Department of
Health, Social Services and Public Safety

An Roinn
Sláinte, Seirbhísí Sóisialta agus Sábháilteachta Poiblí

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Statistics of Scientific Procedures on Living Animals Northern Ireland 2005

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Prepared pursuant to section 21(7) of the Animals (Scientific Procedures) Act 1986 as adapted by section 29 of that Act

BELFAST: The Stationery Office

CONTENTS

STATISTICS OF SCIENTIFIC PROCEDURES ON LIVING ANIMALS NORTHERN IRELAND 2005

INTRODUCTORY NOTES

1. The statistics in this publication relate to experiments or other scientific procedures on living animals which were subject to the provisions of the Animals (Scientific Procedures) Act 1986 during the year from 1 January 2005. The system of control under the 1986 Act is explained in detail in the Appendix. Under this Act any scientific procedure carried out on any living vertebrate animal, or one species of octopus (*Octopus vulgaris*), which may cause that animal pain, suffering, distress or lasting harm is a regulated procedure requiring licence authority. Recognised veterinary, agricultural or animal husbandry practice and the administration of medicines under an Animal Test Certificate granted under the Medicines Act 1968 are excluded from the controls of the Act. Statistics of scientific procedures on living animals are collected and published annually They are structured to comply with European Union requirements, but the data provided are far more extensive than required by Europe.

Collection procedures

2. The statistics are compiled from, and largely based on, a detailed form returned by project licence holders at the end of each year, or on termination of the licence where this occurred during the year . This return, completed by each project licence holder, provides details of the species of animal used, the main purpose of the procedure and other details as described in paragraphs 7-12 below. In these statistics each procedure (which may consist of several stages) for a given purpose on an animal is counted as one returnable procedure in the year in which it commenced. A study involving a procedure using a number of animals is counted once for each animal. Where an animal which has recovered fully from a returnable procedure is used again for a further procedure, this is counted as a separate procedure, but the animal itself is not re-counted. The circumstances in which re-use of an animal is permitted are limited.

3. To complete the return, project licence holders were asked to classify their procedures. The current classification system dates from 1995 and is considerably more detailed than that used previously; further slight modifications were introduced for the 1999 statistics in the areas relating to source of animals, production and breeding, toxicology and legislation.

4. Details of the work of individual project licence holders are not identifiable in this publication.

Description of statistical tables

5. Project licence holders were asked to answer 15 questions about the procedures performed, 12 of which identified individual characteristics explained more fully in paragraphs 7-13 below.

6. Table 17 covers information on project licence holders, their place of employment and numbers of procedures.

PROCEDURES IN 2005

Species of animal

7. All the tables except 1a, 5a and 10a give the number of procedures. Tables 1a, 5a and 10a give the actual number of animals used for the first, and usually only time, and are classified according to their first use. The list of species or categories of animals is selective to avoid undue complications; where collective terms are used it is because previous experience suggests that the category will contain a relatively small number or because further breakdown is of little interest. In several of the tables, rows which are completely zero have been omitted and if a species is not mentioned it is because the row or rows pertaining to that species is completely blank.

Genetic status of animal

8. Tables 2 (source), 3 (genetic status), and 5 (non-toxicological work by field of research) are subdivided to give more information about animals with abnormal genetic constitutions. Table 2 shows procedures using all animals, as in publications for years before 1998.

Primary purpose (Table 1)

9. Use of animals for regulated procedures is limited by Section 5(3) of the Act to one of the following primary purposes:

(i) **fundamental biological research**; carried out with the primary intention of increasing knowledge of the structure, function and malfunction of the body (in both animals and man). Such studies may be aimed solely at an increase in knowledge, application of that knowledge being beyond the scope of the investigation, or with a view to providing a practical solution to a medical or veterinary problem once the issues are more clearly defined and understood. This category includes physiological, pathological, pharmacological, genetic and biochemical studies, including toxicological evaluation.

(ii) **applied studies - human medicine or dentistry, and veterinary medicine** ; consisting of research into, development of and quality control of products or devices, including toxicological evaluation and safety or efficacy testing.

(iii) **protection of man, animals or the environment**; by toxicological or other safety or environmental evaluation. This category is intended to cater for toxicological work which is not related either to fundamental research or to the solution of medical and veterinary problems as such (see (i) and (ii) above), but also includes some non-toxicological procedures. This category is further divided into a number of subgroups (listed in Tables 10 and 10a). These are largely self-explanatory but the following notes may be helpful in understanding the figures:

(a) while any one substance may be used in industry or in the home, or may be an environmental pollutant, a herbicide or a pesticide, the project licence holder classifies the procedure in accordance with the particular context of the procedure and the expected primary use of the product;

(b) animal pesticides (as distinct from plant pesticides) are not included amongst the types of substances listed, because a substance intended to kill pests which infest or attack animals would be regarded as a veterinary product. These are included in the appropriate body-system group covered by primary purposes described in (ii) above;

(c) many of the procedures recorded under this category are required by UK law or by the laws and regulations of countries in which it is intended to use the substance concerned;

(d) the term 'food additives' covers substances deliberately added to food as preservatives, artificial colourants or flavouring agents but not studies on the nutritive value of food, accidental contamination or infection of food, or medicines administered to animals or humans in food.

(iv) **education and training**; these categories include procedures carried out under project licences for the purposes of education or training under the 1986 Act. They also include killing of animals by methods not included in Schedule 1 to the 1986 Act, if the killing takes place for educational purposes at a designated establishment. Such killing may be authorised to provide, for example, tissues subsequently used for education or training. The use of animals for the acquisition of manual skills is permitted only for training in microvascular sur gery.

(v) **forensic enquiries** ; may refer to animal use in human or veterinary enquiries relevant to potential legal proceedings.

(vi) **direct diagnosis**; investigation of disease including investigating suspected poisoning. This caters for procedures carried out under the 1986 Act for the purpose of diagnosing disease in an individual human or animal patient or a group of such patients. There is no research function: these are essentially applied studies, predominantly involving antibody and other tissue production.

(vii) **breeding**; a category for recording the production and breeding of animals with harmful genetic defects and genetically modified animals. The numbers recorded in this category include those animals which are identified as possessing a harmful mutation or are genetically modified, but not used subsequently on procedures which are recorded elsewhere in the tables. The numbers also include some genetically normal animals which were subjected to regulated procedures such as tissue sampling or hormonal administration for the purpose of regulated breeding programmes (see Table 3).

Source of animals (Table 2)

10. Sections 7 and 10(3) of the Act require, unless a specific exemption is granted, that certain animals, listed in Schedule 2 to the Act, be obtained from designated breeding or supplying establishments certified as such by the Department. The species so listed are: mouse, rat, guinea-pig, hamster , gerbil, ferret, rabbit, cat, dog, primate, quail (*Coturnix coturnix*) and pigs and sheep if genetically modified. The source of these species is tabulated according to whether it is within the UK, within the remainder of the EU, within certain Council of Europe (but non-EU) countries who are signatories to convention ETS 123, or elsewhere. Animals which originate from non-designated sources, such as overseas breeding centres, but which are acquired by the project licence holder from a designated supplying establishment in the UK, are reported under the heading "Animals acquired from other designated breeding or supplying establishments in the UK." In columns 4, 5 and 6 of the table, supplies of Schedule 2-listed species from non-designated sources in the UK, or from Europe or elsewhere, were subject to prior approval by the Department. Such supply was justified on the basis of scientific need or unavailability of appropriate animals from designated breeding or supplying establishments.

Stage of development and genetic status, and br eeding (Table 3)

11. Stage of development

Details of procedures on immature forms were collected but not enumerated because it is impracticable in some cases to count such procedures, e.g. a foetus resorbed during gestation, or fish fry which are very small and fast-moving.

Genetic status

Only the number of animals in which the harmful genetic defect actually manifested itself has been recorded. All genetically modified animals are recorded.

Target body system (Tables 4, 6)

12. Some of the headings in the tables are self-explanatory but, for the others, further explanation is given below . Table 4 comprises all procedures, whilst Table 6 refers only to procedures for non-toxicological work.

