



Department of
**Health, Social Services
and Public Safety**

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AN ROIÑN

**Sláinte, Seirbhísí Sóisialta
agus Sábháilteachta Poiblí**

MÄNNYSTRIE O

**Poustie, Resydènter Heisin
an Fowk Siccar**

Statistics of Scientific Procedures on Living Animals Northern Ireland 2007

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Speaking of Research



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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

Speaking of Research

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Speaking of Research

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 2007. 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 2007

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 surgery.

(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 breeding (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:

- fundamental and applied studies other than toxicology (Tables 5-9);
- 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 (N MBA) 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) table 3 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 efficacy 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 (12,13,15,16), 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 2007 were:

- (a) The number of scientific procedures started was 15,525 a decrease of 1,909 on the previous year. (Tables 1, 2, 3 and 4).
- (b) The number of animals used for the first time was 15,154. This is in comparison to 16,923 used in 2006 (Table 1a).
- (c) The species of animals involved in the largest number of procedures in 2007 was mouse (49%), domestic fowl (25%), rat (11%) and sheep (6%). Between 2006 and 2007 there was a fall in the number of procedures on mice (down 906) and sheep (down 643). Increases were recorded for species including rat (up 417) and domestic fowl (up 549). There were no procedures carried out on primates (Tables 1 and 3).
- (d) Some 9,332 procedures started in 2007 used animals acquired from designated establishments within the United Kingdom. There were no procedures started using animals acquired from non-designated sources in the United Kingdom and 6,052 procedures used animals not listed in Schedule 2 to the Act (Table 2).
- (e) 6 % (934) of procedures started in 2007 involved animals with a harmful genetic defect, (404 more than in 2006). There were 2,574 animals involved in genetically manipulated procedures. The majority of procedures started in 2007 (77 %) involved normal animals (Table 3).
- (f) In 2007 2,455 procedures (16 % of the total) were aimed at more than one body system, 91 (1 %) concerned the reproductive system, and 3,261 (21 %) concerned the alimentary system. There were 764 procedures (5 %) concerning the cardiovascular system and 2,230 (14 %) concerned the nervous system. Some 4,128 procedures (27 %) were those in which the body system or systems affected were either not predictable or not relevant (Table 4a).
- (g) Most procedures (68 %) were so minor that the use of anaesthesia was not appropriate. The remaining 32 % either used anaesthesia with recovery or were procedures in which the anaesthesia was terminal. The corresponding figures for 2006 were 76 % and 24 % respectively. (Table 4b)
- (h) Among non-toxicological work, certain procedures have been identified as being of particular interest. Some 1,111 (7 %) of the procedures started in 2007 used a technique identified on the code list to record these procedures. The most common technique involved injection into the brain (317) (Table 9).
- (i) Of the 15,525 procedures started, only 8 % concerned toxicology studies (Tables 10 - 16). The number of animals used in such work was 915 with mouse (77%) being the largest numbers used (Table 10).
- (j) The 1,193 procedures (1,017 less than in 2006) 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 915 (77 %) were used in safety testing products (Table 11).

(k) In 2007, 61 % of the projects on which procedures were started were based at universities (including medical schools) and they accounted for 65 % of the procedures. Projects at non-profit making organisations accounted for 34 % of the projects started, and 30 % of procedures. Commercial concerns projects accounted for 5 % of projects started and 5 % of procedures.

(l) Returns were received in respect of 151 project licences in 2007, 14 more than in 2006. Some project licence holders would have made two returns for 2007, one relating to the expiring licence and one to the successor licence. A total of 92 licences carried out procedures in 2007. (Table 17).

(m) The number of personal licensees authorised to carry out regulated procedures under the Act was 523 (Table 19).

