

Campaign for Responsible Rodenticide Use (CRRU) UK

The UK Rodenticide Stewardship Regime
2017 Annual Report



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Annual Report 2017

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Foreword

The year 2017 has been very busy for those working to implement the UK Rodenticide Stewardship Regime. Most importantly, it has been the first full year that the regime has operated. Rodenticide products that were approved prior to implementation may no longer be sold or used anywhere in the UK. Stewardship conditions are now applied to approximately 350 anticoagulant rodenticide products authorised under the Biocidal Products Regulation for use by professionals. Authorisations for these products are held by 15 companies, all of which were funding members of CRRU UK in 2017.

All professional rodenticide products permitted for use outdoors can be sold only to those presenting at point of sale, either in person or on-line, a CRRU-approved certificate of competence. Early in the year, this requirement resulted in a number of reports to CRRU that point of sale checks were not sometimes carried out. CRRU UK has now introduced a web-based reporting tool for those who witness such incidents. Substantiated cases are referred to authorisation holders for action, because their authorisations are at risk when stewardship conditions are not implemented by suppliers.

An independent auditing organisation (BASIS Registration Limited) has developed and is currently piloting a procedure in which all point of sale outlets, again both 'bricks and mortar' and on-line, which sell professional outdoor rodenticides, will have their clerical procedures examined to ensure that every sale is supported by valid proof of competence certification. This will be rolled out country-wide in 2018. Outlets which do not sign up to the audit process, or which do not correct procedures after failing audits, cannot continue to sell stewardship-conditions rodenticides.

The ground-work for training and certification was done in 2016, with the establishment of a training framework, recognition of a number of existing training qualifications/certifications as 'CRRU-approved' and the development and delivery of new CRRU-approved training courses. Certification/qualification is offered by four independent awarding organisations. Training has proceeded apace in 2017 with more than six thousand participants gaining CRRU-approved certifications, to add to more than seven thousand obtained in 2016.

An important area of CRRU work in 2017 has been with farm assurance schemes. Those elements of the schemes' standards that refer to rodent pest management have been examined in collaboration with the schemes themselves and modified where necessary to bring them into line with new requirements of best practice and the stewardship regime.

It is hard to over-state the effort this has entailed and the anticipated benefits for best practice on thousands of farms across the UK.

The rapidly changing landscape of rodenticide regulation in the UK has necessitated a continuous process of communication with rodenticide users, and those who supply them with these essential products. CRRU has actively pursued a strategy of information dissemination, either directly from its own communications function or through the publicity departments of its stakeholder partners.

Last but certainly not least has been the work of CRRU in monitoring various aspects of regime implementation. Five major programmes have been carried out in 2017, more information on which can be seen in the text of this report. Barn owl breeding performance, barn owl rodenticide liver residues, the extent of the application of best practice among professional user groups, the occurrence and severity of anticoagulant resistance and the frequency and consequences of acute exposure to vertebrate pesticides have all been the subject of detailed studies and CRRU reports published this year.

Once again it falls to me to express sincere gratitude to all those who have given their time freely to assist with this work, particularly my co-authors of this report, the leaders of the CRRU UK stewardship work groups. The effort of the staff of more than thirty stakeholder organisations is also gratefully acknowledged. In particular, the work of the trade associations of professional rodenticide users in farming, gamekeeping and professional pest management has been of the highest importance in improving knowledge of best practice and changing use patterns to reduce wildlife exposure. All have embraced the concept of rodenticide stewardship with great enthusiasm.

There are promising early signs among some of the stewardship monitoring programmes. But there remains much to be done. We must hope for further progress in 2018.



Dr Alan Buckle
Chairman CRRU UK,
University of Reading

1. Summary

- 1.1 The Government Oversight Group (GOG), chaired by the Health and Safety Executive (HSE), has determined that the work undertaken by Campaign for Responsible Rodenticide Use (CRRU) UK and its stakeholder partners to establish the UK Rodenticide Stewardship Regime has met the government 'high level principles' for rodenticide stewardship (GOG 2017).
- 1.2 Products containing anticoagulant rodenticides have therefore received Biocidal Products Regulation (BPR) authorisations for use by professionals in the UK, including application outdoors.
- 1.3 Essential elements of the regime are:
- a code of best practice which requires adoption of integrated pest management, use of the concept of 'risk hierarchy' and application of all available and appropriate risk mitigation measures when applying rodenticides,
 - other best practice advice including guidance on permanent (long-term) baiting and environmental risk assessment,
 - a training framework to permit the assessment for CRRU approval of all training courses leading to certification,
 - approved training courses for all professional rodenticide user groups, using both classroom and on-line methods of course delivery,
 - identification of farm assurance schemes whose membership is considered equivalent as proof of professional competence to certification/qualification,
 - the co-ordinated phase-out of sale and use of obsolete products and their replacement by products carrying consistent labels showing 'stewardship conditions',
- point of sale checks for competence in all outlets supplying professional rodenticides prior to purchase,
 - a programme of monitoring for all important aspects of regime delivery, and
 - a strategy of communication that ensures all user groups are informed in timely fashion of all stewardship developments and requirements.
- 1.4 All companies that hold rodenticide authorisations for products used by professionals outdoors are funding members of CRRU UK and therefore comply with the conditions of their stewardship authorisations.
- 1.5 Further additions to the regime developed in 2017 are:
- an independent annual audit of compliance with point of sale checks at all outlets supplying professional rodenticides,
 - a website where those who observe point of sale compliance failures can report incidents for investigation by CRRU,
 - a framework for the supply of materials to the four certification Awarding Organisations for programmes of continuing professional development (CPD) suitable for all professional user groups.
- 1.6 The GOG has defined, using six headings, the data required from CRRU to permit government to evaluate the implementation and impacts of the stewardship regime.
- 1.7 In 2017, CRRU has conducted all required monitoring programmes and presents in this report summary data acquired from them.

2. Introduction

In 2013, after consultation with a wide range of stakeholder organisations, the Health and Safety Executive (HSE) conceived a scheme for the stewardship of rodenticides in the UK intended to promote the use of best practice among professional users of rodenticides. The main objectives of the scheme were to reduce the exposure of non-target wildlife (HSE 2013), while allowing these essential products to be used to protect human and animal health and hygiene. The principle requirements of the scheme were laid out in an HSE announcement as a set of 'High Level Principles' (HSE 2015). A detailed framework for implementation of stewardship was developed by the Campaign for Responsible Rodenticide Use (CRRU) UK, after consultation with all interested government agencies and stakeholder organisations, and introduced as the UK Rodenticide Stewardship Regime (Buckle et al. 2017a).

After 30th September 2016, it became illegal to sell professional rodenticides that were not authorised under the Biocidal Products Regulation (BPR) (EU 2012), and they could not be used after 31st March 2017. The first products were authorised under stewardship on 31st March 2016. Among these conditions was a requirement to show certification demonstrating proof of professional competence at the time

of purchase. The annual report of the stewardship regime for 2016 was published in early 2017 (Buckle et al. 2017b). This document explained the structures set up within the CRRU UK organisation to deliver the stewardship regime, the progress of implementation through to the end of 2016 and the measures put in place to monitor the progress of the regime. HSE, and the other government agencies of the Government Oversight Group (GOG), published a response to the CRRU UK report (GOG 2017), which stated that the CRRU stewardship regime met the requirements of the HSE high level principles, which in turn permitted HSE to authorise certain rodenticide products for use outdoors in the UK. The GOG report also noted that the results of the monitoring programmes were awaited to demonstrate progress in several key areas of "performance monitoring and assurance requirements".

Further progress has been made in 2017 in all areas of implementation and monitoring of the stewardship regime. The details of this progress, and information obtained from monitoring, are provided in the following pages this report.

3. Reports from the CRRU UK Work Groups on Progress during 2017

3.1. General

The implementation of the stewardship regime has been facilitated by the establishment of six work groups, each under the leadership of a specialist in the field of operation of the group. The objectives of these work groups, the names of participants in them and of the organisations that permit their staff to support stewardship with time and resources, were given in the previous report (Buckle et al. 2017b). The lists of work group representatives given in 2016 remain valid (with only minor amendment).

3.2. Best Practice Work Group (Leader: Dee Ward-Thompson, BPCA)

3.2.1. CRRU Code of Best Practice

The Code of Best Practice (the Code) is held under review and instances where its text may require future amendment are discussed and recorded by the work group. Presently, the Code remains fit for purpose and there are no significant points of conflict either with existing knowledge of best practice or current UK and European Union (EU) legislation. However, the coming years may see the introduction to the market of new rodenticide products containing an active substance not currently approved in the UK (ECHA 2017a) and the introduction of products that contain lower concentrations of anticoagulant active substances than are presently routinely used. This latter development is determined by a decision of the Risk Assessment Committee of the European Chemicals Agency (ECHA, 2016; section 3.4.1). The process of renewal of the anticoagulant active substances has been completed by the European Commission, after a public consultation (see ECHA 2017b). Subsequent renewal of products containing anticoagulant active substances is underway and may result in changes to recommended use patterns and label phrases (see section 3.4.1). The Best

Practice WG will hold these developments under review and consider a revision of the Code when this becomes necessary.

3.2.2. Farm Assurance Schemes

A period of interim acceptance of existing farm assurance scheme standards as proof of competence at point of sale for purchase of professional rodenticides ended on 31st December 2017. The work group developed a thirteen-point template (Annex 1) for the assessment of new scheme standards and worked with a number of schemes to bring forward new standards fully aligned with the Code. A list is provided (Table 1) of those schemes whose new standards meet the requirements of the template and who have confirmed that farms will be audited to their new standards either before or on 1st January 2018. Membership documents from these schemes will therefore continue to provide proof of competence at point of sale after that date.

Fully compliant standards have not been made available to CRRU by some schemes, although working documents seen by work group rapporteurs indicate that standards will be compliant when they are issued. These schemes, marked with an asterisk in Table 1, will remain approved after 1st January 2018 but may be removed from the approved list if compliant standards are not published and in force by 31st March 2018.

The work group will continue to co-operate with those schemes whose cycle for consultation and amendment of standards did not permit these CRRU time-lines to be met. The list of approved schemes may be amended when more schemes become compliant.

Support and guidance has been offered to schemes to ensure that auditors are aware of the new requirements and understand how to assess compliance. Further support in the form of training and development of documentation is planned.

Table 1. Farm assurance schemes whose standards will be compliant with CRRU UK guidance and requirements after 1st January 2018.

Assurance schemes	No. of members	Geographical Coverage
Agricultural Industries Confederation*	250	UK
British Egg Industry Council Code of Practice for Lion Eggs*	1,746	UK
Red Tractor Farm Assurance - Beef and Lamb	25,014	England
Red Tractor Farm Assurance – Dairy	11,668	UK
Red Tractor Farm Assurance – Crops	16,973	England, Wales
Red Tractor Farm Assurance - Fresh Produce	2,222	UK
Red Tractor Farm Assurance – Pigs	2,129	England, Wales, NI
Red Tractor Farm Assurance – Poultry	2,131	UK
Quality Meat Scotland - Cattle & Sheep	9,772	Scotland.
Quality Meat Scotland – Pigs	141	Scotland
Scottish Quality Crops	3,500	Scotland
Farm Assured Welsh Livestock - Beef & Lamb	7,440	Wales
Northern Ireland Farm Quality Assurance Scheme – Beef and Lamb*	12,184	NI
Northern Ireland Farm Quality Assurance Cereals Scheme*	915	NI
Laid in Britain	Not available	England, Wales, Scotland
Quality British Turkey	720	UK
Duck Assurance Scheme (Breeder Replacement, Breeder Layers, Hatcheries, Table Birds, Free-Range Table Birds)*	Not available	UK
TOTAL	96,805	

* Schemes marked with an asterisk have provided compliant draft standards

3.2.3. Environmental Risk Assessment

The new Environmental Risk Assessment form and guidance notes, introduced in October 2016, was ‘road tested’ during 2017. Only positive feed-back has been received from users of these materials. The road test period has been declared to be over and the documents are considered to be finalised. They will be reviewed periodically.

3.2.4. 2017 KAP Survey

A follow-up Knowledge, Attitudes and Practice (KAP) survey was carried out during 2017 by an independent market research company. A report was prepared for CRRU UK, and subsequently this was provided to the GOG. The report compares data obtained in 2017 with those from 2015, prior to the implementation of the stewardship regime (Research Engine 2017). Many of the questions addressed to respondents from the three professional pest management sectors were intended to test knowledge of and compliance with best practice. There is evidence in the information obtained for 2017 of significant increases in understanding and application of best practice across all professional user groups. A summary of the main findings of the 2017 KAP Survey report is given in section 3.6.2.