Abbreviated title	*Description: studies in which interest centres on:*
Nervous	The central or peripheral nervous systems, other than the special senses
Senses	Sight, hearing, smell, or taste
Alimentary	The alimentary (including liver) and excretory systems
Musculo-skeletal	The skeletal or muscle system
Immune and reticulo-endothelial	The understanding and operation of the immune system
Other system	A single body system not separately listed in the table
Multiple systems	More than one system of primary interest
System not relevant	The system or systems affected were not predictable or not relevant

Type of procedure

13. This is divided into two groups:

    (a) fundamental and applied studies other than toxicology (Tables 5-9);

    (b) toxicity tests, or other safety or efficacy evaluation (Tables 10-16).

    Licensees reporting procedures were asked to classify them depending on whether the procedure fell within (a) or (b) above.

    If the purpose of the procedure was toxicological, the licensee was asked to report on the field of safety testing or efficacy evaluation, the type of test or procedure, and the legislative requirements (if any) under which the procedure was performed.

    If the purpose was non-toxicological, the licensee was asked to specify the field of research, the nature of the procedure with regard to production and breeding and whether the technique was identified as being of particular interest.

    The two strands of reporting are mutually exclusive and it is not possible, for instance, to identify procedures using a technique of particular interest if the purpose of the procedure was toxicological.

(a) **Fundamental and applied studies other than toxicology**

This group is sub-divided into four main areas of interest:

(i) **Field of research** (Tables 5 and 5a)

These headings are self-explanatory, but the following should be noted:

(a) pharmaceutical research and development excludes anti-cancer agents, where work is listed separately later in the table under 'cancer research';

(b) ecology excludes work done in toxicology and other safety evaluation;

(c) tobacco and alcohol research lists only those procedures done for research on the effects of tobacco or alcohol and not those where these substances are used as experimental tools or standards; note also that tobacco *safety* procedures would be reported in Table 10.

(ii) **Use of anaesthesia** (Table 4a)

This also indicates whether or not a neuromuscular blocking agent (NMBA) was used. The codes for anaesthesia distinguish procedures involving one or more stages, in which there was anaesthesia with recovery , from procedures in which the only anaesthesia was terminal. They also include the use of local or regional anaesthesia. The categories are:

(a) no anaesthesia used throughout the procedure; this will include procedures without anaesthesia even where the subject animal may have been killed by use of an anaesthetic overdose at the end of the procedure. It also includes studies of potential anaesthetic agents;

(b) general anaesthesia with recovery;

(c) local or regional anaesthesia;

(d) general anaesthesia without recovery, at the end of the procedure only;

(e) general anaesthesia without recovery, throughout the procedure.

The killing of an animal by the administration of an overdose of an anaesthetic agent (a recognised humane way of disposal as cited in Schedule 1 to the Act) is not a regulated procedure and should not be recorded *as such* in the above table.

(iii) **Production of biological materials** (Table 8)

Production: Procedures for production and maintenance of infectious agents (excluding neoplasms);

procedures for production and maintenance of vectors; e.g. parasites;

procedures for production and maintenance of neoplasms;

the ascites model for the production of monoclonal antibodies;

initial immunisation for subsequent *in vitro* or *in vivo* production of monoclonal antibodies;

procedures for production of polyclonal antibodies;

procedures for production of other biological material, eg plasma, tissues.

Breeding: Breeding of animals with harmful genetic defects or genetically modified animals is a regulated procedure under a project licence. Recorded in this category are those animals which are identified as 'harmful' or 'genetically modified' but not used subsequently in procedures which are recorded elsewhere in the tables. The numbers also include some genetically normal animals which were subjected to regulated procedures such as tissue sampling or hormonal administration for the purpose of regulated breeding programmes. Furthermore, this category also includes some animals possessing harmful but naturally occurring genetic mutations, and some genetically modified animals, which have been used for purposes other than breeding but for which this category is most appropriate from the list of choices of the returns form.

The figures for breeding in table 8 do not match those reported in Table 3: (see paragraph 10 above) incorporates all procedures and looks at the purpose of the procedure as coded in the return form, whilst Table 8 includes only procedures for fundamental and applied studies *other than* toxicology, regulatory or safety evaluation, and the columns of that table reflect coding of the return form, for production and breeding.

(iv) **Techniques of particular interest** (Table 9)

This table provides a selective list which identifies those procedures in which a technique is of itself of particular interest as, for example, the application of a substance to the eye or exposure to ionising radiation.The procedures recorded in this table do not include those undertaken for toxicology or safety evaluation.

(b) **Toxicity tests, or other safety or efficacy evaluation**

(i) **Safety and efficacy evaluation** (Tables 10, 10a)

Most of the subdivisions have been described in paragraph 10(iii) above with regard to general safety or efficacy evaluation but the category also includes work done for pharmaceutical safety and ef ficacy evaluation, and some other purposes as follows:

efficacy evaluation (acute, subacute and chronic);

absorption, distribution, metabolism, excretion and residue tests;

nutritional evaluation;

quality control;

toxicology research;

tobacco safety (note: tobacco *research* is recorded in Table 5 - see above);

medical device safety;

method development, and other tests.

(ii) **Legislative requirements** (Table 11)

This identifies medical/dental and veterinary categories which include procedures used in the initial development and selection of such products, those required to satisfy specific legislation (medical and non-medical) such as the Medicines Act 1968 and/or equivalent overseas or international legislation or regulations for purposes such as the intention of registration or the intention of presenting batch quality control data; and those carried out for other reasons. The legislation is divided into seven groups:

(a) United Kingdom legislation only;

(b) legislation specific to one EU country only (excluding the UK);

(c) general EU requirements, including the European Pharmacopoeia;

(d) non-EU member country of Council of Europe legislation;

(e) legislation of other countries;

(f) any combination of (a)-(e);

(g) purposes other than legislative requirements.

The following are examples of specific legislative requirements which may be included:

Medicines Act 1968;

Workplace safety - eg Health and Safety at Work (Northern Ireland) Order 1978, COSHH Regulations;

Substances used in agriculture - eg Control of Pesticides Regulations (Northern Ireland) 1987; EU Pesticides Directives;

Substances used in foodstuffs - eg The Food Safety (Northern Ireland) Order 1991.

(iii) **Specific types of toxicity tests** (Table 12)

acute and subacute dose ranging or limit setting lethal toxicity tests;

acute quantitative lethal toxicity tests;

acute and subacute non-lethal clinical sign toxicity tests;

subchronic and chronic toxicity tests;

carcinogen/teratogen/mutagen tests;

other reproductive toxicity tests;

tests for clinical signs in the eye;

tests for clinical signs on the skin, including irritation or sensitisation;

toxicokinetics, pyrogenicity, biocompatibility and other toxicology tests.

(iv) **Tables showing some selected work in greater detail**

There are four further tables (13-15), which examine some aspects of toxicological work in greater detail.

Three relate to safety testing:

Table 13: substances other than pharmaceuticals

Table 15: pharmaceuticals

Table 16: other safety or toxicology

PROJECT LICENCE HOLDERS AND DESIGNATED PLACES

Type of designated place (Table 17)

14. Project licence holders have been classified according to the type of designated place which was their main place of employment at the end of the year, although they could be licensed to carry out procedures at more than one place. Procedures have been classified according to the type of designated place of the project licence holder reporting them

COMMENTARY

15. The main features of the statistics for 2005 were:

(a) The number of scientific procedures started was 18,095 a decrease of 2,630 on the previous year (T ables 1, 2, 3 and 4).

(b) The number of animals used for the first time was 17,771. This is in comparison to 20,1 14 used in 2004 (T able 1a).

(c) The species of animals involved in the lar gest number of procedures in 2005 was mouse (46 per cent), cattle (16 per cent), domestic fowl (13 per cent) and sheep (10 per cent). Between 2004 and 2005 there was a fall in the number of procedures on mouse (down 3,546), rat (down 791), and fish (down 824). Increases were recorded for species inluding cattle (up 1,199), sheep (up 1,062) and Domestic fowl (up **1**6). There were no procedures carried out on primates (Tables 1 and 3).