Table 1 Scientific procedures by species of animal and primary purpose of the procedure

Species of animal	Fundamental biological research	Applied studies -human medicine or dentistry	Applied studies -veterinary medicine	Primary purpose of the procedure				Number of procedures Total
				Protection of man, animals or environment	Education	Training	Forensic enquiries	
Mammal								
Mouse	3,831	1,110	414	915	-	-	-	216
Rat	1,458	55	-	-	-	-	-	161
Guinea pig	-	-	-	-	-	-	-	7,562
Hamster	-	-	-	6	-	-	-	1,674
Gerbil	-	-	-	-	-	-	-	6
Other rodent	-	-	-	-	-	-	-	-
Rabbit	14	-	-	64	-	-	-	78
Cat	-	-	-	37	-	-	-	37
Dog	-	-	-	-	-	-	-	116
Beagle	-	-	-	116	-	-	-	-
Other including cross-bred dogs	-	-	-	-	-	-	-	-
Other carnivore	-	-	-	-	-	-	-	-
Horse, donkey and cross-bred equids	-	-	-	-	-	-	-	-
Pig	130	59	145	-	-	-	-	30
Goat	-	-	-	7	-	-	-	334
Sheep	452	-	50	209	-	-	-	7
Cattle	236	-	421	27	-	-	-	956
Other ungulate	-	-	-	-	-	-	-	684
Other mammal	-	-	-	-	-	-	-	-
Bird								
Domestic fowl (<i>Gallus domesticus</i>)	2,240	-	-	1,439	-	-	-	257
Turkey	-	-	-	-	-	-	-	12
Quail (<i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-
Quail (spp.other than <i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-
Other bird	58	-	-	-	-	-	-	58
Reptile	-	-	-	-	-	-	-	-
Any reptilian species	13	-	-	-	-	-	-	13
Amphibian	-	-	-	-	-	-	-	-
Any amphibian species	-	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-	-
Any fish species	22	-	-	-	-	-	-	22
Total	8,454	1,224	2,729	1,151	-	-	-	15,525
								1,237
								730

**Table 1a Animals by species of animal and primary purpose of the procedure**

Northern Ireland 2007		Primary purpose of the procedure						Number of animals		
Species of animal	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	Total
Mammal										
Mouse	3,831	1,110	414	915	-	-	-	216	1,076	7,562
Rat	1,458	55	-	-	-	-	-	161	1,674	-
Guinea pig	-	-	-	-	-	-	-	-	-	-
Hamster	-	-	-	6	-	-	-	-	-	6
Gerbil	-	-	-	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-	-	-	-
Rabbit	14	-	-	64	-	-	-	-	-	78
Cat	-	-	-	6	-	-	-	-	-	6
Dog	-	-	-	-	-	-	-	-	-	-
Beagle	-	-	-	25	-	-	-	-	-	25
Other including cross-bred dogs	-	-	-	-	-	-	-	-	-	-
Other carnivore	-	-	-	-	-	-	-	-	-	-
Horse, donkey and cross-bred equids	-	-	-	29	-	-	-	-	-	29
Pig	130	59	145	-	-	-	-	-	-	334
Goat	-	-	7	-	-	-	-	-	-	7
Sheep	404	-	48	200	-	-	-	186	-	838
Cattle	189	-	340	25	-	-	-	-	-	554
Other ungulate	-	-	-	-	-	-	-	-	-	-
Other mammal	-	-	-	-	-	-	-	-	-	-
Bird										
Domestic fowl (<i>Gallus domesticus</i>)	2,240	-	1,439	-	-	-	-	257	-	3,936
Turkey	-	-	-	-	-	-	-	12	-	12
Quail (<i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-	-	-
Quail (spp. other than <i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-	-	-
Other bird	58	-	-	-	-	-	-	-	-	58
Reptile										
Any reptilian species	13	-	-	-	-	-	-	-	-	13
Amphibian	-	-	-	-	-	-	-	-	-	-
Any amphibian species	-	-	-	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-	-	-	-
Any fish species	22	-	-	-	-	-	-	-	-	22
Total	8,359	1,224	2,523	1,140	-	-	-	671	1,237	15,154

Table 2 Scientific procedures by Schedule 2 listed species and source of animals

Northern Ireland 2007		Source				Number of procedures	
Species of animal	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 ETS123	Animals acquired from other sources	Total
Mouse	5,174	2,278		51		59	7,562
Rat	711	963					1,674
Guinea pig							-
Hamster				6			6
Gerbil							-
Rabbit		70		8			78
Cat		20			17		37
Dog	15	101					116
Pig (genetically modified)							-
Sheep (genetically modified)							-
Quail (<i>Coturnix coturnix</i>)							-
Animals not listed						6,052	6,052
Total	5,920	3,412	-	65	-	76	15,525