3.2.5. Forward Focus for 2018

It seems likely that work will be required on the Code 2018 to ensure that it contains the most accurate and up-to-

date advice on risk mitigation and integrated rodent pest management for professional users of rodenticides. A high priority will also be given to work with those farm assurance schemes whose standards are not yet aligned with the Code. An aspect of rodenticide application that is neglected is burrow baiting and CRRU guidance on this practice will be issued.

3.3 Training and Certification Work Group (Leader: Matthew Davies, Killgerm)

3.3.1. Work output and achievements of the T&C WG

The main output and achievement of the T&C WG remain from 2016, which has been to deliver its stewardship objectives and Training Framework (CRRU UK 2016) by producing approved training and certification options for users as listed on the CRRU website <http://www.thinkwildlife.org/list-of-training-and-certification/>.

3.3.2. Continuing Professional Development (CPD) output and achievements

CPD is not currently a mandatory requirement for users of professional use rodenticide under the stewardship regime.

The Framework for provision of CPD for all professional rodenticide user groups has been revised and will now involve:

- a) CRRU to produce a resource, updated annually, to maintain the knowledge of users that was gained from their achieving stewardship approved certification,
- b) CRRU resource to be proactively communicated to CPD schemes operated via Awarding Organisations, for dissemination through their trusted and established routes to users,
- c) CRRU resource posted to CRRU website and made available to all professionals,
- d) Best Practice Work Group, among other sources, to provide content for the CRRU resource,
- e) produce first resource ready for July 2018,
- f) resource to be shown to CPD sub-group in June for review and agreement. If any concerns cannot be dealt with, decisions will be elevated to CRRU TF.
- g) if possible, it may be desirable for CRRU to release sector specific resources

- h) it is envisaged that the CRRU resource will be a presentation or booklet.

It has been decided that the CRRU Portal, from previous proposals, is no longer relevant or required. The gap has been filled by the BASIS associate rodent specific category. Furthermore, the CRRU resource will be made available via the CRRU website.

It has been requested and agreed that the Code includes a sentence such as ‘users are encouraged to maintain their knowledge by joining an established CPD scheme or alternatively by consulting the annual CRRU resource’. This captures users that fall outside established CPD schemes. Label directions refer users to the Code which in turn encourages them to maintain their knowledge by consulting the CRRU resource.

3.3.3. An updated list of established CPD schemes in operation

CRRU has discussed established CPD schemes and considers there are now suitable options for all user sectors, including professional pest management, farming and gamekeeping (Table 2).

Table 2. The names of Continuing Professional Development (CPD) schemes currently in operation in the UK and their providing organisations.

Scheme Name	Providing Organisation
National Register of Sprayer Operators (NRoSO)	City & Guilds / NPTC
Pig Industry Professional Register (PIPR)	City & Guilds / NPTC
BASIS Professional	BASIS Registration Ltd
BASIS Professional Register for Managers and Pest Technicians (PROMPT)	BASIS Registration Ltd
BASIS Amenity	BASIS Registration Ltd
AHDB Dairy Pro	Agriculture and Horticulture Development Board (AHDB)
Lantra Passport	Lantra
Lantra Skills Plus	Lantra
In-house schemes are available in the professional pest management sector	Various providers, particularly the large professional pest control service companies
Training and Certification: users can repeat the approved training and certification options at regular intervals, in order to maintain their knowledge to stewardship levels	BASIS, City & Guilds, Lantra, RSPH

CRRU will not formally approve CPD schemes as was done with training and certification. Delivery of the CRRU resource is entrusted to the Awarding Organisations (AOs) that were appointed to deliver training and certification options via their own successful and proven systems. CRRU will support information and updates relevant to CPD, by production of their annual resource, as well as ‘signposting’ users via the CRRU website and through the agreed amendment to the Code.

City & Guilds, Lantra, and BASIS are committed to promoting the CRRU resource and rodent-related content through their CPD systems.

3.3.4. Key preliminary metrics to permit operation of the WG, and thereby delivery of stewardship, to be monitored by the GOG

The work group has collaborated with the AOs to produce data on the uptake of training and certification in each of the three main user sectors. These data are considered confidential to the four organisations, RSPH, LANTRA, City and Guilds and BASIS, which have supplied them. They comprise information on the number of training providers who present approved courses, the number of participants who obtain the certification and, in the case of LANTRA, City and Guilds and BASIS the pass rate of those who sit the examination. These confidential data were presented to the GOG separately from this report. Total annual numbers of certificates/qualifications awarded are shown in Table 3.

3.3.5. KAP survey 2017 – training and CPD indicators

The percentage of users holding rodenticide use qualifications increased from 2015 to 2017 across all three sectors, but especially among gamekeepers (from 37 % to 60 %). The percentage of farmers holding rodenticide use qualifications/certifications increased slightly, from 19 % to 23 %. In 2015, 96 % of PCOs had qualifications/certifications relevant to the use of rodenticides and this rose to 98 % in 2017.

Although levels of training certification/qualification were low in the farming sector it was noted that membership of farm assurance schemes, whose membership is considered by CRRU to be equivalent to certification under stewardship conditions, was high (Arable farmers: 84 %, Dairy farmers: 99 %, Sheep farmers: 79 %, Pig farmers: 88 %, Poultry farmers: 92 %). The work done by the Best Practice Work Group (section 3.2.2) to bring farm assurance scheme standards into alignment with the Code will increase knowledge and application of best practice in the farming sector.

CPD levels among farmers increased but declined amongst gamekeepers and PCOs. Why we see the apparent contradiction between CPD and qualification amongst gamekeepers (and to lesser extent PCOs) is not immediately apparent. The finding is contradicted by BASIS (Registration) Ltd., which reports that membership of the BASIS PROMPT CPD scheme, aimed at the PCO sector, increases reliably year-on-year.

3.3.6. Forward focus for 2018

Submission of training and certification data to GOG.

The work group will continue with arrangements for data submission to GOG with the help of the Awarding Organisations. Further data will also be obtained regarding the numbers of historical approved certifications and qualifications issued, again with help from the Awarding Organisations.

Delivery of training and certification to stewardship requirements.

The CRRU T&C WG will continue with delivery of training and certification in its current form.

Continuing Professional Development.

Deliver work plan described above.

Table 3. The total numbers of CRRU-approved training certificates and qualifications awarded by the following awarding organisations: BASIS (Registration) Ltd., City & Guilds, Lantra, Royal Society for Public Health

Time Period	Total number of certificates/qualifications issued
July 2015 - June 2016	7,285
July 2016 - June 2017	6,044
total	13,329

3.4. Regulatory Work Group (Leader: Sarah Bull, BASF)

3.4.1. Activities in 2017

During 2017 authorisation holders have been preparing for two major forthcoming changes:

i) Re-classification of rodenticides in accordance with the 9th ATP (Adaptation to Technical Progress) of the Classification, Labelling and Packaging Regulation (applies from 1 March 2018) (ECHA 2016).

ii) Renewal of product authorisations following active substance renewal (anticipated end 2017 to Q1 2018).

Renewal of product authorisations will introduce new EU harmonised rules. The new rules differ according to active substance and type of user and will impact pack sizes, label phrases and use of products.

In the 2016 annual report (Buckle et al. 2017b), the CRRU Regulatory Work Group highlighted concerns that several of the EU proposals (now agreed) are not practical in terms of achieving efficient rodent control whilst protecting human health and the environment. During 2017, the Work Group has continued to provide feedback to the HSE, at their request, on some of the conditions of authorisation agreed in the EU, such as the 'public area use' phrase. The work group hopes that it can continue to provide comment on topics where national flexibility allows. The work group has also continued to seek advice from HSE on how EU harmonisation will impact authorisations in the UK, for example, how HSE will define 'trained professional', 'professional' and 'general public' and if there is scope to change the minimum pack sizes for professional users.

The work group has also contributed to documents issued by other CRRU work groups, such as the "CRRU UK – Guidance for Internet Sales of Rodenticides in the UK" and has provided regulatory advice/opinion to CRRU where needed.

Monitoring data continues to be submitted to HSE as required under the stewardship regime.

3.4.2. Current Status of UK BPR Product Authorisations with 'Stewardship Conditions' Labels

HSE provides public access to a database containing information on authorised rodenticide products at: www.hse.gov.uk/

A total of 349 rodenticide products are currently supported by the work of CRRU UK and the stewardship regime and therefore carry labels requiring the implementation of stewardship conditions. Some 75 products are not supported by stewardship, mainly because their authorisations restrict their use to indoors. Seven different anticoagulant active substances are used in 'professional stewardship products,

as follows: difenacoum (142 authorisations), bromadiolone (126), brodifacoum (68), difethialone (9), flocoumfen (4), coumatetralyl (2) and warfarin (1). The majority (347) of these stewardship products are permitted for use outdoors around buildings, while 132 products are also authorised for use outdoors in open areas, 123 outdoors at waste dumps and 191 in sewers. These authorisations provide a wide variety of options for professional users in integrated rodent pest management programmes and for the control of anticoagulant-resistant rodents (see section 3.6.5).

3.4.3. Next steps and work planned in 2018

The work group welcomes opportunities to provide comments to the HSE to help shape their position on topics which may impact the authorisation and use of rodenticides, and thereby public and animal health and hygiene. In 2018, this will be particularly relevant due to the forthcoming UK exit from the EU. The work group encourages HSE to involve authorisation holders in discussions on future regulation of rodenticides.

Authorisation holders will continue to work with supply chain partners to facilitate a smooth transition to new labels in 2018.

3.5. Point of Sale Work Group (Leader: Rupert Broome, Killgerm)

3.5.1. Guidance for Internet Sales of Rodenticides

The CRRU UK Point of Sale Work Group, together with input from the CRRU UK Regulatory Work Group, created the advisory document "Guidance for Internet Sales of Rodenticides." (see Annex 2). The objective was to set out clear and simple guidelines on how all companies selling rodenticides online should be behaving, and as such it has created a benchmark for online sellers which had not previously existed, and which is consistent with the UK Rodenticide Stewardship Regime.

The guidance covers the online advertisement and sale of both professional and non-professional rodenticides. It provides all authorisation holders with a clear, cross industry reference point and therefore ensures a consistent approach when dealing with any instances of non-compliance in relation to internet sales of their rodenticides. The guidance also highlights potential areas of legal concern for any suppliers and/or authorisation holders who do not comply.

3.5.2. Online Reporting Tool for Allegations of Non-Compliance

Since the instigation of the UK Rodenticide Stewardship Regime, CRRU UK has received, on an *ad hoc* basis, reports

of potential instances of non-compliance in terms of point of sale controls. Each of these has been addressed on a case by case basis, but not in a systematic way. To create a more simplified and uniform platform for the handling of such allegations, and to deliver a more clearly measurable resource for logging the numbers and outcomes of such reports, the work group has developed and implemented an online reporting tool for allegations of point of sale non-compliance.

The online reporting tool went 'live' on 1st October 2017 and is accessed from the CRRU UK website: <http://www.thinkwildlife.org/stewardship-regime/crru-uk-point-of-sale-non-compliance-reporting/>. It is administered by CRRU UK, and on receipt of an allegation the details are checked to ensure there are sufficient grounds in order to investigate. Those allegations with sufficient grounds are passed to the authorisation holder(s) concerned for investigation and action. The authorisation holder(s) are asked to report back to CRRU UK on outcomes of their investigations and actions taken. These are logged against the original allegation and recorded.

CRRU UK will report on a regular basis (at least annually) to the GOG the number of allegations, the number of investigations and their outcomes.

3.5.3. Independent Audit Process for Point of Sale Compliance

Throughout 2017, CRRU UK has been working closely with BASIS (Registration) Ltd (BASIS) to create a new audit process for assessing compliance with the proof of competence checks at the point of sale, as required under the regime.

BASIS was chosen as the preferred partner due to a number of considerations, including their independence, the existing recognition they have within HSE and the success of the existing BASIS Stores Inspection Scheme. The background to the Audit proposal, which has been endorsed by CRRU UK, is attached at Annex 3 for reference.

Once the proposal was endorsed, a Sub-Group of the work group was set up to work with BASIS in the creation of the audit process itself, and this work was completed in Q3 2017. Since then a training program has begun for the BASIS team of auditors, covering the background to CRRU UK, the UK Rodenticide Stewardship Regime and the new audit procedures. In addition, the first trial audits have been conducted by BASIS.

In Q4 2017 a communication exercise has begun by CRRU UK to raise awareness throughout all sectors of the need for all suppliers of professional use rodenticides to register with BASIS before the end of 2017, such that their organisations will be included in the BASIS POS Audit process which begins in 2018.

In addition, all authorisation holders which are Members of CRRU UK have been instructed to cascade down their supply chains the requirement for their supply chain partners to register with BASIS before the end of 2017. In terms of authorisation holders themselves, for all companies with operations based in the UK, they have been asked to also register to be audited by BASIS.