(d) Some 9,880 procedures started in 2005 used animals acquired from designated establishments in Northern Ireland or from designated establishments within the United Kingdom. There were no procedures started using animals acquired from non-designated sources in the United Kingdom and 8,161 procedures used animals not listed in Schedule 2 to the Act (Table 2).

(e) Just under 6 per cent, (1,082) of procedures started in 2005 involved animals with a harmful genetic defect, (266 more than in 2004). There were 2,504 animals involved in genetically manipulated procedures. The majority of procedures started in 2005 (80 per cent) involved normal animals (T able 3).

(f) In 2005 2,295 procedures (13 per cent of the total) were aimed at more than one body system, 156 (1 per cent) concerned the reproductive system, and 2,781 (15 per cent) concerned the alimentary system. There were 450 procedures (2 per cent) concerning the cardiovascular system and 2,983 (16 per cent) concerned the nervous system. Some 4,260 procedures (24 per cent) were those in which the body system or systems afected were either not predictable or not relevant (Table 4a).

(g) Most procedures (81 per cent) were so minor that the use of anaesthesia was not appropriate. The remaining 19 per cent either used anaesthesia with recovery or were procedures in which the anaesthesia was terminal. The corresponding figures for 2004 were 78 per cent and 22 per cent respectively (T able 4b)

(h) Among non-toxicological work, certain procedures have been identified as being of particular interest. Some 575 (4 per cent) of the procedures started in 2005 used a technique identified on the code list to record these procedures. The most common technique involved interference with or gans of special sense (322) (Table 9).

(i) Of the 18,095 procedures started, only 15 per cent concerned toxicology studies (T ables 10 - 16). The number of animals used in such work was 2,716, with mouse (95 per cent) being the lar gest numbers used (Table 10a).

(j) The 2,785 procedures (1,226 less than in 2004) involving toxicology were performed in order to comply with the provisions of one of the following Acts Orders or equivalent overseas legislation: Medicines Act 1968, Health and Safety at Work (Northern Ireland) Order 1978, Agriculture (Poisonous Substances) Act (Northern Ireland) 1954, The Food Safety (Northern Ireland) Order 1991 or other legislation or regulations. Of these procedures 2,446 (88 per cent) were used in safety testing products other than cosmetics (T able 11).

(k) In 2005, 61 percent of the projects on which procedures were started were based at universities (including medical schools) and they accounted for 46 percent of the procedures. Projects at government departments accounted for 23 percent of the projects started, and 33 per cent of procedures. Commercial concerns projects accounted for 4 per cent of projects started and 5 per cent of procedures.The remaining percentages were those based at non-profit making organisations (Table 17).

(l) Returns were received in respect of 155 project licences in 2005, 8 more than in 2004. Some project licence holders would have made two returns for 2005, one relating to the expiring licence and one to the successor licence. A total of 93 licences carried out procedures in 2005. (T able 17).

(m) The number of personal licensees authorised to carry out regulated procedures under the Act was 535 (Table 19).

TABLE 1 – Scientific procedures by species of animal and primary purpose of the procedure
Northern Ireland 2005 **Number of procedures**

Species of animal	Primary purpose of the procedure									Total
	Fundamental biological research	Applied studies – human medicine or dentistry	Applied studies – veterinary medicine	Protection of man, animals or environment	Education	Training	Forensic enquiries	Direct diagnosis	Breeding	
Mammal										
Mouse	2,906	642	74	2,446	-	-	-	590	1,634	8,292
Rat	1,068	234	-	-	-	-	-	-	-	1,302
Guinea pig	24	-	-	-	-	-	-	-	-	24
Hamster	-	-	-	-	-	-	-	-	-	-
Gerbil	-	-	-	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-	-	-	-
Rabbit	90	-	85	-	-	-	-	-	-	175
Dog										
Beagle	-	-	89	-	-	-	-	-	-	89
Other including cross-bred dogs	-	-	-	-	-	-	-	-	-	-
Ferret	28	24	-	-	-	-	-	-	-	52
Other carnivore	-	-	-	-	-	-	-	-	-	-
Horse, donkey and cross-bred equids	-	-	14	-	-	-	-	-	-	14
Pig	565	8	52	-	-	-	-	-	-	625
Sheep	217	303	1,210	-	-	-	-	52	-	1,782
Cattle	2,455	-	437	7	-	-	-	-	-	2,899
Other mammal	16	-	-	192	-	-	-	-	-	208
Bird										
Domestic fowl *(Gallus domesticus)*	1,161	-	894	100	-	-	-	230	-	2,385
Quail *(Coturnix coturnix)*	-	-	-	-	-	-	-	-	-	-
Quail (spp. other than *Coturnix coturnix*)	-	-	-	-	-	-	-	-	-	-
Other bird	123	-	-	-	-	-	-	-	-	123
Reptile										
Any reptilian species	20	-	-	-	-	-	-	-	-	20
Amphibian										
Any amphibian species	19	-	-	-	-	-	-	-	-	19
Fish										
Any fish species	66	-	-	20	-	-	-	-	-	86
TOTAL	8,758	1,211	2,855	2,765	-	-	-	872	1,634	18,095

TABLE 1a– Animals by species of animal and primary purpose of the procedure
Northern Ireland 2005 **Number of animals**

Species of animal	Primary purpose of the procedure									Total
	Fundamental biological research	Applied studies – human medicine or dentistry	Applied studies – veterinary medicine	Protection of man, animals or environment	Education	Training	Forensic enquiries	Direct diagnosis	Breeding	
Mammal										
Mouse	2,906	642	74	2,446	-	-	-	590	1,634	8,292
Rat	1,068	234	-	-	-	-	-	-	-	1,302
Guinea pig	24	-	-	-	-	-	-	-	-	24
Hamster	-	-	-	-	-	-	-	-	-	-
Gerbil	-	-	-	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-	-	-	-
Rabbit	90	-	85	-	-	-	-	-	-	175
Dog										
Beagle	-	-	-	-	-	-	-	-	-	-
Other including cross-bred dogs	-	-	-	-	-	-	-	-	-	-
Ferret	28	24	-	-	-	-	-	-	-	52
Other carnivore	-	-	-	-	-	-	-	-	-	-
Horse, donkey and cross-bred equids	-	-	14	-	-	-	-	-	-	14
Pig	565	8	52	-	-	-	-	-	-	625
Sheep	217	303	1,198	-	-	-	-	4	-	1,722
Cattle	2,455	-	262	7	-	-	-	-	-	2,724
Other mammal	16	-	-	192	-	-	-	-	-	208
Bird										
Domestic fowl *(Gallus domesticus)*	1,161	-	894	100	-	-	-	230	-	2,385
Quail *(Coturmix coturnix)*	-	-	-	-	-	-	-	-	-	-
Quail (spp. other than *Coturmix coturnix*)	-	-	-	-	-	-	-	-	-	-
Other bird	123	-	-	-	-	-	-	-	-	123
Reptile										
Any reptilian species	20	-	-	-	-	-	-	-	-	20
Amphibian										
Any amphibian species	19	-	-	-	-	-	-	-	-	19
Fish										
Any fish species	66	-	-	20	-	-	-	-	-	86
TOTAL	8,758	1,211	2,579	2,765	-	-	-	824	1,634	17,771

TABLE 2 - Scientific procedures by Schedule 2 listed species and source of animals

