings are not recent.
f. If there is any doubt about the age of a mole hill, remove some of the soil; if there is yellowed grass beneath, the mole hill is more than three days old.

In dry weather conditions, moles may tunnel deeper in order to find moisture. It is important to realise this when probing for the runs, as those nearer the surface may not be in use; if tablets are inserted into them, the treatment may be ineffective.

Do not attempt to gas the shallow feeding tunnels, since these are rapidly abandoned and are not in permanent use. Phostoxin tablets should never be placed or allowed to remain on the ground surface.

For best results, large areas should be treated in one operation. We suggest all application points are marked and checked on subsequent days in order to identify any new runs which will be requiring treatment. It is quite possible that although the moles in the treated area will be dead, others from further away will move in after the gas has dissipated. Moles can move a distance of at least 200 metres across streams and under roads. Vacant workings can be taken over by other moles and the rate of re-infestation varies with the number of moles in adjacent areas.

Always walk the perimeter of the treated area, including any adjacent banks, woods or fields, looking for fresh workings, since this provides the earliest evidence of re-infestation. These should be re-treated, as should the treated area if fresh workings are found.

As activity by moles often overlaps boundaries, it is a good plan to seek the co-operation of neighbours before commencing treatment. As mentioned previously, as large an area as possible should be treated in one operation for successful eradication of moles, remembering that tunnel systems may well extend some distance into neighbouring land.

DIRECTIONS FOR USE
The following procedure is recommended:

1. Using a dibber, probe between visible mole hills until the tunnel is located; there will be no doubt about this since the dibber will "give" suddenly as it enters the tunnel beneath. It should go down to a depth of about 15 to 30cm (6 to 12in). When removing the dibber, ensure that a clean hole is left down which a tablet can be dropped without disturbing the soil.
2. If the runs cannot be found easily, dig out the earth in a mole hill until the tunnel is visible and, by means of the Phostoxin applicator, insert one tablet. A tablet should always be placed as far as possible into each tunnel.
3. Wear appropriate protective clothing, including gloves, and use a Phostoxin applicator.
4. After applying the tablet, insert a plug of turf to act as a seal or heel in the opening and flatten the molehill, taking care to ensure that as little earth as possible falls on to the tablet.
5. For best results repeat treatments may be required. Revisit sites 4-7 days after treatment and re-treat where there are signs of continued activity.

SAFETY – Children, domestic and farm animals should be kept away from the treated areas for at least two days to prevent any possibility of the tablets being dug up whilst they are active.

PHOSTOXIN TABLETS SHOULD ONLY BE USED TO TREAT RUNS OR BURROWS WHICH ARE AT LEAST THREE METRES FROM AN OCCUPIED BUILDING.