For authorisation holders not based in the UK, it is impractical and potentially financially burdensome to expect BASIS physically to visit and audit each company. Instead, these authorisation holders have been instructed to declare to BASIS, in confidence, which companies they are supplying as the first point of sale in the UK. BASIS will then ensure that these companies are included in the audit plan, and if they are not then they will alert the authorisation holder.

BASIS expects the 2018 audit cycle to be complete by the end of November 2018. All stores which have successfully passed the BASIS POS Audit will receive certification confirming their status. Certification is annual, as is the audit process. From 1st January 2019, all authorisation holders and their supply chain partners are expected to supply only stewardship labelled rodenticides to companies within the supply chain if they have a current BASIS POS Audit certification.

3.5.4. Forward Focus for 2018

A key priority for the POS Work Group in 2018 will be to support the successful implementation of the BASIS Point of Sale Audit scheme. In addition, the POS Work Group will focus on monitoring the levels of non-compliance allegations, and acting where necessary on any instances of serious or repeated non-compliance.

3.6. Monitoring Work Group (Leader: Colin Prescott, University of Reading)

3.6.1. Key Collaboration Partners in Stewardship Monitoring

The Monitoring Work Group has established links with contractor agencies to deliver the following stewardship monitoring projects:

- Research Engine Ltd. - Knowledge, Attitude and Practice (KAP) survey, conducted in 2017, for comparison with the KAP Survey conducted in 2015.
- Centre for Ecology and Hydrology – analysis of SGAR residues in barn owl liver samples collected in 2016.
- Wildlife Conservation Partnership - breeding

performance of barn owls in 2016 across five regions of the UK, for comparison with similar data collected between 2011 and 2015.

- University of Reading – Report on the status of anticoagulant resistance in Norway rats and House mice to date.
- University of Reading - a review of the Wildlife Incidence Investigation Scheme (WIIS), monitoring the effects of vertebrate pesticides (including anticoagulant rodenticides) on non-target animals in the UK.

Contracts are established between contractors and the funding agency (CRRU UK). The work group is responsible for the scientific veracity of the monitoring projects, coordinates provision of reports at required intervals and oversees publication of monitoring data.

3.6.2. Knowledge, Attitude and Practice (KAP) survey

Introduction

An initial Knowledge, Attitude and Practice (KAP) market research survey was completed in June 2015 and published in August of that year. It provided baseline information on the knowledge, attitudes and practice of the three professional rodenticide user sectors, namely farmers, gamekeepers and professional pest control technicians (PCOs). The survey was repeated in 2017 to follow changes in user behaviours and responses to a wide range of questions about best practice and the stewardship regime (Research Engine 2017).

Best Practice Key Performance Indicators from the KAP Survey

The KAP Survey provides detailed information on how rodenticides are used by practitioners in all user sectors in the UK. A sample of farmers (both livestock and arable), gamekeepers and pest controllers was asked questions to gain insight into their knowledge, attitudes and practices, during May/June 2015, to provide a baseline survey prior to implementation of the UK rodenticide stewardship regime. The KAP survey was repeated in June/July 2017, to see if knowledge has improved from 2015 and since the launch of stewardship, as well as to find out whether attitudes and practices have changed as a result, with the ultimate aim to reduce the exposure of wildlife to rodenticides.

KAP Survey Objectives

The objectives of the KAP surveys are to:

- measure awareness of rodent control strategies and the control approaches used,
- define rodenticide products used, situations, frequency, quantities applied and methods used,
- assess knowledge and attitudes regarding potential

adverse impacts on humans, non-target animals and the environment for different ways of controlling rodents,

- quantify knowledge and degree of implementation of risk mitigation measures,
- define awareness, understanding and attitudes to codes of practice and impact on use practices,
- identify influencers and influences and their impact on attitudes and behaviours; including advice sources, training programmes, and communications,
- compare and contrast knowledge, attitudes and practices between different types of users (farmers, gamekeepers, professional pest controllers).

Results Summary

Qualifications/certifications, farm assurance membership and CPD

The percentage of users holding rodenticide use qualifications increased across all user sectors, but especially among gamekeepers (from 37 % to 60 %). The percentage of farmers holding rodenticide use qualifications/certifications increased slightly, from 19 % to 23 %. In 2015, 96 % of PCOs had rodenticide use qualifications/certifications and this rose to 98 % by 2017. Although levels of training were low in the farming sector it was noted that membership of farm assurance schemes, which function in 2017 as approved certification under stewardship conditions, was high (arable farmers, 84 %; dairy farmers, 99 %; sheep farmers, 79 %; pig farmers, 88 %; poultry farmers, 92 %). CPD levels amongst farmers increased but declined amongst gamekeepers and PCOs. Why we see the apparent contradiction between CPD and qualification amongst gamekeepers (and to a lesser extent PCOs) is unknown at this time. For example, BASIS (Registration) Ltd report that membership of BASIS PROMPT (aimed at the PCO sector) increases reliably year-on-year.

Usage and awareness of products

Recall of brands remained static in the farming sector (57 % of livestock farmers being the highest in 2017) but increased dramatically in the gamekeeping (from 35 % to 59 %) and PCO sectors (from 62 % to 90 %). Perceived effectiveness of the product was the main rationale for use amongst farmer and PCO sectors, while environmental toxicity is becoming more important amongst gamekeepers. Only PCOs maintain a high level of knowledge about active ingredients (93 % knew the active ingredient used in the products they apply in 2017). Gamekeepers have made significant improvement in awareness of actives (up from 21 % to 52 %). Farmers' awareness remains low at 16 % in both 2015 and 2017.

Awareness of CRRU and the UK rodenticide stewardship regime

Awareness of CRRU increased marginally from 2015 to 2017 in the farming sector (8% - 12%), more significantly amongst PCOs (58% to 83%) and, especially, in gamekeeping (9% to 41%). Awareness of the UK Rodenticide Stewardship Regime increased across all sectors (farming, 20% to 35%; gamekeeping, 30% to 56%; PCO, 56% to 89%).

Awareness of rodent control issues (e.g. contamination of wildlife)

The 2017 survey found that there had been a decline in the ability of professionals in their respective sectors to identify a reason why rodenticides are found in non-target wildlife. However, the 2017 results showed that the understanding of poor practice, which leads to higher environmental risk, had increased. This may explain why there was a decline in the ability of respondents to identify why rodenticides are found in non-target wildlife – there is perhaps an understanding that the issue is a complex one, with several contributing factors.

How do they interact – acquisition and impact of information

In 2015 on average 6 out of 10 people surveyed believed that they had accessed some form of information about rodent control in the last 3 years. This was highest for PCOs (93%) and lowest for livestock farmers (44%). Little changed in 2017 - with the exception of an improvement mainly amongst livestock farmers (now up to 59%).

Around half the people that sought information claimed to make a change to their rodent management programme and this was marginally up in 2017.

Training, Certification and Qualification

There is evidence of more training being taken up in each of the three sectors, especially in gamekeeping which appears to have made significant progress in the last two years in terms of increased professionalism. Uptake of training and seminar attendance about responsible rodenticide usage increased from 2015 to 2017 as follows: farmers (11% to 19%), gamekeepers (14% to 49%), PCOs (71% to 83%).

Anticoagulant Resistance

A third of the respondents expressed no concern about resistance issues, while one in ten expressed a very high concern about resistance when asked in 2015. Concern about resistance is marginally up in each of the sectors in 2017. For PCOs resistance management involved better monitoring and management rather than just changing products, as when asked in 2015. In 2017, PCOs consider the widest range of options when dealing with resistance - whereas farmers focus on changing some aspect of the product used and gamekeepers back up product usage with traps.

Permanent Baiting

Permanent baiting declined from 2015 to 2017 amongst farmers (39% to 37%), PCOs (53% to 41%) and, once again, especially among gamekeepers (44% to 25%). Amongst those that employ permanent baiting there was a degree of stability between 2015 and 2017 in terms of where permanent baiting was located, being mainly around buildings and feed/grain stores. A decline in the use of permanent baiting has also been reported in an independent survey of rodenticide use among arable farmers in Scotland (Wardlaw et al. 2017). This reduction in permanent baiting may explain, at least in part, the recorded decline in the volume of rodenticide products used on Scottish arable farms of 19-30%.

Planning vs reactive

The KAP survey question scheme separates those who claim to conduct rodent pest management using a planned approach and those who simply react to the presence of rodents. Gamekeepers appear to have transformed their outlook and are mainly planning (rather than reactive as in 2015) in terms of their approach to rodent control, with implementation of a planned approach up from 30% to 59%. There are also clear signs of a reduction in the use of a reactive system to rodent control among arable and livestock farmers, from 43% using a reactive approach in 2015 to 38% in 2017.

Frequency of monitoring

Those that consider their approach to rodent control to be more reactive report checking bait points more frequently than those who use a planned approach. Daily checks by those who adopt a reactive approach went up from 40% to 56% and increased similarly among those who use a planned scheme, from 31% to 38%.

Adverse impacts/negative practices

All sectors have made significant steps to become more environmentally aware when dealing with rodent problems. The 2015 survey found that leaving bait exposed to the environment, risking primary poisoning, was the main concern. There was also a view that the main source of indirect (secondary) poisoning was failure to collect poisoned rodents. The 2017 results reveal a higher level of appreciation of these issues across all sectors.

Environmental Risk Assessments

An important addition to the 2017 survey was a series of questions regarding environmental risk assessments (ERAs). PCOs are most aware of ERAs and very likely to complete one. In contrast gamekeepers were least aware of the term compared to PCOs and farmers. Over 90% of PCOs claim to complete ERAs in 2017, while for the other sectors it was around 60%.

Risk Hierarchy

An further important addition to the questions asked in 2017 was a series relating to the term 'risk hierarchy'. PCOs and gamekeepers are far more aware of the term (67 % and 78 % respectively) compared to farmers (24 %). In each sector surveyed, and among those who recognised the term, the main interpretation was "aiming for best rodent control at least risk to the environment".

Next Steps with KAP Surveys

The CRRU Monitoring Work Group will conduct further analysis of information in the 2017 KAP survey report about the implementation of best practice. Recommendations will be made to the CRRU UK Task Force concerning areas of knowledge and practice, and user sectors, that require particular attention in 2018.

3.6.3. SGAR residues in barn owl livers: Study conducted by the Centre for Ecology and Hydrology (CEH)

Introduction

The report on the 2016 barn owl liver residue analysis was completed by CEH and submitted to HSE/GOG (Shore et al. 2017). The report can be compared with that of 2015, which was commissioned by CRRU and submitted to HSE as a pilot study (Shore et al. 2016). CRRU has now entered into an agreement with CEH to conduct similar work for barn owls collected in 2017 and 2018, to be reported in 2018 and 2019 respectively.

Performance Measures and 2016 Results

Performance measures for assessment of the effectiveness of stewardship in reducing exposure to anticoagulants of predatory birds were defined by GOG (2017) as follows:

- *There should be a significant decrease in the exposure of the sentinel species – barn owl – in terms of sum residues of SGARs detected in livers of barn owl carcasses collected over the first four years (of stewardship)*
- *Within the expected long-term downward trend, any significant increase observed in the exposure to the sum and any individual SGAR active substance on a yearly basis will be considered.*

Specifically, the following criteria (Shore et al., 2014) will be used to determine exposure:

- *Mean low hepatic residue level – i.e. $\leq 0.1 \mu\text{g/g}$ wet weight or*
- *Mean high hepatic residue level – i.e. $> 0.1 \mu\text{g/g}$ wet weight or*
- *Ratio of Barn Owls with high to low hepatic residues levels.*

The report published in 2017 on birds collected in 2016 (Shore et al. 2017) concluded that:

- There was no significant difference in the proportion of barn owls with detectable liver residue levels of either flocoumafen or difethialone between the baseline years and 2016. (These active substances are reported separately because the numbers of owls found exposed to them during the baseline years of 2006 to 2012 was insufficient to permit the same level of statistical analysis as could be applied to the other three SGARs (Shore et al. 2014).)
- For the ratio of birds with high to low hepatic residues levels (of brodifacoum, bromadiolone and difenacoum) there was no significant difference between barn owls from the baseline years and from 2016 for any individual SGAR or for the summed SGARs
- There was no significant difference between barn owls from baseline years and from 2016 in the concentrations of either "low" or "high" residues for bromadiolone and brodifacoum, or for all residues summed. The median "low" difenacoum concentration in birds that died in 2016 was significantly lower than in barn owls from baseline years. There were too few 2016 barn owls with "high" difenacoum residues for statistical comparison with the baseline years.

Conclusions

Although products came to the market in 2016 with stewardship conditions labels, existing pre-stewardship labelled products were in sell-out and use-up during 2016. Overall, the lack of difference in SGAR residues in barn owls in 2016, compared with baseline years, suggests that not surprisingly full implementation of stewardship in 2016 has yet to be reflected by a detectable general reduction in exposure of barn owls (Shore et al. 2017).