Northern Ireland 2005 **Number of procedures**

Species of animal	Source							Total
	Animals acquired from within own designated establishment	Animals acquired from another designated breeding or supplying establishment in the UK	Animals acquired from non-designated sources in the UK	Animals acquired from sources within the EU (outside the UK)	Animals acquired from Council of Europe countries who are signatories to ETS 123	Animals acquired from other sources	Animals not listed in Schedule 2	
Mouse	7,186	1,080	-	6	-	20	-	8,292
Rat	752	550	-	-	-	-	-	1,302
Guinea pig	-	24	-	-	-	-	-	24
Hamster	-	-	-	-	-	-	-	-
Rabbit	-	175	-	-	-	-	-	175
Dog	-	89	-	-	-	-	-	89
Ferret	-	24	-	-	-	28	-	52
Pig (genetically modified)	-	-	-	-	-	-	-	-
Sheep (genetically modified)	-	-	-	-	-	-	-	-
Quail *(Coturnix coturnix)*	-	-	-	-	-	-	-	-
Animals not listed	-	-	-	-	-	-	8,161	8,161
TOTAL	7,938	1,942	-	6	-	48	8,161	18,095

TABLE 3 - Scientific procedures by species of animal, primary purpose and genetic status

Northern Ireland 2005 **Number of procedures**

Species of animal	Primary purpose of procedure	Genetic status			Total
		Normal animal	Animal with harmful genetic defect	Genetically modified animal	
Mouse	Fundamental biological research	1,035	772	1,290	3,097
	Applied studies	470	240	6	716
	Safety	2,446	-	-	2,446
	Other uses	590	-	-	590
	Breeding	377	28	1,038	1,443
	Total	4,918	1,040	2,334	8,292
Rat	Fundamental biological research	856	42	170	1,068
	Applied studies	234	-	-	234
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	1,090	42	170	1,302
Guinea pig	Fundamental biological research	24	-	-	24
	Applied studies	-	-	-	-
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	24	-	-	24
Rabbit	Fundamental biological research	90	-	-	90
	Applied studies	85	-	-	85
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	175	-	-	175
Dog - Beagle	Fundamental biological research	-	-	-	-
	Applied studies	89	-	-	89
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	89	-	-	89

TABLE 3 - Scientific procedures by species of animal, primary purpose and genetic status *(continued)*

Northern Ireland 2005 **Number of procedures**

Species of animal	Primary purpose of procedure	Genetic status			Total
		Normal animal	Animal with harmful genetic defect	Genetically modified animals	
Ferret	Fundamental biological research	28	-	-	28
	Applied studies	24	-	-	24
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	52	-	-	52
Horse, Donkey etc	Fundamental biological research	-	-	-	-
	Applied studies	14	-	-	14
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	14	-	-	14
Pig	Fundamental biological research	565	-	-	565
	Applied studies	60	-	-	60
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	625	-	-	625
Sheep	Fundamental biological research	217	-	-	217
	Applied studies	1,513	-	-	1,513
	Safety	-	-	-	-
	Other uses	52	-	-	52
	Breeding	-	-	-	-
	Total	1,782	-	-	1,782
Cattle	Fundamental biological research	2,455	-	-	2,455
	Applied studies	437	-	-	437
	Safety	7	-	-	7
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	2,899	-	-	2,899

TABLE 3 - Scientific procedures by species of animal, primary purpose and genetic status *(continued)*

Northern Ireland 2005 **Number of procedures**

Species of animal	Primary purpose of procedure	Genetic status			Total
		Normal animal	Animal with harmful genetic defect	Genetically modified animals	
Other Mammal	Fundamental biological research	16	-	-	16
	Applied studies	-	-	-	-
	Safety	192	-	-	192
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	208	-	-	208
Domestic Fowl	Fundamental biological research	1,161	-	-	1,161
	Applied studies	894	-	-	894
	Safety	100	-	-	100
	Other uses	230	-	-	230
	Breeding	-	-	-	-
	Total	2,385	-	-	2,385
Other bird	Fundamental biological research	123	-	-	123
	Applied studies	-	-	-	
	Safety	-	-	-	
	Other uses	-	-	-	
	Breeding	-	-	-	-
	Total	123	-	-	123
Reptile	Fundamental biological research	20	-	-	20
	Applied studies	-	-	-	-
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	20	-	-	20
Amphibian	Fundamental biological research	19	-	-	19
	Applied studies	-	-	-	-
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	19	-	-	19

TABLE 3 - Scientific procedures by species of animal, primary purpose and genetic status *(continued)*

Northern Ireland 2005 **Number of procedures**

Species of animal	Primary purpose of procedure	Genetic status			Total
		Normal animal	Animal with harmful genetic defect	Genetically modified animals	
Fish	Fundamental biological research	66	-	-	66
	Applied studies	-	-	-	-
	Safety	20	-	-	20
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	86	-	-	86
All species	Fundamental biological research	6,675	814	1,460	8,949
	Applied studies	3,820	240	6	4,066
	Safety	2,765	-	-	2,765
	Other uses	872	-	-	872
	Breeding	377	28	1,038	1,443
TOTAL		14,509	1,082	2,504	18,095

Species not listed had no procedures

TABLE 4a - Scientific procedures by species of animal and target body system

Northern Ireland 2005 **Number of procedures**

Species of animal	Body Systems												Total
	Respiratory	Cardiovascular	Nervous	Senses	Alimentary	Skin	Musculo-skeletal	Reproductive	Immune and reticulo-endothelial	Other system	Multiple systems	System not relevant	
Mammal													
Mouse	-	-	2,427	1,264	2,072	-	156	156	559	571	176	911	8,292
Rat	-	170	447	125	272	-	-	-	120	168	-	-	1,302
Other rodent	-	-	-	-	-	-	-	-	24	-	-	-	24
Rabbit	-	-	-	-	-	-	-	-	138	-	30	7	175
Dog	-	-	-	-	-	-	-	-	-	-	-	89	89
Ferret	-	-	-	-	-	-	-	-	-	-	24	28	52
Other carnivore	-	-	-	-	-	-	-	-	-	-	-	-	-
Horse, donkey and cross bred equids	-	-	-	-	-	-	-	-	-	-	-	14	14
Other ungulate	32	60	-	1,671	197	-	-	-	327	-	1,300	1,719	5,306
Other mammal	-	-	-	-	-	-	-	-	-	-	16	192	208
Bird	-	220	50	-	240	-	-	-	15	-	749	1,234	2,508
Reptile, amphibian	-	-	39	-	-	-	-	-	-	-	-	-	39
Fish	-	-	20	-	-	-	-	-	-	-	-	66	86
TOTAL	32	450	2,983	3,060	2,781	-	156	156	1,183	739	2,295	4,260	18,095

TABLE 4b - Scientific procedures by species of animal and level of anaesthesia

Northern Ireland 2005 **Number of procedures**

Species of animal	No anaesthesia	Type of anaesthesia				Total
		General anaesthesia with recovery	Local anaesthesia	General anaesthesia at end of procedure, without recovery	General anaesthesia throughout, without recovery	
Mouse	6,431	1,825	-	36	-	8,292
Rat	293	797	-	124	88	1,302
Other rodent	-	-	-	24	-	24
Rabbit	59	30	-	86	-	175
Dog	89	-	-	-	-	89
Ferret	-	52	-	-	-	52
Other carnivore	-	-	-	-	-	-
Horse and other equids	14	-	-	-	-	14
Other ungulates	5,283	-	13	2	8	5,306
Other mammal	208	-	-	-	-	208
Bird	2,263	-	-	37	208	2,508
Reptile / Amphibian	-	39	-	-	-	39
Fish	86	-	-	-	-	86
TOTAL	14,726	2,743	13	309	304	18,095

Neuromuscular blocking agents (NMBA) were used in 132 procedures in 2005. All of these procedures involved the use of general anaesthesia.