3.6.4. Barn Owl Monitoring Survey (BOMS)

Anticoagulant residues in UK barn owls are an indication of the exposure of these birds to the rodenticides, but monitoring residues provides no information on the status and breeding performance of UK barn owl populations that carrying them (Prescott et al., 2017a). It is the purpose of CRRU to monitor various breeding parameters in a representative sample of UK barn owl nest sites to obtain this information. A CRRU contract is now in place with Colin Shawyer and the Wildlife Conservation Partnership (WCP) to conduct this work. The contracted output from the WCP is an "Annual Data Set" giving barn owl nest monitoring data for the preceding season. This enables CRRU to provide a summary of the breeding status of UK barn owls, for examination alongside the annual residue data collected by CEH. The BOMS will study annually a statistically significant

sample of barn owl nests and broods across five regions of the UK, which is representative of the wider UK barn owl population.

Key Performance Indicators for each of the five survey regions will be:

- nest site occupancy,
- nest productivity (mean number of chicks fledged) for productive nests in each region,
- records of birds (both chicks and adults) which show abnormal development.

From 2011 to 2016 between 98 and 130 barn owl nest sites were surveyed each year across five regions of the UK; and during this time, between 23 and 78 of these sites were successful, producing 83 to 336 fledgling birds each year. The overall annual mean nest productivity for the successful nests ranged from 2.0 to 5.06, with a mean across all years of 3.15 (n=322). Nest productivity, which is the mean number of fledgling birds produced per successful nest, is used in the BOMS as a measure of barn owl breeding success to enable comparisons to be made with numerous other studies that use this same criterion of breeding success. In the present study, nest occupancy data will also be used to provide additional information on barn owl breeding success.

Of the 130 barn owl nest sites monitored in 2016 (Prescott et al. 2017b), a total of 154 young birds fledged from 61 successful nests, with nest productivity values ranging across the five regions samples from 2.27 to 2.83. In addition twelve pairs produced eggs that subsequently failed, three pairs made no attempt to breed, and there were single birds present at a further eight nest sites.

BOMS data shows annual fluctuations in the breeding productivity of UK barn owl populations. It is generally considered that these fluctuations are caused by factors including climatic conditions, the availability of prey, the availability of nest sites and the numbers of birds in breeding condition (Prescott et al. 2017b).

3.6.5. Anticoagulant Resistance in UK Populations of Norway Rats and House Mice – Current Status in 2017

Studies of anticoagulant resistance in Norway rats and house mice have been conducted in the UK for more than fifty years. These studies provide an extensive platform of knowledge upon which to base practical advice on the use of anticoagulants, on the likely impact of resistance on treatment outcomes and on recommendations for resistance management. The recent development of new molecular methodologies has revolutionised the study of anticoagulant resistance, and has enabled the identification in the UK of five distinct resistance genotypes in Norway rats, and two in house mice, that are known to have a practical impacts on treatment outcomes.

A report presented to the GOG by CRRU gives the results of all anticoagulant resistance monitoring conducted to date at the University of Reading using DNA extraction and sequencing, for both Norway rats and house mice (Prescott et al. 2017c). It shows, in particular, the wide extent of the VKORC1 resistance mutation L120Q in Norway rats across the whole of central southern England. In addition, Y139F is found to occur across much of Kent and East Sussex; and Y139C, another relatively severe form of resistance, is also widely dispersed. These three VKORC1 mutations, L120Q, Y139F and Y139C are known to confer a high degree of resistance to the first generation anticoagulants (FGARs) and to a lesser extent to the less potent SGARs, bromadiolone and difenacoum. The Y139C and L128Q mutations are also found in the UK, which confer a high degree of resistance to FGARs.

A sample of house mice from south east England has also been tested and the results of this work are given in the report for the first time (Prescott et al. 2017c). These reveal that both known UK house mouse resistance mutations, L128S and Y139C, occur at high frequency among the mice tested, with some individuals worryingly possessing both mutations.

The molecular methodology on its own provides no information on the likely impact of particular resistance mutations on treatment outcome. However, methodologies have been developed at the University of Reading that can be used to estimate the Resistance Factor for each VKORC1 genotype/active ingredient combination. With funding from the Rodenticide Resistance Action Committee (RRAC) of CropLife International, such data is being generated for all five SGARs against L120Q resistant Norway rats and Y139C resistant house mice. RRAC is also funding the generation of similar data for other Norway rats resistance mutations (Y139C and Y139F) at a German government laboratory, using similar techniques. These data are also referred to in the report (Prescott et al. 2017c). Recommendations in the report submitted to GOG about the use of anticoagulant rodenticides against UK resistant rodent infestations are extracted from resistance management guidelines published by the UK Rodenticide Resistance Action Group (RRAG).

3.6.6. Summary of Information from the Wildlife Incident Investigation Scheme

The Wildlife Incident Investigation Scheme (WIIS) is programme of post registration pesticide monitoring operated, since 1985, by UK government agencies. Incidents are recorded and investigated where wildlife and companion animal casualties are discovered, mainly by members of the public, and there is evidence of the possible involvement of a pesticide. Post mortem examination and extraction and chemical analysis of tissue samples, and other materials, are conducted by government laboratories in England, Wales,

Scotland and Northern Ireland. Reports were previously published in printed form and are now available on-line (see <http://www.hse.gov.uk/pesticides/topics/reducing-environmental-impact/wildlife.htm>).

Since 1993, WIIS reporting has included separate records on each incident investigated. This has permitted workers at the University of Reading to maintain a data-base, using Microsoft Excel software, in which separate records are made of each active substance residue found, and each animal casualty, within each WIIS incident. This data-base then permits segregation of incidents by the active substance involved and species affected.

A report has been presented to the GOG which reviews WIIS incidents involving pesticides used in the UK for vertebrate pest management during the period 1995 to 2014 (Buckle and Prescott, 2017a). Among anticoagulants, difenacoum and bromadiolone predominate among residues found in the casualties of WIIS incidents. This is certainly because they similarly predominate among the products applied in rodent control in the UK (see section 3.4.2.; Wardlaw et al. 2017). The species most commonly affected by exposure to vertebrate pesticides are buzzard (*Buteo buteo*), red kite (*Milvus milvus*) and fox (*Vulpes vulpes*). WIIS incidents are partitioned, according to the type of use of the product that caused the incident, namely 'abuse', 'misuse' and 'approved use'.

Incidents are given a category 'unspecified' when investigations are unable to allocate the incident to one of the other use categories. Alphachloralose predominates in abuse incidents and buzzards are most often affected. It is encouraging that 'approved use' incidents are exceedingly rare among WIIS incidents. This suggests that, when vertebrate pesticides are properly applied with all necessary risk mitigation measures, risks to non-target wildlife and companion animals are very low. Anticoagulant rodenticides predominate as the cause of 'unspecified' incidents because of their delayed action and the fact that casualties are therefore likely to be found far from the site of exposure. However, there is no evidence to suggest that the relative frequencies of use categories (i.e. 'abuse', 'misuse' and 'approved use') differs among 'unspecified' incidents to that found among incidents where type of use can be allocated.

There has been an apparent steady increase in the frequency of residues of vertebrate pesticides found during WIIS investigations, particularly during the period 2007 to date. It is difficult to attribute this increase to any cause without further knowledge of the analytical methods used in the government laboratories concerned and the policy decisions made by those laboratories when admitting reported incidents to the different national schemes that comprise WIIS in the UK.

It is acknowledged that WIIS is a 'reactive' scheme and relies on members of the public, and others, to find and report casualties. Undoubtedly many casualties are not found in this way and, therefore, WIIS data are unreliable in recording the absolute number of non-target animals exposed to vertebrate pesticides. However, there is no evidence that WIIS does not provide an accurate relative assessment of the different species and active substances involved and the types of use practice that result in non-target exposure.

3.7. Communications Work Group (Leader: Phil Christopher, Red Rock Publicity)

3.7.1. Impact of Communication on Knowledge, Awareness and Practice among Professional Users of Rodenticides

The knowledge and awareness components of the KAP survey findings summarised elsewhere in this report clearly come about due to multi-factorial influences, including but not exhaustively:

- point-of-sale processes and contact between well informed sellers and their customers,
- supply chain communications by all rodenticide authorisation holders,
- best practice protocols disseminated through the rodenticide user community,
- training and certification activity,
- farm assurance scheme commitments to stewardship requirements and implementation,
- this communications programme and the trustworthy information sources on which it depends for valid audience-centric content.

3.7.2. Strategy

Production of concise, reader-centric editorial narrative, then distribution to:

- CRRU stakeholders in agriculture and gamekeeping for publication to their own members via house journals, independent publishers and stewardship-approved farm assurance schemes.
- Pest control publishers and professional membership organisations
- CRRU member companies for use in their own communications programmes.

3.7.3. Themes and completed items

Completed communication outputs are shown in Table 4.

Table 4. Details of completed items of communication November 2016 to October 2016.

Date	Theme	Title	User sector: Content
25 Nov 2016	Farm assurance	Tenth assurance scheme gets rodenticide stewardship approval	Agri: Laid in Britain is stewardship compliant to Dec 2017 (also recap other nine)
15 Dec 2016	Big picture	First rodenticide stewardship annual report published	All: End of the beginning, considerable work ahead
21 Dec 2016	Point of sale controls	Rodenticides leaflet explains rule change and options	All: Help for rodenticide sellers to explain reasons for refusal to supply
16 Feb 2017	Big picture	End of beginning for rodenticide stewardship: "Much to be done"	All: End of the beginning, considerable work ahead
22 Feb 2017	Point of sale controls	Rodenticide rules and teeth reaffirmed to online sellers	All: One set of rules, all distribution channels
3 Apr 2017	Farm assurance	2018 rodenticide compliance 'expected' for seven assurance schemes	Agri: Reassurance to farmers and public accountability for named FASs
15 Mar 2017	Big picture	So far, so good...and spotlight here to stay on rodenticide use	All: CRRU interpretation of 2016 GOG review, stewardship is here to stay
30 May 2017	Point of sale controls	Independent audits for rodenticide point of sale controls 'significant for stewardship success'	All: Joint CRRU-BASIS expectation setter to supply chain
21 Jul 2017	New leaflet	Helping gamekeepers with rodenticide stewardship best practice	Game: Updated advisory booklet published
21 Aug 2017	Big picture	Update commissioned by Pig World magazine	Agri (pigs): All rodenticide users in the spotlight, stewardship here to stay
18 Sep 20	Monitoring processes	New CRRU study monitors UK barn owl breeding	All: Latest BOMS findings, multi-factorial effects
1 Oct 2017	Farm Assurance	2018 rodenticide approval for Quality Meat Scotland	Agri: QMS standards stewardship aligned 2018 onwards
2 Oct 2017	Point of sale controls	Whistleblower process introduced for rodenticide point-of-sale breaches	All: Announce process and how to use it
16 Oct 2017	Point of sale controls	Sign-up call to rodenticide sellers for point-of-sale audits	All: Supply chain call to action, time to sign up
16 Oct 2017	Monitoring processes	2016 sees no increase in barn owl rodenticide residues	All: Latest PBMS findings
tbc Nov 2017	Farm assurance	In draft: Confirm 2018 compliant schemes	Agri: In draft
tbc Nov 2017	Big picture	Website update: Simplified, more user-centric navigation and detailed update of contents	All: Comprehensive reference for stewardship matters and origins

3.7.4. Forward Focus for 2018

Working with other work groups, and using data from the 2017 KAP survey to assess information gaps, communication will aim further to improve awareness of best practice and mitigation measures required to reduce exposure of wildlife

to rodenticides. The CRRU communications function will also provide information to all professional users about the stewardship regime.

4. Conclusions

This, the second annual report of the UK Rodenticide Stewardship Regime, charts the progress of implementation of the regime during 2017. The GOG information paper which followed the publication of the 2016 annual report (Buckle et al. 2017b) explained that evaluation of the regime by the GOG is to be conducted in three stages, as follows (GOG 2017):

- (i) Evidence that the industry has put in place what it said it would
- (ii) Evidence / indicators of industry's response / changes of behaviour
- (iii) Evidence / indicators of impact

Necessarily, the GOG assessment of progress in 2016 was confined to (i) above. This assessment was that the structure of the regime, as proposed and agreed between HSE, other government departments, CRRU UK and stakeholder organisations, had effectively been put in place. Furthermore, according to the GOG assessment, the CRRU UK stewardship regime met the requirements of the 'high level principles' (HSE 2015b) and permitted the authorisation of professional rodenticide products for applications outside buildings by HSE.

Additional required elements have continued to be added to the regime in 2017. Most notable of these is an audit process for point of sale compliance wherein an independent agency (BASIS (Registration) Limited) will conduct annual audits of all point of sale outlets for compliance with the stewardship regime conditions for sale of authorised professional rodenticide products. Also, a 'whistle-blowing' page has been added to the CRRU UK website which permits reports of failures of point of sale compliance to be recorded, scrutinised and acted upon. Both these elements are examples of industry 'self-policing', an element of the regime strongly emphasised by HSE. A framework for the delivery of materials for programmes of continuing professional development (CPD) is now in place and will be available to the four Awarding Organisations during 2018.

It is understood that the regime objectives, to promote best practice and change use patterns among tens of thousands of professional rodenticide users in the UK, are likely to be achieved only in the medium to long term. In particular, the way that best practice has been implemented in farming, through a procedure involving step-wise improvements to farm assurance scheme standards, will mean that significant changes will occur in that sector only from January 2018. Not until there have been meaningful and widespread

changes in user behaviour, and use practices, can it be realistically anticipated that we shall see these changes reflected in a measurable diminution of rodenticide residues in wildlife.

Nevertheless, promising signs have emerged from the Knowledge, Attitudes and Practice (KAP) survey repeated in 2017 and with data compared to a baseline survey carried out in 2015. There were significant increases among users of awareness of CRRU and stewardship, in the numbers of users holding qualifications and in the awareness of the different products being used, and a reduction in the use of permanent baiting. These changes were particularly marked in the gamekeeping sector, most likely because of the roll-out of a training course developed specifically for this sector by CRRU and all gamekeeping stakeholder organisations.

Both the 2015 and 2017 assessments show the farming sector to lag behind professional pest control and gamekeeping in many of the KAP metrics. However, the very high frequency among farmers of membership of one or more farm assurance schemes presages likely improvements in this sector when CRRU initiatives with the assurance bodies are fully implemented in 2018. Also, newly-developed training and certifications for the farming sector will also be beneficial. Overall, the numbers of professionals who have obtained CRRU-approved certification, more than 13,000 in the period July 2015 to August 2017, indicates a major increase in those with up-to-date knowledge about the environmental risks of rodenticides and necessary risk mitigation measures (see Buckle and Prescott, 2017b).

Changing the practices of tens of thousands of professional users of rodenticides in the UK will take some time, and it seems likely that an effect of stewardship to reduce detectable levels of rodenticides in wildlife will take longer. There is little surprise, therefore, that the Centre for Ecology & Hydrology barn owl liver residue study showed no significant change from "baseline" years in most indicators of SGAR exposure, although there was a decline in low level difenacoum residues. Annual surveys of SGAR residues in barn owls will be conducted by CEH to monitor future developments.

Government has set out the requirements for evaluation data for stewardship implementation and achievement in its paper published earlier this year (GOG 2017). More specifically, Annex 2 of that report provides an overview of required 'CRRU Evaluation Data'. The contents of this report present a summary of all required data under each of the headings set out by the GOG (Table 5).

Table 5.

Required data		Data to be provided	Information Provided
1	Environmental Impacts (Monitoring Compliance)	1. CEH annual survey of residues in livers of 100 barn owls	See Shore et al. (2017)
		2. Annual survey of barn owl breeding performance	See Prescott et al. (2017a,b)
		3. Annual review of WIIS incidents	See Buckle and Prescott (2017a)
2	Whether the rodenticides are effective (Competent Workforce)	1. Annual report of training uptake and award of certification/ qualification by CRRU-approved awarding bodies	Confidential data provided to GOG by CRRU
		2. Annual report of number of members of CRRU-approved farm assurance schemes	Table 1 above.
		3. Provision of up to date, relevant best practice guidance documents	See report of Best Practice Work Group
		4. Promotion of regime objectives and raising awareness by stakeholder organisations	See KAP report and report from Communications Work Group
3	Resistance monitoring (Competent Workforce).	1. Annual report of status of resistance monitoring in UK and elsewhere in EU	See Prescott et al. (2017c)
4	Awareness using the Knowledge, Attitude and Practice (KAP) survey (Competent Workforce/Monitoring Compliance)	1. KAP survey baseline study (published)	Provided in 2015.
		2. Repeated KAP surveys in 2017 and 2019	See Research Engine (2017)
5	Point of sale information (Supply Chain Governance)	1. Examination of options for point of sale compliance audits by independent organisations	See report of Point of sale Work Group
6	Training (Competent Workforce)	(see point 2 above)	See report of Training and Certification Work Group

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Annex 1. The thirteen-point template used to determine compliance of farm assurance scheme standards with the CRRU UK Code of Best Practice.

Mapping Tool for Content of Farm Assurance Standards against CRRU Code of Best Practice key indications.

Required for approval of farm assurance schemes post-December 2017 by the CRRU BP WG, as certification demonstrating compliance with UK rodenticide stewardship regime requirements

Name of Farm Assurance Scheme:

CRRU CoBP key indication	Relevant Text in Assurance Scheme Standard	Evidence required
<p>1.The ‘risk hierarchy’ a) Evidence of a hierarchical risk assessment, showing that the least severe but effective method of control has been selected</p>		<p>Hierarchical risk assessment, justifying the selected control method.</p>
<p>2. Avoiding rodent infestations a) Exclusion / proofing – the aim is to keep rodents out of buildings b) Hygiene – prevent rodent access to food c) Harbourage – sites are to be made less attractive to rodents as places to live and breed</p>		<p>On-site evidence of proofing measures, absence of food spillages and reduced rodent harbourages e.g. lack of vegetation cover at building perimeters.</p>
<p>3.What to do before treatment a)Areas of use – it is essential to apply rodenticides only in those areas where their use is permitted by the product authorisation and shown on the product label b)Site survey – to include type, level and extent of infestation. Identify non-target animals, housekeeping, hygiene and proofing issues</p>		<p>Check relevant product labels against on-site bait locations, to determine correct area of use e.g. are baits applied in ‘open areas’, ‘in and around buildings’, ‘indoors’ in line with label requirements.</p> <p>A site survey report must be present.</p>
<p>4. Risk assessments a) COSHH assessment – identify risks to operators and others who may be affected by treatments involving hazardous substances and record the findings b) Environmental risk assessment – conduct this when a risk to the environment has been identified during the site survey. Record this assessment in writing</p>		<p>COSHH assessment present.</p> <p>Environmental risk assessment present.</p>

<p>5. Guidance for treatments a) Use a variety of control methods – it is important that you do not rely solely on the use of rodenticides to control rodents b) Placing the bait – make sure bait is adequately protected from children and non-target animals</p>		<p>On-site evidence of proofing measures, good hygiene, harbourage reduction and traps where appropriate.</p> <p>Check bait is applied in tamper-resistant bait stations or covered bait points or secured so that children and non-target animals cannot access it.</p>
<p>6. Records a) Make a written record of where you have placed the bait, which rodenticide was used and how much bait has been laid</p>		<p>Bait plan present.</p>
<p>7. Monitoring a) If you have decided that the application of a rodenticide is needed and the treatment phase is underway, it is important to monitor it regularly to track its progress</p>		<p>Evidence of regular inspections of rodenticide baits, in line with label requirements.</p>
<p>8. Replenishing bait a) Once laid, baits should be inspected frequently and where bait has been eaten, it should be replenished as necessary according to the schedule on the product label</p>		<p>Evidence of regular replenishment of rodenticide baits, in line with label requirements.</p>
<p>9. Removal of dying / dead rodents a) Search for and remove any dying and dead rodents and dispose of them safely, in line with the product label. This is particularly important to reduce the risk of secondary poisoning, especially in areas where birds of prey and other predators/scavengers are known to be active</p>		<p>Records of searching for and the removal and disposal of rodent bodies.</p>

<p>10. Long-term baiting a) long-term perimeter baiting should never be used as a routine rodent control measure b) Consider any long-term baiting programme carefully and be justified in your risk assessments for each location where this strategy is used. The preferred approach is to use either traps or non-toxic baits as a guide to the presence of an infestation of pest rodents that may then trigger the use of a rodenticide</p>		<p>Check pest control records e.g. environmental risk assessment, for a justification of long-term perimeter baiting.</p>
<p>11. Retrieval of bait a) After you have finished the treatment, you must make every effort to ensure all traces of the bait have been removed from the site and disposed of according to the label instructions</p>		<p>Records of rodenticide bait disposal.</p>
<p>12. Storage of bait a) Keep all rodenticides secure in a suitable store</p>		<p>Rodenticides are kept in a secure pesticide store.</p>
<p>13. Operations after removal of rodent infestations a) Once adequate control has been achieved the environmental management measures in point 2 should be considered and implemented as appropriate</p>		<p>On-site evidence of proofing measures, absence of food spillages and reduced rodent harbourages e.g. lack of vegetation cover at building perimeters.</p>



CRRU UK – Guidance for Internet Sales of Rodenticides in the UK



GENERAL GUIDANCE FOR ALL INTERNET SALES OF RODENTICIDES IN THE UK

- **Only** products currently authorised in the UK by HSE are legal to sell online.
- The current UK Authorisation number for the product **must** be stated in the online description.
- All products offered for sale online **must** show representative pictures of the current legally authorised pack type as available for sale.
- All products offered for sale **must** be supplied in the original packaging with the original label as provided by the marketing company and / or authorisation holder.
- **Never** break down the original packaging into smaller amounts for sale. This is illegal.
- **Never** simply use the term “outdoors”. The area of use **must** be described as per the product label, i.e. “In & Around Buildings”, “Outdoors – Open Spaces”, “Outdoors – Waste Dumps”.
- Advertisements must comply with the following guidelines:
 - <http://www.hse.gov.uk/biocides/eu-bpr/advertisement-requirements.htm>

GUIDANCE FOR SALE OF NON-PROFESSIONAL PACKS OF RODENTICIDES ONLINE

- All products offered for sale **must** be labelled as being authorised for non-professional use and clearly identified as such in all descriptions.
- All products **must** be sold only in their original packaging.
- All pack sizes offered for sale **must** comply with restricted pack sizes for non-professional use – currently 1.5kg or less.

GUIDANCE FOR SALE OF PROFESSIONAL USE PACKS OF RODENTICIDES ONLINE

- All products offered for sale **must** be products labelled as being authorised for professional use and clearly identified as such in all descriptions.
- All online description text for products for use ‘in and around buildings’, for use ‘outdoors – open spaces’ or ‘outdoors – waste dumps’ **must** clearly include the following text :

To be used only by professional users holding certification demonstrating compliance with UK rodenticide stewardship regime requirements.

Read the label before use. Using this product in a manner that is inconsistent with the label may be an offence. Refer to the CRRU UK Code of Best Practice (or equivalent) for guidance.

When this product is supplied to a user for the control of rodents, it shall only be supplied to a professional user holding certification demonstrating compliance with UK rodenticide stewardship regime requirements.
- All products **must** be sold only in their original packaging. These pack sizes may vary.
- The online seller **must** confirm the identity of the purchaser, **and** that the purchaser has the required certification and declaration as set out below, prior to supplying the product.
 - www.thinkwildlife.org/list-of-training-and-certification
 - www.thinkwildlife.org/list-of-approved-farm-assurance-schemes
- The online seller **must** keep records of each sale and the proof of certification presented by the purchaser.
- So called “self-declarations” of competence, whereby a purchaser simply ticks a box online to declare their compliance is **never** acceptable.

Failure to adhere to these guidelines may be an offence and may lead to the company concerned being reported to the Health & Safety Executive, Trading Standards and any other relevant body. Failure to comply may also lead to cancellation of the authorisation for sale of the product concerned.

For more information about CRRU UK and the UK Rodenticide Stewardship Regime :
www.thinkwildlife.org/stewardship-regime



Background

The BASIS Stores Inspection Scheme established in 1978, is an independently assessed annual inspection looking at legislation and best practice standards in professional pesticide stores. The scheme observes standards set out in the Defra Code of Practice for Suppliers of Pesticides to Agriculture, Horticulture and Forestry and other relevant Codes of Practice.

The Scheme is available to all types and sizes of stores from large distributors, smaller town and country type outlets to specific product storage (small stores scheme). It is envisaged that via an addendum to the current store audit a large proportion of existing BASIS registered stores that are stockists of rodenticides could be assessed at POS. Additionally, an extension of the specific product storage scheme, introduced to monitor the safe storage and point of sale standards for Metallic Phosphide products, could be adapted to accept retailers not currently engaged with BASIS.

The Assessors

BASIS audits are carried out by a national team of BASIS inspectors. They were hired based on their experience, attitude and desire to help stores improve their standards. They have been professionally trained to ensure high and consistent standards of assessment and conduct the audits on iPads utilising state of the art auditing software.

The audit process is focused on assessing behaviours in practice rather than just facilities and equipment. During assessments advice and guidance is provided to help stores / retailers improve.

The Premises

Premises would be required to be registered with BASIS and approved as suitable for the storage and supply of rodenticides.