TABLE 5 - Scientific procedures (non-toxicology) by species of animal and field of research

Northern Ireland 2005 **Number of procedures**

Species of animal	Field of research												
	Anatomy	Physiology	Biochemistry	Psychology	Pathology	Immunology	Microbiology	Parasitology	Pharmacology	Pharmaceutical R&D	Therapeutics	Clinical medicine	Clinical surgery
Mammal													
Mouse	1,738	-	571	286	82	127	903	130	4	4	-	46	187
Rat	68	8	18	212	117	-	95	175	88	80	-	74	270
Guinea pig	-	-	-	-	-	24	-	-	-	-	-	-	-
Hamster	-	-	-	-	-	-	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-	-	-	-	-	-	-
Rabbit	-	-	-	-	-	86	59	-	-	-	-	-	30
Dog													
Beagle	-	-	-	-	-	-	-	-	-	89	-	-	-
Other including cross-bred dogs	-	-	-	-	-	-	-	-	-	-	-	-	-
Ferret	-	-	-	-	-	-	24	-	-	-	-	-	-
Other carnivore	-	-	-	-	-	-	-	-	-	-	-	-	-
Horse, donkey and cross-bred equids	-	-	-	-	-	-	-	-	-	14	-	-	-
Pig	-	8	-	282	-	-	53	-	-	38	-	-	-
Sheep	-	-	-	-	-	2	54	97	-	5	-	303	-
Cattle	-	-	-	12	-	-	52	-	-	207	-	-	-
Other mammal	-	-	-	-	-	-	-	-	-	-	-	-	-
Bird													
Domestic fowl (*Gallus domesticus*)	-	-	-	50	-	15	1,109	-	-	-	-	-	-
Quail (*Coturnix coturnix*)	-	-	-	-	-	-	-	-	-	-	-	-	-
Quail (spp. other than *Coturnix coturnix*)	-	-	-	-	-	-	-	-	-	-	-	-	-
Other bird	-	-	-	-	-	-	-	-	-	-	-	-	-
Reptile													
Any reptilian species	-	-	-	20	-	-	-	-	-	-	-	-	-
Amphibian													
Any amphibian species	-	-	-	19	-	-	-	-	-	-	-	-	-
Fish													
Any fish species	-	-	-	20	-	-	-	-	-	-	-	-	-
Total	1,806	16	589	901	199	254	2,349	402	92	437	-	423	487

TABLE 5 - Scientific procedures (non-toxicology) by species of animal and field of research *(continued)*

Northern Ireland 2005 **Number of procedures**

Species of animal	Field of research													Total
	Dentistry	Genetics	Molecular biology	Cancer research	Nutrition	Zoology	Botany	Animal science	Ecology	Animal welfare	Other	Tobacco	Alcohol	
Mammal														
Mouse	-	244	-	1,390	-	-	-	-	-	-	-	-	-	5,712
Rat	-	-	-	97	-	-	-	-	-	-	-	-	-	1,302
Guinea pig	-	-	-	-	-	-	-	-	-	-	-	-	-	24
Hamster	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rabbit	-	-	-	-	-	-	-	-	-	-	-	-	-	175
Dog														
Beagle	-	-	-	-	-	-	-	-	-	-	-	-	-	89
Other including cross-bred dogs	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ferret	-	-	-	-	-	28	-	-	-	-	-	-	-	52
Other carnivore	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Horse, donkey and cross-bred equids	-	-	-	-	-	-	-	-	-	-	-	-	-	14
Pig	-	-	-	-	230	-	-	-	-	-	-	-	-	611
Sheep	-	-	-	-	1,255	-	-	53	-	-	-	-	-	1,769
Cattle	-	1,671	-	-	226	-	-	553	-	-	-	-	-	2,721
Other mammal	-	208	-	-	-	-	-	-	-	-	-	-	-	208
Bird														
Domestic fowl (*Gallus domesticus*)	-	-	-	-	1,111	-	-	100	-	-	-	-	-	2,385
Quail (*Coturnix coturnix*)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Quail (spp. other than *Coturnix coturnix*)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other bird	-	-	-	-	-	123	-	-	-	-	-	-	-	123
Reptile														
Any reptilian species	-	-	-	-	-	-	-	-	-	-	-	-	-	20
Amphibian														
Any amphibian species	-	-	-	-	-	-	-	-	-	-	-	-	-	19
Fish														
Any fish species	-	-	-	-	-	-	-	-	20	46	-	-	-	86
Total	-	2,123	-	1,487	2,822	151	-	706	20	46	-	-	-	15,310

TABLE 5a - Animals (non-toxicology) by species of animal and field of research

Northern Ireland 2005 **Number of animals**

Species of animal	Field of research												
	Anatomy	Physiology	Biochemistry	Psychology	Pathology	Immunology	Microbiology	Parasitology	Pharmacology	Pharmaceutical R&D	Therapeutics	Clinical medicine	Clinical surgery
Mammal													
Mouse	1,738	-	571	286	82	127	903	130	4	4	-	46	187
Rat	68	8	18	212	117	-	95	175	88	80	-	74	270
Guinea pig	-	-	-	-	-	24	-	-	-	-	-	-	-
Hamster	-	-	-	-	-	-	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-	-	-	-	-	-	-
Rabbit	-	-	-	-	-	86	59	-	-	-	-	-	30
Dog												-	
Beagle	-	-	-	-	-	-	-	-	-	-	-	-	-
Other including cross-bred dogs	-	-	-	-	-	-	-	-	-	-	-	-	-
Ferret	-	-	-	-	-	-	24	-	-	-	-	-	-
Other carnivore	-	-	-	-	-	-	-	-	-	-	-	-	-
Horse, donkey and cross-bred equids	-	-	-	-	-	-	-	-	-	14	-	-	-
Pig	-	8	-	282	-	-	53	-	-	38	-	-	-
Sheep	-	-	-	-	-	2	6	97	-	-	-	303	-
Cattle	-	-	-	12	-	-	52	-	-	94	-	-	-
Other mammal	-	-	-	-	-	-	-	-	-	-	-	-	-
Bird													
Domestic fowl (*Gallus domesticus*)	-	-	-	50	-	15	1,109	-	-	-	-	-	-
Quail (*Coturnix coturnix*)	-	-	-	-	-	-	-	-	-	-	-	-	-
Quail (spp. other than *Coturnix coturnix*)	-	-	-	-	-	-	-	-	-	-	-	-	-
Other bird	-	-	-	-	-	-	-	-	-	-	-	-	-
Reptile													
Any reptilian species	-	-	-	20	-	-	-	-	-	-	-	-	-
Amphibian													
Any amphibian species	-	-	-	19	-	-	-	-	-	-	-	-	-
Fish													
Any fish species	-	-	-	20	-	-	-	-	-	-	-	-	-
Total	1,806	16	589	901	199	254	2,301	402	92	230	-	423	487

TABLE 5a - Animals (non-toxicology) by species of animal and field of research *(continued)*

Northern Ireland 2005 **Number of animals**

Species of animal	Field of research													Total
	Dentistry	Genetics	Molecular biology	Cancer research	Nutrition	Zoology	Botany	Animal science	Ecology	Animal welfare	Other	Tobacco	Alcohol	
Mammal														
Mouse	-	244	-	1,390	-	-	-	-	-	-	-	-	-	5,712
Rat	-	-	-	97	-	-	-	-	-	-	-	-	-	1,302
Guinea pig	-	-	-	-	-	-	-	-	-	-	-	-	-	24
Hamster	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rabbit	-	-	-	-	-	-	-	-	-	-	-	-	-	175
Dog														
Beagle	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other including cross-bred dogs	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ferret	-	-	-	-	-	28	-	-	-	-	-	-	-	52
Other carnivore	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Horse, donkey and cross-bred equids	-	-	-	-	-	-	-	-	-	-	-	-	-	14
Pig	-	-	-	-	230	-	-	-	-	-	-	-	-	611
Sheep	-	-	-	-	1,255	-	-	53	-	-	-	-	-	1,716
Cattle	-	1,671	-	-	226	-	-	553	-	-	-	-	-	2,608
Other Mammal	-	208	-	-	-	-	-	-	-	-	-	-	-	208
Bird														
Domestic fowl (*Gallus domesticus*)	-	-	-	-	1,111	-	-	100	-	-	-	-	-	2,385
Quail (*Coturnix coturnix*)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Quail (spp. other than *Coturnix coturnix*)	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other bird	-	-	-	-	-	123	-	-	-	-	-	-	-	123
Reptile														
Any reptilian species	-	-	-	-	-	-	-	-	-	-	-	-	-	20
Amphibian														
Any amphibian species	-	-	-	-	-	-	-	-	-	-	-	-	-	19
Fish														
Any fish species	-	-	-	-	-	-	-	-	20	46	-	-	-	86
Total	-	2,123	-	1,487	2,822	151	-	706	20	46	-	-	-	15,055