Premises could include:

- Retail premises
- Distribution centres: a company's distribution centre, to which rodenticide products are delivered from a wholesale dealer for onward transfer to the company's own approved BASIS retailer premises
- Retail supply via the internet

Approval will only be granted following a satisfactory annual inspection.

Supplying

BASIS Auditors would be authorised under the BASIS Stores Scheme to:

- Inspect the premises, organisational arrangements and procedures used in the storage and distribution of rodenticides products
- Interview key personnel and POS staff
- Examine any documentation or records relating to the storage and distribution of rodenticides
 - o CRRU Approved Certificates
 - o Farm Assurance Scheme membership
- Take photographic evidence / samples

Storage

The audit would include inspection of the premises to determine its suitability for storage and supply e.g. general security, H&S, fire precautions, store etc.

Proof of Competence Controls at Point of Sale

POS auditing would focus on:

- Sales
- Returns
- Employee Training

The retail centre should have a named staff member with overall responsibility for the intake, storage and transfer of rodenticide products, but that staff member does not need to authorise each and every retail transaction. All staff at POS must have had sufficient (in-house) training in order to meet the requirements of CRRU rodenticide stewardship. The staff at POS must satisfy themselves by all reasonable means that the customer is competent to use the product safely.

How will this be assessed?

- Random checks on customer documentation to ensure that the correct declarations are in place
 - o CRRU Approved Certificates
 - o Farm Assurance Scheme membership
- Interview key personnel and POS staff

Retail supply via the internet

The protocols apply to the sale of rodenticides on the internet in the same way as they do to 'over the counter' sales.

Internet retailers of rodenticides can apply to be accredited under the BASIS small stores scheme. An annual audit would be focused on POS advice and customer competence, product storage and transportation.

There would need to be some communication with manufacturers and wholesalers of rodenticide to ensure that BASIS is made aware of which online trading entities should be audited. I hasten to add that BASIS Registration Ltd. is a professional standards organisation, registered charity and independent of all commercial activity. Our revenue is wholly generated through increasing competency in the storage, use and advice of pesticides and related products via auditing, certification and professional registration.

Cost

For stores already engaged with the BASIS Store Inspection there would be an additional fee of £ 30 per premises to encompass POS auditing. For companies wishing to comply with CRRU stewardship and who only retail rodenticides may join under the specific product scheme for which there is an annual fee of £176 per annum, per premises.



VERMIN CONTROL SPECIAL

Farmers can undertake a number of proactive steps to prevent rats and mice from causing any headaches.

Tips for rodent control

With temperatures declining, increased rodent activity is almost inevitable without proper management. And, if left to their own devices, rats and mice can spread disease and cause major damage even leading to farm fires in the worst case scenario.

One pest controller who helps farmers to manage rodent problems is Linton-based Michael Platt, owner of Fox Tiger Pest Control. Here he gives his top tips to help farmers keep on top of infestations.

KEEP CLEAN AND TIDY

FARMERS looking to minimise pest damage should aim to prevent infestation, Mr Platt explains. Therefore, an integrated approach to rodent management should be implemented, which is also recommended in the Campaign for Responsible Rodenticide Use (CRRU) stewardship guidelines to help increase the rate of success.

Mr Platt says: "I cannot stress the importance of keeping the immediate areas around grain stores and feedstock sheds clean and tidy. This removes any harbourage and food sources, as well as greatly reducing the likelihood of pests entering the building in the first place. It would be best to clear away any weeds in the direct vicinity. Following this, simple measures such as removing bins such as crates and pallets, then proofing the building to block entry points, can all be easily implemented by the farmer."

Starting with the basics can be part of an effective management strategy and farmers should also not underestimate the importance of keeping barn doors closed, which Mr Platt says is an obvious measure to be taken as well.

MONITOR ACTIVITY

If control measures are required, then the next important step for successful management is regular monitoring and surveillance of the area to create a targeted baiting pattern.

"Sites can be monitored visually, looking for droppings, holes and footprints, and depending on the situation there is a variety of tools you can use," says Mr Platt. "Traps and tracking dust will show where rodent runs are and a non-toxic monitoring bait will highlight popular feeding areas, as well as act as a 'bait-bait' to improve the uptake of a toxic product."

USING CORRECT RODENTICIDE

ACCORDING to CRRU guidelines, in most situations, first-generation anticoagulants should be considered before selecting a more potent second-generation anticoagulant product.

Mr Platt stresses the need to assess the situation ahead of applying a rodenticide. "Look at the risk hierarchy of non-target species, taking into account farm wildlife such as birds and mammals, but also farm dogs which may access the area."

When selecting a product, it is also important to choose one with the correct authorization for the area, of which there are currently three indoor use only, in and around buildings, and open areas.

Mr Platt explains the job does not stop at applying a rodenticide. "Check the infestation at least weekly, to either put down more bait, move bait stations, or take it away if necessary, if a vital bait is removed at the end of the treatment."

This is because rodenticides which are left out for prolonged periods of time can provide a potential source of contamination to wildlife.



Products and Services

BASIS deadline nears for rodenticide sellers

Suppliers of professional use rodenticides to pest controllers, farmers and gamekeepers must register with BASIS Registration by the end of December 2017 in order to comply with the new UK Rodenticide Stewardship Regime Point-of-Sale audit process.

This requires rodenticide authorisation holders to ensure UK sellers of their professional use products pass the BASIS point of sale audit, and maintain this standard for the future. Audits will be carried out by independent assessors for BASIS, starting from this February. Initial audits will be completed by November 30th 2018 and then repeated annually.

The rule applies to all trade and retail premises as well as to internet channels. For sellers already enrolled in the BASIS Stores Inspection scheme, the 2018 cost is £30 per outlet. For rodenticide sellers new to the scheme, the cost per outlet is £176.

Failure to comply will result in the seller no longer being allowed to sell professional use rodenticides with effect from the end of 2018. Authorisation holders are ultimately accountable for ensuring that all resellers of professional use rodenticides comply with audit requirements. Failure to do so could result in a referral to Trading Standards and HSE, with consequent restrictions to the authorisations concerned.

The Campaign for Responsible Rodenticide Use is responsible to HSE as the UK Regulatory Authority for rodenticide stewardship implementation. Leader of CRRU's point-of-sale work group Rupert Broome explains, "The audit process will provide independent verification that the entire supply chain is correctly implementing stewardship point of sale controls.

"This will make a significant contribution to enabling continued access by competent users to professional use rodenticides for the future."

From BASIS, logistics manager Lindsay Smith-Boam adds that rodenticide point of sale audits are a logical development for the long established Stores Inspection Scheme.

"Existing and new clients of the scheme alike can rest assured that our experience and this audit process will help their business meet stewardship requirements," she says.

Companies can sign up with BASIS by telephone - 01335 301207 or email - stores@basis-req.co.uk

The national magazine for animal health advisers and country store retailers

Over the Counter

In association with AMTRA, AHDA and NOAH September 2017



Audits for rodenticide sale controls are 'significant for success'

Plans for independent auditing of rodenticide point of sale controls have been announced jointly by training body BASIS Registration and the Campaign for Responsible Rodenticide Use (CRRU).

The BASIS Stores Inspection Scheme, which already uses independent assessors to ensure compliance with regulations for the storage and distribution of professional pesticides, is set to be extended by the two organisations.

Lindsay Smith-Boam, logistics manager at BASIS, said the creation of an audit process specifically for rodenticides will be significant in ensuring the success of the UK Rodenticide Stewardship Regime.

ASSESSORS NEEDED

BASIS is currently recruiting individuals to strengthen the team, by conducting annual rodenticide store assessments throughout the UK.

Ms Smith-Boam said: "We're looking for somebody with a good knowledge of the pesticide industry, the use of a car and availability for around 15-25 days' work a year. If you're interested, email your CV and covering email to lindsay@basis-req.co.uk."

"Applying controls at the point of sale, such as checking distribution staff are aware of the regulations and best practice requirements, is an important part of stewardship," she said.

"For distributors already operating within the long-established Stores Inspection Scheme, the fact it will now cover rodenticides too should be seen as good news.

"It will provide further evidence that the entire supply chain is controlling availability of these products – as a result, enabling continued access to them without further restriction."

Audits will apply to all supply routes – trade and retail, premises and internet – with the first audit cycle conducted by BASIS between February and November 2018.

Rupert Broome, CRRU UK point of sale work group leader, added: "Any company or outlet selling professional use rodenticides must have passed a BASIS Point of Sale audit for rodenticide stewardship compliance by November 30, 2018."

CRRU UK and BASIS said it will advise the supply chain of the precise audit process, and the requirements that have to be met, before the end of this year.

Failure to comply with any aspect of the stewardship regime may lead to cancellation of the authorisation for sale of the product concerned. ■



Products and Services

Two weeks to rodenticide sales rule change

The Campaign for Responsible Rodenticide Use (CRRU) is reminding rural retailers and their farm and gamekeeper customers, alongside pest controllers and their employees, that from October 1st 2016, anyone buying professional rodenticide packs for use outdoors will need to show an approved certificate of competence or a document confirming membership of an approved farm assurance scheme.

Without this documentation, rodenticide sellers will not complete a sale, under the conditions of the UK rodenticide stewardship regime. Remaining stocks with pre-stewardship labels can be sold throughout September. These products are to be replaced with stewardship-authorised rodenticides that carry legally-binding requirements from the Health and Safety Executive (HSE) specifying user certification and compliance with conditions of use on product labels.

The CRRU reports to the HSE on the implementation of the rodenticide stewardship regime. It has recently published new guidelines on safe and effective alternatives to permanent baiting, indicating when this can be justified and how to do it safely. Chairman Dr Alan Buckle suggests that the way rodenticides are used should change to reduce residues in wildlife. He says: "For many years it was thought best practice to set out bait points on farms, shooting estates and around rural premises, then keep them permanently topped up with rodenticide. We now believe this practice is responsible, at least in part, for the contamination of wildlife we now see so widely in the UK."

More information from the CRRU website <http://www.thinkwildlife.org/important-information-on-stewardship>.



FEATURE | Pest control



A new stewardship regime and the threat of increased regulation means producers are being driven to develop innovative and sophisticated pest control practices

By DAVID BURROWS

There's a rat among the chickens, what are you going to do?

Traditionally, the solution would have been to set traps around the sheds filled with rodenticide bait. In fact, many farms would routinely do this, whether there were pens or not. But things have changed. "It's not legal to use permanent baiting, but the Government has asked us to help people use it more responsibly," explains Alan Buckle, chairman of the UK Campaign for Responsible Rodenticide Use (CRRU).

"We're moving to a more sophisticated, sustainable approach," he adds. From April, anyone buying rodenticide has had to provide 'proof of competence', which means quality producers have had to either take a professional qualification, employ a professional pest control contractor or buy 'lifetime products' (just smaller bags, which can be prohibitively expensive). Membership of certain assurance schemes is also proof of competence.

The changes can be traced back to the EU Biocides Regulation 2012, and the history

wants a brief recap. Europe's review of biocides highlighted the risks associated with first and second generation anticoagulant rodenticides (GARs and SGARs) – residues of which were regularly found in non-target species, prompting further research.

Snails, tadpoles, insects and other non-target species, many of which don't feed on the animals the chemicals are meant for, were examined whenever studies looked, they found residues of SGARs in UK wildlife. "Forty-five percent of barn swallows and 80% of red kites were showing some signs of SGARs," says David Cross, head of the technical training academy at Borewell UK. "It won't kill them but we don't know what impact it's having on them."

The fight to keep SGARs
 Polytechnics took a precautionary approach through the biocide regulations. Some member states have banned the use of anticoagulants, given how specifically the SGARs, in particular, killed the various mammals and environmental safety tests. However, Borewell designed the rules with

The CRRU is not wishy-washy. It is very closely monitored and we have to improve things

more flexibility to those who wanted it. The UK, through the Health and Safety Executive (HSE), is one of those to have taken a more pragmatic approach. "We had to fight to hang on to



Pest control | FEATURE

SGARs," says Cross, and it was tough and took a while, given the lack of viable alternatives.

However, the chemicals industry has funded and established a new self-regulated stewardship regime, coordinated by CRRU. Buckle says the scheme is certainly not "wishy-washy," it's very closely monitored and we have to improve things. CRRU has to meet a number of criteria, but barn swallows are the most high profile.

The Government has demanded a significant decrease in the exposure of the sensitive species (barn swallows) to levels of acute toxicity of SGARs detected in faeces of barn swallows collected over the last five years. The campaign is being assessed based on three areas: whether it's done what it promised to do, whether it affected the way these products are used and whether wildlife exposure changed. HSE is satisfied that the first goal has been achieved, but it is too early to assess the other two definitively. CRRU, as part of its regular biannual reports to HSE, has to monitor behavioural change

under the new regime. There has been some tension, especially among those who serve for a rodenticide environment. Buckle says he had plenty of calls from farmers who had driven 25 miles to pick up a rodenticide and were turned away because they didn't have proof of competence, but "we seem to have got over that. Farming representatives are fully on board with it," he adds.

Some of the experts Poultry Business approached said there are high levels of awareness. Kevin Higgins, who has been touring sites of the major agricultural zones with the British Pest Control Association (BPCA), has been "pleasantly surprised" that farmers know about the changes. "Some have already taken courses," he adds.

License to kill
 Other farmers will be relying on their membership of certification schemes to continue using rodenticides. Initially, this was going to be an interim measure to provide enough time to meet thousands of producers, but CRRU has been working with a number of farm assurance schemes to bring their standards into line with the CRRU UK code of best practice.

Red Tractor and Laid in Britain are both expected to be compliant by the end of 2016, meaning that membership will provide that important proof of competence. The British Egg Industry Council had signed up last year, but chairman Andrew Jost said Poultry Business that the latest best practice for responsible rodenticide (and not been incorporated into the British Lion Code of Practice, and we are still due to offer courses as part of the Lion training passport". CRRU is yet to see the updated standards, however.

1 BPCO is still one of our largest members. January 1, 2016, it was revised but years ago the Government reviews whether it's been a success or a failure. If it's the latter, then there's every chance of regulation. "That's what is hanging over us," says BPCO's



Higgins. "We may not have those weapons at us, so everyone needs to take this seriously and give time to it." Given that HSE alone could the UK farming industry earn between £1 billion and £20m a year, producers have long been pest control seriously – especially those with poultry units, where conditions are perfect for rodents to breed, excrete, water and feed are all in good supply. What the new regime has done is just an

4th October

Rodenticide approval for Scotch meat assurance

Gordon Davidson
News & Online Editor



Quality Meat Scotland



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QUALITY MEAT Scotland's farm assurance standard for rodent control has been approved for 2018 onwards by the UK Rodenticide Stewardship Regime, it was announced this week.

Since the regime's introduction by UK government in mid-2016, members of QMS have been considered stewardship-compliant as a transitional measure, but this arrangement would have expired on December 31 without the new approval.

But under the Biocidal Product Regulation, QMS member farms can now continue to qualify under the regime as holding proof of competence in the use of 'professionals only' stewardship label rodenticides.



All sales outlets for these products are legally obliged to check every buyer's proof of competence before they can supply – a farm's QMS membership certificate of compliance satisfies this.

"Clearly, this approval for 2018 onwards is good news for members," says QMS brands integrity manager Suzanne Woodman. "We appreciate the help from the Campaign for Responsible Rodenticide Use UK in achieving this."

For schemes to attain 2018 approval, their assurance standards for rodent control are audited for alignment with rigorous rodenticide stewardship requirements. These are set out in the CRRU Code of Best Practice, which can be downloaded from www.thinkwildlife.org/



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CASE STUDY
CRRU code

Stewardship improves rodent control

No, it's not a delayed April fool prank, the UK Rodenticide Stewardship Regime and its associated Campaign for Responsible Rodenticide Use (CRRU) UK Code of Best Practice actually does benefit rodent control. And that's not just a theory; we actually have documented evidence from a practical pest professional to prove it.

Pest has been a supporter of the UK Rodenticide Stewardship regime from its inception. There were many reasons for this – we saw it as an essential defence of rodenticides allowing pest controllers continued access to these useful products and as a way of raising the bar to keep the cowboys out of our industry. We also felt it was generally good PR for our sector and we hoped it would have a positive impact on the environment. We hoped too that, long term, it would help customers see pest professionals as experts in pest management, rather than simply bait box fillers. What we didn't ever expect was that it might actually improve rodent control. But that is exactly what one of our readers, Matt Garwood of MG Pest Control, has found and he has evidence to prove it.

Like many pest control businesses, MG Pest Control provides a service to a number of industrial sites. And like many others, MG Pest Control has followed the common practice of protecting these sites with well placed bait stations around site perimeters.

Covering London, Essex and Kent, all of the company's long term baiting points are numbered and mapped on site plans. During every routine visit, the level of activity at each bait station is recorded on what the company calls 'control sheets'.

Implementing the Code

The CRRU UK Code of Best Practice – Best Practice and Guidance for Rodent Control and the Safe Use of Rodenticides was published in March 2015, see **Pest** Issue 38: April & May 2015. Following this MG Pest Control decided to change its way of working.

Matt Garwood explains: "From around October 2015 we started to embrace the CRRU Code of Best Practice and by early 2016 we had all of our sites fully switched over. What we decided to do was put non-toxic monitoring blocks into all bait stations where no recent activity had been recorded.

"We then only put a rodenticide into the bait station control point when rodent activity had been recorded or, sometimes, if there was high level of rodent activity at an adjacent control point, or where we felt there was a high risk so areas such as bin stores or receiving areas for large warehouses." Toxic bait is also used on 'cavity bait lines' As Matt explains these are metal cables which are lowered inside cavity walls and secured at one end, so they can't work loose. The rodenticide is cable gripped on the other end of the line inside the wall cavity. The line is pulled out on routine visits, to check for rodent activity. In effect the cavity walls become giant bait boxes.

Rodenticides were selected according to site history so a first-generation anticoagulant rodenticide (FGAR) where possible, or a second generation-anticoagulant rodenticide (SGAR). "We also sometimes use an acute product in areas of high activity," he adds.

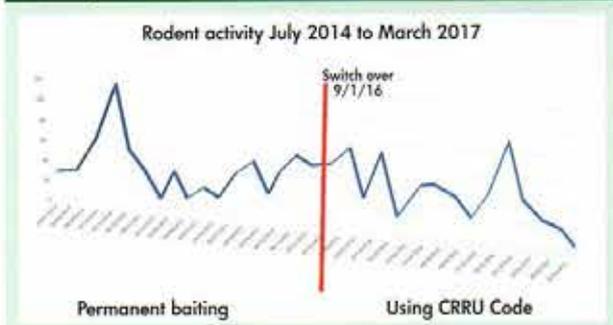
Results clear to see

Matt continues: "The four graphs shown are from four different sites where MG Pest Control is contracted to do the pest control. These are just examples but, note, they are real sites and the data is actual data. They are all large industrial sites; the size of each site is shown on the individual graphs. As part of the contract all of these sites required activity graphs and not just detailed activity reports so we had historical data for them.

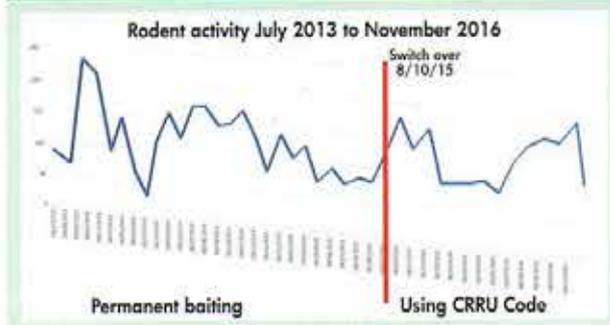
"The red vertical line is the date we switched from permanent baiting with FGAR or SGAR over to the CRRU Code – using non toxic as described above. These four sites currently have between



Example 1: 14 acre (5.7 ha) site in Essex



Example 2: 100 acre (40.5 ha) site in Essex



20 to 30% of the control points with toxic bait. The rest of the control points are all non-toxic. Prior to November 2015, every one of these bait stations would have contained toxic bait.

So, how does Matt get the values for the graphs? At every routine visit, every control point, internal and external, containing toxic or non-toxic bait, is given a rodent activity score as follows:

Activity level	Score	Activity level	Score
■ No activity	0	■ Very light activity	1
■ Light activity	2	■ Medium activity	3
■ High activity	4	■ All bait gone	5

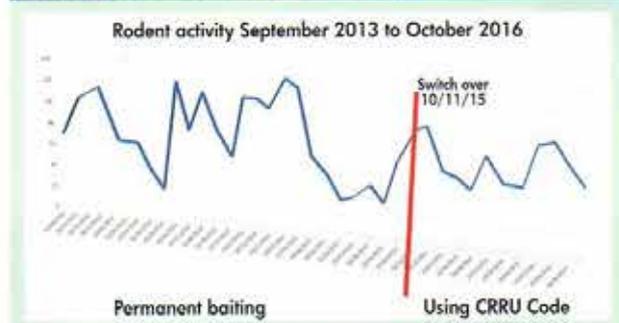
The control scores are then totalled for each routine visit with the resulting grand total being plotted on the graph by date of visit. Over time, this shows the level of rodent activity ebbing and flowing.

As Matt points out: "If you look at each of the graphs you can clearly see that the CRRU Code delivers better rodent control. The peaks of activity are not so high and the activity period is not so prolonged. Rodent activity is actually controlled more quickly when following the CRRU Code and, for most sites, (examples two, three and four) it offers much better control.

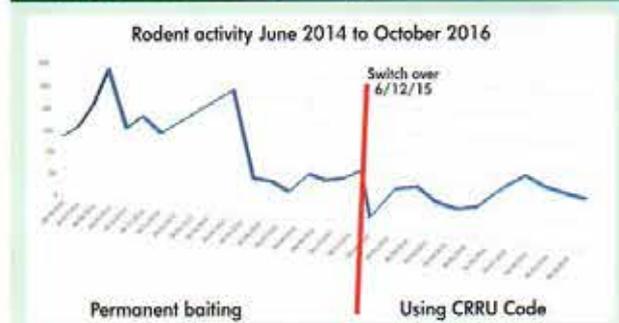
"In addition, three of the sites (examples 1, 2 & 3) were previously on a cycle of eight routine visits per year. On the switch over they were moved to 12 visits p.a. to meet the minimum monthly checks required. For us that meant a 50% increase in contract sales. The clients were happy with this after we explained it was due to adopting the CRRU Code."

"By following the CRRU Code we don't use as much SGAR or FGAR which, as well as reducing costs, also significantly reduces the risk to non target animals whilst in turn the better rodent control achieved is good for clients. By controlling rodents more quickly we are significantly reducing the risk from rodents to our customers' businesses," he concludes.

Example 3: 50 acre (20.25 ha) site in Kent



Example 4: 30 acre (12 ha) site in Essex



Stewardship update

So far so good...

Thanks to a lot of good work by distributors in our sector, the transition from old to new stewardship labelled rodenticides has passed without major incident. The use-up period ended on 31 March 2017, so if you do have any old product in stock, legally it can no longer be used, so you will have to arrange for it to be disposed of correctly.

The first formal assessment of the UK Rodenticide Stewardship Regime has been conducted by the Health & Safety Executive (HSE)-led Government Oversight Group. The report confirmed the regime is 'fit for purpose' but, it warns, that failure to deliver a reduction in second-generation anticoagulant rodenticides in barn owls, as a sentinel species, may result in changes to the regime.

Among elements currently in progress, it is the need for verification audits at point of sale that is now a priority. Ensuring that professional rodenticides are only available to responsible certified users in all user groups – farmers, gamekeepers and public health pest control professionals – is a critical priority. With rodenticides in competent hands, the goal is meaningful behavioural change leading to measurable effects in non-target species.

Recognising practical reality, however, the Oversight Group points out that it does not underestimate the significance of this challenge and recognises the significant efforts and achievements of CRRU and all involved.

Rodenticide stewardship for farmers...

It may have passed many readers by but, at PestTech last November, CRRU chairman, Dr Alan Buckle, announced a change in policy in the way farmers will prove their competence when purchasing professional rodenticides for outdoor use.

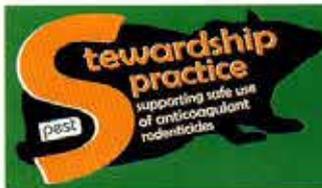
Because of the sheer numbers of farmers involved, the sector was given an exception to the certificate of competence requirement. Provided farmers could prove membership of a farm quality assurance scheme, approved by CRRU, they could continue to purchase rodenticides sporting the new stewardship labels. The original intention was that this exemption would run until 31 December 2017. This would give those in the sector time to get trained. Indeed, the Agriculture & Horticulture Development Board devised an online course to allow farmers to get qualified without having to leave the farm.

At PestTech however, Dr Buckle said that the logistical problem of how to steward 100,000 plus farmers has been dealt with by a policy decision, made by CRRU and supported by HSE, to bring about change by working through the farm assurance schemes, rather than by insisting on certification.

Going forward, schemes will continue to have to be vetted and approved by CRRU and it is expected that, from 1 January 2018, there will be seven that qualify members for exemption.

Whilst this move is understandable, it seems far from ideal. The safe and effective use of rodenticides will inevitably be a small part of any farm assurance auditor's checklist. As we have seen in the food sector, a lack of proper understanding of the role of rodenticides can lead to some strange interpretations of those words 'safe and effective use'.

NEWS
Rodenticide update



Amateur rodenticide use not forgotten

When a group of pest controllers get together to discuss rodenticides you can often here the refrain: 'but what about the amateurs, they scatter rodenticide everywhere!'