TABLE 8 - Scientific procedures (non-toxicology) by species of animal and production of biological materials

Northern Ireland 2005 **Number of procedures**

Species of animal	Production							Breeding					Other	Total
	Infectious agents	Vectors	Neoplasms	Monoclonal antibodies (ascites model)	Monoclonal antibodies (initial immun-isation)	Polyclonal antibodies	Other biological materials	Animals used to generate founder GM animals	GM animals created by recognised husbandry methods	GM animals used in research programmes	Harmful mutant animals created by recognised husbandry methods	Harmful mutant animals used in research programmes		
Mouse	73	-	110	-	133	-	120	520	1,689	364	480	-	2,223	5,712
Rat	175	-	-	-	-	-	-	-	20	154	-	-	953	1,302
Other Rodent	-	-	-	-	-	24	-	-	-	-	-	-	-	24
Rabbit	-	-	-	-	-	101	-	-	-	-	-	-	74	175
Dog	-	-	-	-	-	-	-	-	-	-	-	-	89	89
Ferret	-	-	-	-	-	-	-	-	-	-	-	-	52	52
Other Carnivore	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Horse & other equids	-	-	-	-	-	-	-	-	-	-	-	-	14	14
Other Ungulates	31	-	-	-	-	305	52	-	-	-	-	-	4,713	5,101
Other Mammal	-	-	-	-	-	-	-	-	-	-	-	-	208	208
Bird	10	-	-	-	-	12	208	-	-	-	-	-	2,278	2,508
Reptile/ Amphibian	-	-	-	-	-	-	-	-	-	-	-	-	39	39
Fish	-	-	-	-	-	-	-	-	-	-	-	-	86	86
Total	289	-	110	-	133	442	380	520	1,709	518	480	-	10,729	15,310

TABLE 9 - Scientific procedures (non-toxicology) by species of animal and techniques of particular interest

Northern Ireland 2005 **Number of procedures**

Species of animal	Techniques of Particular Interest									All other techniques	Total
	Interference with organs of special sense	Injection into brain	Interference with brain	Psychological stress	Aversive training	Radiation	Inhalation	Thermal injury	Physical trauma		
Mouse	97	89	-	-	-	-	9	39	36	5,442	5,712
Rat	186	-	-	80	-	-	-	-	-	1,036	1,302
Other rodent	-	-	-	-	-	-	-	-	-	24	24
Rabbit	-	-	-	-	-	-	-	-	-	175	175
Dog	-	-	-	-	-	-	-	-	-	89	89
Ferret	-	-	-	-	-	-	-	-	-	52	52
Other carnivore	-	-	-	-	-	-	-	-	-	-	-
Horse and other equids	-	-	-	-	-	-	-	-	-	14	14
Other ungulate	-	-	-	-	-	-	-	-	-	5,101	5,101
Other mammal	-	-	-	-	-	-	-	-	-	208	208
Bird	-	-	-	-	-	-	-	-	-	2,508	2,508
Reptile / Amphibian	19	-	-	-	-	-	-	-	-	20	39
Fish	20	-	-	-	-	-	-	-	-	66	86
Total	322	89	-	80	-	-	9	39	36	14,735	15,310

TABLE 10 - Scientific procedures (toxicology) by species of animal and toxicological purpose

Northern Ireland 2005 **Number of procedures**

Species of animal	Toxicology or other safety/efficacy evaluation							Total
	Pharmaceutical safety/efficacy evaluation					Other purposes		
	Other foodstuffs	Safety testing	Efficacy testing	Quality control	ADME and residue	Toxicology research	Other	
Mammal								
Mouse	2,446	24	-	-	-	110	-	2,580
Rat	-	-	-	-	-	-	-	-
Guinea pig	-	-	-	-	-	-	-	-
Hamster	-	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-	-
Rabbit	-	-	-	-	-	-	-	-
Dog	-	-	-	-	-	-	-	-
Beagle	-	-	-	-	-	-	-	-
Other including cross-bred dogs	-	-	-	-	-	-	-	-
Ferret	-	-	-	-	-	-	-	-
Other carnivore	-	-	-	-	-	-	-	-
Horse, donkey and cross-bred equids	-	-	-	-	-	-	-	-
Pig	-	-	-	-	14	-	-	14
Sheep	-	-	-	-	13	-	-	13
Cattle	-	-	100	-	78	-	-	178
Other ungulate	-	-	-	-	-	-	-	-
Other mammal	-	-	-	-	-	-	-	-
Bird								
Domestic fowl *(Gallus domesticus)*	-	-	-	-	-	-	-	-
Quail (*Coturnix coturnix*)	-	-	-	-	-	-	-	-
Quail (spp. other than *Coturnix coturnix*)	-	-	-	-	-	-	-	-
Other bird	-	-	-	-	-	-	-	-
Reptile								
Any reptilian species	-	-	-	-	-	-	-	-
Amphibian								
Any amphibian species	-	-	-	-	-	-	-	-
Fish								
Any fish species	-	-	-	-	-	-	-	-
TOTAL	2,446	24	100	-	105	110	-	2,785

TABLE 10a - Animals (toxicology) by species of animal and toxicological purpose

Northern Ireland 2005 **Number of animals**

Species of animal	Toxicology or other safety/efficacy evaluation										Total
	General safety/efficacy evaluation				Pharmaceutical safety/efficacy evaluation				Other purposes		
	Pollution	Household	Food additives	Other foodstuffs	Safety testing	Efficacy testing	Quality control	ADME and residue	Toxicology research	Other	
Mammal											
Mouse	-	-	-	2,446	24	-	-	-	110	-	2,580
Rat	-	-	-	-	-	-	-	-	-	-	-
Guinea pig	-	-	-	-	-	-	-	-	-	-	-
Hamster	-	-	-	-	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-	-	-	-	-
Rabbit	-	-	-	-	-	-	-	-	-	-	-
Dog											
Beagle	-	-	-	-	-	-	-	-	-	-	-
Other including cross-bred dogs	-	-	-	-	-	-	-	-	-	-	-
Ferret	-	-	-	-	-	-	-	-	-	-	-
Other carnivore	-	-	-	-	-	-	-	-	-	-	-
Horse, donkey and cross-bred equids	-	-	-	-	-	-	-	-	-	-	-
Pig	-	-	-	-	-	-	-	14	-	-	14
Sheep	-	-	-	-	-	-	-	6	-	-	6
Cattle	-	-	-	-	-	97	-	19	-	-	116
Other mammal	-	-	-	-	-	-	-	-	-	-	-
Bird											
Domestic fowl *(Gallus domesticus)*	-	-	-	-	-	-	-	-	-	-	-
Quail (*Coturnix coturnix*)	-	-	-	-	-	-	-	-	-	-	-
Quail (spp other than *Coturnix coturnix*)	-	-	-	-	-	-	-	-	-	-	-
Other bird	-	-	-	-	-	-	-	-	-	-	-
Reptile											
Any reptilian species	-	-	-	-	-	-	-	-	-	-	-
Amphibian											
Any amphibian species	-	-	-	-	-	-	-	-	-	-	-
Fish											
Any fish species	-	-	-	-	-	-	-	-	-	-	-
TOTAL	-	-	-	2,446	24	97	-	39	110	-	2,716

TABLE 11 - Scientific procedures (toxicology) by species of animal, type of legislation and toxicological purpose

Northern Ireland 2005 **Number of procedures**

Species	Legislative requirements	Toxicological purpose			TOTAL
		Safety testing other than cosmetics	Pharmaceutical safety	Other safety/ Toxicology	
Mouse	UK requirements only	-	-	-	-
	One EU country only (not UK)	-	-	-	-
	EU requirements, incl. European Pharmacopoeia	-	-	-	-
	Requirements of (non-EU) Council of Europe	-	-	-	-
	Requirements of other countries	-	-	-	-
	Any combination of above	2,446	-	-	2,446
	Non-legislative purposes	-	24	110	134
	Total	2,446	24	110	2,580
Rat	UK requirements only	-	-	-	-
	One EU country only (not UK)	-	-	-	-
	EU requirements, incl. European Pharmacopoeia	-	-	-	-
	Requirements of (non-EU) Council of Europe	-	-	-	-
	Requirements of other countries	-	-	-	-
	Any combination of above	-	-	-	-
	Non-legislative purposes	-	-	-	-
	Total	-	-	-	-
Pig	UK requirements only	-	-	-	-
	One EU country only (not UK)	-	-	-	-
	EU requirements, incl. European Pharmacopoeia	-	-	-	-
	Requirements of (non-EU) Council of Europe	-	-	-	-
	Requirements of other countries	-	-	-	-
	Any combination of above	-	14	-	14
	Non-legislative purposes	-	-	-	-
	Total	-	14	-	14
Sheep	UK requirements only	-	-	-	-
	One EU country only (not UK)	-	-	-	-
	EU requirements, incl. European Pharmacopoeia	-	-	-	-
	Requirements of (non-EU) Council of Europe	-	-	-	-
	Requirements of other countries	-	-	-	-
	Any combination of above	-	13	-	13
	Non-legislative purposes	-	-	-	-
	Total	-	13	-	13
Cattle	UK requirements only	-	-	-	-
	One EU country only (not UK)	-	-	-	-
	EU requirements, incl. European Pharmacopoeia	-	-	-	-
	Requirements of (non-EU) Council of Europe	-	-	-	-
	Requirements of other countries	-	-	-	-
	Any combination of above	-	178	-	178
	Non-legislative purposes	-	-	-	-
	Total	-	178	-	178
All species	UK requirements only	-	-	-	-
	One EU country only (not UK)	-	-	-	-
	EU requirements, incl. European Pharmacopoeia	-	-	-	-
	Requirements of (non-EU) Council of Europe	-	-	-	-
	Requirements of other countries	-	-	-	-
	Any combination of above	2,446	205	-	2,651
	Non-legislative purposes	-	24	110	134
TOTAL		2,446	229	110	2,785

TABLE 12 - Scientific procedures (toxicology) by species of animal and type of toxicological test: all purposes

Northern Ireland 2005 **Number of procedures**

Species of animal	Type of toxicological test or procedure								Total
	Acute lethal toxicity	Acute limit	Acute non-lethal clinical sign	Subacute limit-setting or dose ranging	Subacute toxicity	Genetic toxicology (includes mutagenicity)	Teratogenicity	Other toxicology	
Mouse	-	-	24	-	-	-	-	2,556	2,580
Rat	-	-	-	-	-	-	-	-	-
Other Rodent	-	-	-	-	-	-	-	-	-
Rabbit	-	-	-	-	-	-	-	-	-
Dog	-	-	-	-	-	-	-	-	-
Ferret	-	-	-	-	-	-	-	-	-
Other carnivore	-	-	-	-	-	-	-	-	-
Horse and other equids	-	-	-	-	-	-	-	-	-
Other ungulate	-	-	-	-	-	-	-	205	205
Other Mammal	-	-	-	-	-	-	-	-	-
Bird	-	-	-	-	-	-	-	-	-
Reptile / Amphibian	-	-	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-	-	-
TOTAL	-	-	24	-	-	-	-	2,761	2,785

TABLE 13 - Scientific procedures (toxicology) by species of animal and type of toxicological test: safety testing of substances other than pharmaceuticals

Northern Ireland 2005 **Number of procedures**

Species of animal	Type of toxicological test or procedure							Total
	Other reproductive toxicity	Toxicokinetics	Pyrogenicity	Biocompatibility	Enzyme induction	Immuno-toxicology for *in vitro* tests	Other toxicology	
Mouse	-	-	-	-	-	-	2,446	2,446
Rat	-	-	-	-	-	-	-	-
Other Rodent	-	-	-	-	-	-	-	-
Rabbit	-	-	-	-	-	-	-	-
Dog	-	-	-	-	-	-	-	-
Horse and other equids	-	-	-	-	-	-	-	-
Other ungulate	-	-	-	-	-	-	-	-
Other Mammal	-	-	-	-	-	-	-	-
Bird	-	-	-	-	-	-	-	-
Reptile / Amphibian	-	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-	-
TOTAL	-	-	-	-	-	-	2,446	2,446

Table 15 - Scientific procedures (toxicology) by species of animal and type of toxicological test: safety testing of pharmaceuticals

Northern Ireland 2005 **Number of procedures**

Species of animal	Type of toxicological test or procedure						Total
	Acute lethal toxicity	Acute lethal concentration	Acute limit setting	Acute non-lethal clinical sign	Teratogenicity	Other Toxicology	
Mouse	-	-	-	24	-	-	24
Rat	-	-	-	-	-	-	-
Other Rodent	-	-	-	-	-	-	-
Rabbit	-	-	-	-	-	-	-
Dog	-	-	-	-	-	-	-
Ferret	-	-	-	-	-	-	-
Horse and other equids	-	-	-	-	-	-	-
Other ungulate	-	-	-	-	-	205	205
Bird	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
TOTAL	-	-	-	24	-	205	229

Table 16 - Scientific procedures (toxicology) by species of animal and type of toxicological test: other safety or toxicology testing

Northern Ireland 2005 **Number of procedures**

Species of animal	Type of toxicological test or procedure										Total
	Acute lethal toxicity	Acute lethal concentration	Acute limit setting	Acute non-lethal clinical sign	Subacute limit-setting or dose ranging	Subacute toxicity	Subchronic and chronic	Carcinogenicity	Genetic toxicology (includes mutagenicity)	Other toxicology	
Mouse	-	-	-	-	-	-	-	-	-	110	110
Rat	-	-	-	-	-	-	-	-	-	-	-
Other Rodent	-	-	-	-	-	-	-	-	-	-	-
Rabbit	-	-	-	-	-	-	-	-	-	-	-
Dog	-	-	-	-	-	-	-	-	-	-	-
Other carnivore	-	-	-	-	-	-	-	-	-	-	-
Horse and other equids	-	-	-	-	-	-	-	-	-	-	-
Other ungulates	-	-	-	-	-	-	-	-	-	-	-
Bird	-	-	-	-	-	-	-	-	-	-	-
Reptile/amphibian	-	-	-	-	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-	-	110	110

TABLE 17 - Project licence holders and scientific procedures by type of designated establishment

Northern Ireland 2005

Type of designated establishment	Project licences reporting procedures[1]	Project licences reporting no procedures	Total number of projects	Total number of procedures
Universities (including medical schools)	57	42	99	8,268
Government departments	21	14	35	5,922
Non-profit making organisations	11	3	14	3,044
Commercial concerns	4	3	7	861
TOTAL	93	62	155	18,095

(1) Some project licence holders hold more than one project licence; these figures are compiled **by project licence**, not by actual licence holder.

TABLE 18 - Designated establishments: 1998-2005

Number of designated places at 31 December

Northern Ireland

	1998	1999	2000	2001	2002	2003	2004	2005
Scientific procedure establishments	11	6	5	5	5	5	5	5
Scientific procedure and breeding establishments	1	1	1	1	1	1	-	-
Scientific procedure breeding and supplying establishments	6	7	7	7	7	6	6	5
Scientific procedure and supplying establishments	-	-	-	-	-	-	-	-
Breeding and supplying establishments	-	-	-	-	-	-	-	1
Total designated places	18	14	13	13	13	12	11	11

TABLE 19 - Personal Licensees: 1998-2005

Number of personal licences at 31 December

Northern Ireland

1998	1999	2000	2001	2002	2003	2004	2005
422	474	509	484	567	624	451	535

APPENDIX

General system of control under the Animals (Scientific Procedures) Act 1986

Introduction

1. The Animals (Scientific Procedures) Act 1986 put in place a rigorous system of controls on scientific work on living animals, including the need for both the researcher and the project to be separately licensed; stringent safeguards on animal pain and suffering; and general requirements to ensure the care and welfare of animals.