Whilst it is true that the UK Rodenticide Stewardship Regime only covers professional use, that is not to say that amateurs have been forgotten.

As the National Pest Technicians Association's (NPTA) Iain Turner explained to delegates to the Association's spring Roadshow tour, within the next 12 months there are some big differences opening up between amateur and professional rodenticide products:

- Following the reclassification of rodenticides as 'toxic to reproduction' amateur products will all contain less than 30 parts per million active substance, whilst professionals will still have access to full strength products;
- Maximum amateur pack sizes will be down from 1.5kg to 300g for rats and 100g for mice;
- Amateur mice products will be only for 'indoor use';
- Amateur rat products will be only for use 'in and around buildings', whilst professionals will still have access to 'open areas' products.

Stewardship policing plans

BASIS Registration is to take a more prominent role in the policing of the UK Rodenticide Stewardship Regime by establishing a system of independent auditing of rodenticide point of sale controls.

BASIS, the organisation that runs the professional register for pest control specialists, PROMPT, already has plenty of expertise in administering independent audits of pesticide stores. Indeed it was for this purpose that the organisation was originally established back in 1978, so that's almost 40 years of checking that pesticide stores comply with regulatory and industry standards.

Joint announcement

The plans were announced jointly with the Campaign for Responsible Rodenticide Use (CRRU) at the end of May. The BASIS Stores Inspection Scheme will be extended to cover rodenticide stewardship requirements. Applying controls at the point of sale, such as checking distribution staff are aware of the regulations and best practice requirements, is an important part of stewardship. Audits will apply to all supply routes – trade and retail, premises and internet – with the first audit cycle conducted by BASIS between February and November 2018.

Rupert Broome, CRRU UK point of sale work group leader, says: "Any company or outlet selling professional use rodenticides must have passed a BASIS Point of Sale audit for rodenticide stewardship compliance by 30 November 2018.

Failure to comply with any aspect of the stewardship regime may lead to the company concerned being reported to HSE, Trading Standards and any other relevant body.







NEW PRODUCT RANGE



Permost CS



Permax 22 E



Permost Uni Fly Spray



Piretrox™



Tetrapiu



Piretrox™ PU



SoFast



HokoEx

Piretrox™ and Piretrox™ PU contain pyrethrum, Permax 22E®, Permost Uni Fly Spray and Tetrapiu contain permethrin and tetramethrin, Permost CS contains permethrin, SoFast contains imidacloprid and HokoEx contains cyromazine. Use biocides safely. Always read the label and product information before use.

www.hockley.co.uk

RED TRACTOR UNVEILS BEEFED UP STANDARDS

Red Tractor has announced the strengthening of its poultry standards. Red Tractor poultry farms and hatcheries will be receiving copies of the scheme's revised assurance standards in July ready for their introduction in October.

Farmers, retailers, vets and other industry experts review the scheme every three years to ensure assured food is produced in a way that consumers value and demand.

With huge importance being placed on all livestock sectors to reduce overall antibiotic usage, standards have been updated to promote responsible use.

Vermis control has also been strengthened to allow assured producers to continue to buy professional rodenticides without the need for further training.

With avian influenza still front of mind, biosecurity protocols have been strengthened across the board.

The environmental protection section is now more appropriate for livestock farmers and for ease of navigation has been divided in to two areas: the responsible use of agricultural and nutrient management.

A summary of the main amendments are:

HOME-GROWN FEED

Records of how and when farmers treated home-grown grains for salmonella before feeding must be kept.

ANTIBIOTICS

Broiler producers must only use antibiotics to treat a problem, and total antibiotic use should now be recorded in mg/pcu*. The use of third and fourth generation cephalosporins, glycopeptides and colistin are not permitted, but macrolides and fluoroquinolones are allowed if backed up

by a vet and with written permission from the company purchasing the birds.

CHICK RECORDS

Red Tractor assured hatcheries must now only handle assured eggs to reduce any reputation risk to the scheme of non-assured eggs being supplied to producers. The requirement for producers to keep robust traceability records has also been beefed up.

RODENTICIDE USE

Routine baiting is not allowed and must only take place where evidence of rodent activity is found.

A map of the farm should show activity and a bait plan kept detailing any action taken. A simple risk assessment of where watercourses are and any populations of non-target species should also be carried out and recorded.

BIOSECURITY

A biosecurity plan or policy must exist for each assured poultry farm, and it is being recommended that there is a defined boundary around each site to control the entry and exit of vehicles and people. Vehicles should be disinfected on exit as well as entry.

ENVIRONMENTAL PROTECTION

Inorganic fertilisers should be stored on hard, dry surfaces away from flammable materials, and all application machinery should be checked annually.




Shootinguk

From next Saturday, 1 October, you will have to show an approved certificate when buying professional rodenticide packs

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The law changes on 1 October

TAGS: [Gamekeeping](#) [Pest control](#) [Rats](#) [Shooting Times](#)

Farmers, gamekeepers and pest controllers are reminded that from Saturday, 1 October, they will not be able to buy professional rodenticide packs for use outdoors without first showing an approved certificate of competence or proof of membership of an approved farm assurance scheme.

Dr Alan Buckle, chairman of the Campaign for Responsible Rodenticide Use, said that the way rodenticides are used must change if we are to reduce the occurrence of residues in wildlife. "It must become a high priority in all outdoor rural locations to make them as inhospitable as possible to rodents," he explained. "It is simply not acceptable to provide 'bed and board' for rodents, then attempt to solve the problem by repeatedly poisoning them with rodenticides."

Rodenticides update

THE NEW STEWARDSHIP ARRANGEMENTS for using rodenticide products are now well bedded in and appear to be working quite smoothly. Many members have reported that their local country stores are no longer selling professional-pack rodenticides without the purchaser showing proof of having attended a training course approved by the Campaign for Responsible Rodenticide Use. Online purchases now require similar evidence before checkout.

It's all about making sure that those who use these products are up to speed with the risks of contamination to wildlife and know how to use rodenticides carefully in accordance with the on-going stewardship programme. The Health & Safety Executive, meanwhile, has accepted that stewardship has started well and, in consequence, it will not be pulling the plug completely on the use of rat bait in the UK, at least for the time being.

The NGO got involved with this process as soon as it started and the threat became apparent. We were influential in ensuring that the aspects of the stewardship programme relating

to gamekeepers were practical and made sense. We co-own the one day training course *Rat Control for Gamekeepers*, which is the route to proof of competence specifically designed for and by our sector. It is overseen for us by BASIS, who issue the certificates to everyone who passes. So far, over 1,200 gamekeepers have taken the course, many trained by our own NGO Development Officers.

New this summer is an updated advisory booklet on rat control for gamekeepers which has been published by CRRU with input from BASIS, GWCT, NGO and SGA. *Rat Control & Game Management* (second edition) provides guidelines on the use of rodenticides under stewardship rules. It includes the latest information available from the Centre for Ecology and Hydrology on UK exposure of barn owls to rodenticides. Barn owls are the regime's formally defined benchmark species for monitoring rodenticide levels in non-target wildlife.

CRRU UK chairman Dr Alan Buckle says: "In game and wildlife management, of course, rats cause severe problems and rodenticides are often used to control

them. A side-effect is that rodenticide residues are found in other wildlife, including species of high conservation value such as barn owls, tawny owls, kestrels and red kites. By following the booklet's recommendations, gamekeepers are operating in line with Stewardship rules, with minimum impact on wildlife and the environment. This will help forestall calls to restrict rodenticide use even further, keeping this important rat control method available to gamekeepers when necessary."

The booklet can be downloaded free from thinkwildlife.org/downloads_resources/



Rat bait: keepers show the way

The extensive, five-month survey into the correct use of rat bait is now well under way. Anyone going onto an agricultural estate now and asking for professional rodenticides will have to show a certificate demonstrating that they have been successfully trained. Pest controllers, gamekeepers and farmers have all gone down slightly different routes to achieving this, but the success of the gamekeeping sector's approach stands through.

Tony Lawry (pictured below), is a good example. A well-employed shoot newby, he was on the very first NGO-run rat bait training course at Englefield in 2013. "It opened my eyes," he told KIB. "I had no idea that the secondary contamination in wildlife was so bad and we were taught how simple

improvements to the way we set baits could improve things so much."

Tony now uses a combination of purpose-built bait boxes and baits, coupled with baiting between-hunting or other means," he says, and with his 'eyes open', he spots and neutralises those days of what others see as being, especially some bad practice in setting.

Indeed, gamekeeping's response to the challenge of Stewardship has been widely commended. The national report made by law-abiding organisations recently to the Government Overlap Group featured great ratings from when the NGO trained its 1,000th gamekeeper in

2016. Officials said they were satisfied with the good start Stewardship had made, describing it as one great success story among many.

The NGO's efforts got another pat on the back when it told the PR professional who handles publicity for the Newby, Phil Christophel, that we were pleasing this article for KIB. His response was "That's exactly the complex, proactive approach I've come to expect from gamekeeping, and is seriously appreciated."

A few press ops, it looked as if rat bait was on a one-way ticket to oblivion. Now gamekeepers are being praised for taking a lead, sorting out their own affairs and standing up for best practice. It's a much better place to be in terms of defending the profession and the essential tools of our trade in the long term.

Tony Lawry goes about his shoot collecting, sets rat catches and disposing of them properly. "I'm a bit more careful than I was and I feel better about a business. I know I am doing my best for the wildlife," he says. And he urges all keepers who have not yet attended an NGO course to do so.



RAT BAIT COURSES

If you want to attend one of the NGO courses entitled *Rat Control for Gamekeepers*, check the NGO website for upcoming events or contact the NGO office to request your nearest. We will attempt to run these courses for as long as the demand is there.



Rodent Control on UK Farms is Changing

The way we do rodent control in the UK is undergoing a revolution. This has been brought about by a growing understanding that the way we do it now has resulted in widespread contamination of UK wildlife with the poisons, mainly anticoagulants, contained in rat baits.

For example, a recent study by Science and Advice for Scottish Agriculture (SASA) has shown the wide scope of rodenticide residues in Scottish wildlife, including many species of high conservation value.

Rodenticide residues in Scottish wildlife in samples collected during the period 2003-2013. [Data from Science and Advice for Scottish Agriculture.

See: [https://www.sasa.gov.uk/wildlife-environment/wildlife-incident-investigation-scheme-wiis.](https://www.sasa.gov.uk/wildlife-environment/wildlife-incident-investigation-scheme-wiis)



Species	Number of animals analysed	% containing residues of one or more rodenticide†
Buzzard	506	48
Red kite	112	72
Barn owl	48	44
Peregrine falcon	29	35
Golden eagle	34	12
White-tailed sea eagle	20	25
Pine marten	3	67
Scottish wildcat	3	67
	6	33

† mainly low-level, sub-lethal residues



One of these changes was referred to in the Summer 2016 edition of SQC News (Issue 48). From September 2016 all who buy professional packs of rodenticides to be used outdoors will need to show either an approved certificate of competence or a document showing membership of an approved farm assurance scheme, such as Scottish Quality Farm Assured Combinable Crops (SQC). But this is not the only change that is being made.

The way we apply rodenticides, especially when used outdoors, must improve if we are to reduce the exposure for UK wildlife to rodenticides.

For many years it was thought best practice to set out bait points on farms and keep them permanently topped up with rodenticide. We now believe this practice is responsible, at least in part, for the contamination of wildlife that we now see so widely in Scotland and elsewhere.

Non-target rodents, such as field mice and voles, go into the boxes, take the bait and are the prey of a very wide variety of wildlife species. CRRU UK has recently published a new guideline about safer and effective alternatives to permanent baiting, when it may be justified and, if it is, how to do it (<http://www.thinkwildlife.org/about-crru/>).

Any use of rodenticide outdoors poses a risk to wildlife. An Environmental Risk Assessment (ERA) is carried out

to identify these risks and to facilitate adoption of measures to minimise risk to wildlife and the wider environment. CRRU UK will shortly publish guidance on why we need ERAs and how they should be done, including an ERA template.

Of course, there is no risk if rodenticides are not used. So it must always be a high priority on all farms to make them as inhospitable as possible to rodent infestation. This is done by reducing harbourage and preventing access to foodstuffs. It is simply not acceptable continually to provide 'bed and board' for rodents on farms and solve the problem by repeatedly poisoning them with rodenticides.

More information on the documents referred to here and the UK Rodenticide Stewardship Regime, which is led by CRRU UK, is available from the CRRU website.

To contact CRRU UK go to the website and click the 'contact us' button: <http://www.thinkwildlife.org/about-crru/contact-us/>.

Article by Dr Alan Buckle, Chairman of the Campaign for Responsible Rodenticide Use (CRRU) UK.

Image credit Andrew Everitt.



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