Scope of the Act

2. The Act controls any experimental or other scientific procedure applied to a 'protected animal' which may have the effect of causing that animal pain, suffering, distress or lasting harm. Such work is referred to in the Act as a 'regulated procedure'. 'Protected animals' are defined as all living vertebrate animals, except man, plus one invertebrate species, *Octopus vulgaris*. The definition extends to foetal, larval or embryonic forms which have reached specified stages in their development. Under the Act an animal is regarded as 'living' until "the permanent cessation of circulation or complete destruction of its brain". Procedures carried out on decerebrate animals are also subject to the controls of the Act.

3. The definition of a regulated procedure encompasses some breeding of animals with genetic defects; production of antisera and other blood products; the maintenance and passage of tumours and parasites; and the administration for a scientific purpose of an anaesthetic, analgesic, tranquilliser or other drug to dull perception. Killing an animal requires licence authority in certain circumstances.

4. The controls of the 1986 Act do not extend to procedures applied to animals in the course of recognised veterinary, agricultural or animal husbandry practice; procedures for identification of animals for scientific purposes, if this causes no more than momentary pain or distress and no lasting harm; or clinical tests on animals for evaluating a veterinary product under authority of an Animal Test Certificate (issued under the Medicines Act 1968).

Project and Personal Licences

5. Two kinds of licence are required for all scientific work controlled by the Act. The procedures must be part of a programme of work authorised by a project licence and the person applying the regulated procedures must hold a personal licence. No work may be done unless the procedure, the animals used and the place where the work is to be done are specifically authorised in both project and personal licences.

6. A project licence is granted when the Department of Health, Social Services and Public Safety (hereinafter referred to as the Department) considers that the use of living animals in a programme of work, for a purpose permitted by the Act, is justified and the methods proposed appropriate. In deciding whether and on what terms to authorise the project, the likely adverse effects on the animals used must be weighed against the benefit (to humans, other animals or the environment) which is likely to accrue from the work. Adequate consideration must also have been given to the feasibility of using alternative methods not involving living animals. The holder of a project licence undertakes overall responsibility for the scientific direction and control of the work and is responsible for making the statistical returns on which this publication is based. New project licence applicants are now required to complete an accredited training course before the licence is granted.

7. A personal licence is the Department's endorsement that the holder is a suitable and competent person to carry out specified procedures on specified animals, under supervision where necessary. Applicants must be over 18 and are required to give details of their qualifications, training and experience. Those who have not previously held a licence need the endorsement of a sponsor (normally someone in a senior position at the applicant's place of work). Satisfactory completion of an accredited training course is also required before a personal licence is issued.

Designation of premises

8. Except where otherwise authorised in a project licence (eg for field work at a specified place and time), any place where work is carried out under the Act must be designated as a scientific procedure establishment. Since January 1990, establishments which breed certain types of animal (mouse, rat, guinea-pig, hamster, rabbit, dog, cat and primate) for use in scientific procedures ('breeding establishments'), and establishments which obtain such animals from elsewhere and supply them to laboratories ('supplying establishments') must have held a certificate of designation. Quail was added to the list of species in 1993. Designated establishments are required to nominate a person to be responsible for the day-to-day care of animals and a veterinary surgeon to advise on their health and welfare.

The Inspectorate

9. The Act gives statutory recognition to the Animals (Scientific Procedures) Inspectorate and describes the Inspectors' duties. Inspectors hold either medical or veterinary qualifications.

10. Inspectors assess all applications for new licences or amendments to existing licences in detail and advise the Department on how to ensure that only properly justified work is licensed. When assessing research proposals, the Inspectorate ensures that full consideration is given to alternatives, not only the *replacement* of procedures with others which do not use animals, but also the *reduction* of the number of animals used and the *refinement* of procedures to minimise pain and suffering. These are known as the 3Rs. Inspectors carry out visits, mainly without notice, to establishments designated under the Act to inspect the premises and to ensure that the establishment's controls are adequate and that the terms and conditions of the licences issued under it are being observed.

11. Inspectors also advise the Department on policy matters connected with the operation of the Act and they are available to give advice and assistance to licensees and other personnel working under the Act.

12. During 2005 the Inspectorate made 202 visits to establishments.

The Animal Procedures Committee

13. The Act established the Animal Procedures Committee which has the duty of advising the Department and the Home Secretary on matters concerned with the Act and functions under it. The Department may refer matters to the Committee, but the APC is also free to consider topics of its own choosing. The Committee is required in its consideration of any matter to have regard both to the legitimate requirements of science and industry and to the protection of animals against avoidable suffering and unnecessary use in scientific procedures. Each year, the Committee makes a report to the Department and the Home Secretary which is laid before Parliament and published.

14. The Act requires that, excluding the Chairman, the Committee must have a minimum of 12 members, one must be a lawyer and at least two thirds must be medical practitioners, veterinary surgeons or have qualifications or experience in a biological subject. At least half of the members must not have held a licence under the Act within the last six years. The Department must also ensure that animal welfare interests are adequately represented.

Guidance, Codes of Practice and Statistics

15. In addition to these annual statistics, the Act requires that there be published and laid before Parliament guidance on the operation of the controls of the Act and codes of practice as to the care and accommodation of animals and their use in regulated procedures. Four such documents have been published:

- Guidance on the operation of the Animals (Scientific Procedures) Act 1986 (2000; HC 321);
- Code of practice for the housing and care of animals used in scientific procedures (1989; HC 107);
- Code of practice for the housing and care of animals in designated breeding and supplying establishments (1995; HC 125); and
- Code of Practice for the Humane Killing of Animals under Schedule 1 to the Animals (Scientific Procedures) Act 1986 (1997; HC 193).

Education and training

16. The Animals (Scientific Procedures) Act 1986 imposes clear responsibilities on persons with specific roles in relation to the care and use of animals in scientific procedures. These are elaborated further in the Home Office guidance on the operation of the Act (HC 321, HMSO 2000) as mentioned above. As the roles differ, it follows that the education and training required before assuming these responsibilities will differ:

- personal licence holders are responsible for the welfare of animals on which they carry out regulated procedures; applicants will be granted licences only if adequately trained to take on this responsibility and they will usually be required to work under supervision initially;
- project licences will be issued only to persons with appropriate qualifications to direct a programme of work which is well-justified and takes account of all reasonable possibilities for reducing the number of animals used, refining the procedures to reduce suffering and replacing animal procedures with alternatives which do not involve protected animals;
- holders of certificates of designation have responsibility not only for ensuring that the fabric and staffing of designated places are maintained to appropriate standards but also for ensuring that reasonable steps are taken to prevent unauthorised procedures being carried out and that adequate training facilities are available for all animal users.

17. Considerable progress has been made over recent years in providing appropriate training for those involved in research with animals. The training programmes for applicants for personal and project licences are described in Appendix IV of the Report of the Animals Procedures Committee for 1992 (Cm 2301, HMSO September 1993). All training programmes are accredited under a scheme recognised by the Department. Accreditation seeks to achieve common and high standards for

licensee training which will facilitate free movement of licensees within the UK and Europe as well as ensuring high standards in the use of animals for scientific purposes.

18. Satisfactory completion of an accredited course prior to application for a personal licence has been a requirement under Departmental policy since 1 April 1994. The same requirement has applied to new applicants for project licences from 1 April 1995.

19. During 1995, mandatory training for Named Veterinary Surgeons was also introduced.

Performance against code of practice standards

20. The licensing team works to specific targets set out in its Code of Practice. The Code of Practice required new licences, certificates and amendments to be issued within 15 working days of receipt of the Inspectorate's recommendations. *(No targets have been, or indeed can be, set for the time the Inspectorate needs to consider applications. This depends greatly on the nature of the application: for example, consideration of a request for a new project licence for a complex and novel programme of work takes much longer than that for a replacement licence to continue ongoing non-complex work.)*

21. Approximately 264 licences, amendments and cancellations were processed during the year. All (100%) were processed within the targets.

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