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

Northern Ireland 2007		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	2,528	252	1,051	3,831
	Applied studies	506	607	411	1,524
	Safety	915			915
	Other uses	216			216
	Breeding	121	75	880	1,076
	Total	4,286	934	2,342	7,562
Rat	Fundamental biological research	1,342	-	116	1,458
	Applied studies	55	-	-	55
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	45	-	116	161
	Total	1,442	-	232	1,674
Hamster	Fundamental biological research	-	-	-	-
	Applied studies	6	-	-	6
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	6	-	-	6
Rabbit	Fundamental biological research	14	-	-	14
	Applied studies	64	-	-	64
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	78	-	-	78
Cat	Fundamental biological research	-	-	-	-
	Applied studies	37	-	-	37
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	37	-	-	37
Dog - Beagle	Fundamental biological research	-	-	-	-
	Applied studies	116	-	-	116
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	116	-	-	116
Horse, Donkey etc	Fundamental biological research	-	-	-	-
	Applied studies	30	-	-	30
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	30	-	-	30

Northern Ireland 2007		Number of procedures			
Species of animal	Primary purpose of procedure	Genetic status			Total
		Normal animal	Animal with harmful genetic defect	Genetically modified animal	
Pig	Fundamental biological research	130	-	-	130
	Applied studies	204	-	-	204
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	334	-	-	334
Goat	Fundamental biological research	-	-	-	-
	Applied studies	7	-	-	7
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	7	-	-	7
Sheep	Fundamental biological research	452	-	-	452
	Applied studies	50	-	-	50
	Safety	209	-	-	209
	Other uses	245	-	-	245
	Breeding	-	-	-	-
	Total	956	-	-	956
Cattle	Fundamental biological research	236	-	-	236
	Applied studies	421	-	-	421
	Safety	27	-	-	27
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	684	-	-	684
Other ungulate	Fundamental biological research	-	-	-	-
	Applied studies	-	-	-	-
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	-	-	-	-
Domestic fowl	Fundamental biological research	2,240	-	-	2,240
	Applied studies	1,439	-	-	1,439
	Safety	-	-	-	-
	Other uses	257	-	-	257
	Breeding	-	-	-	-
	Total	3,936	-	-	3,936
Turkey	Fundamental biological research	-	-	-	-
	Applied studies	-	-	-	-
	Safety	-	-	-	-
	Other uses	12	-	-	12
	Breeding	-	-	-	-
	Total	12	-	-	12

Northern Ireland 2007		Number of procedures			
Species of animal	Primary purpose of procedure	Genetic status			Total
		Normal animal	Animal with harmful genetic defect	Genetically modified animal	
Other bird	Fundamental biological research	58	-	-	58
	Applied studies	-	-	-	-
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	58	-	-	58
Reptile	Fundamental biological research	13	-	-	13
	Applied studies	-	-	-	-
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	13	-	-	13
Amphibian	Fundamental biological research	-	-	-	-
	Applied studies	-	-	-	-
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	-	-	-	-
Fish	Fundamental biological research	22	-	-	22
	Applied studies	-	-	-	-
	Safety	-	-	-	-
	Other uses	-	-	-	-
	Breeding	-	-	-	-
	Total	22	-	-	22
All species	Fundamental biological research	7,035	252	1,167	8,454
	Applied studies	2,935	607	411	3,953
	Safety	1,151	-	-	1,151
	Other uses	730	-	-	730
	Breeding	166	75	996	1,237
TOTAL		12,017	934	2,574	15,525

Species not listed had no procedures

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

Northern Ireland 2007		Body systems								Number of procedures			
Species of animal	Respiratory	Cardio-vascular	Nervous	Senses	Alimentary	Skin	Musculo-skeletal	Reproductive	Immune and reticulo-endothelial	Other system	Multiple systems	System not relevant	Total
Mammal													
Mouse	391	1,605	674	999	20	89	46	812	70	1,789	1,067	7,562	
Rat	6	625	356	391		100	45			67	84	1,674	
Other rodent									6			6	
Rabbit								78				78	
Cat										14	23	37	
Dog										24	92	116	
Other carnivore												-	
Horse, donkey and cross-bred equids											30	30	
Pig	59									92	183	334	
Sheep	63				512				197		182	2	
Other ungulate	112				94				77	5	263	140	
Other mammal												-	
Bird	245				1,265					24	2,472	4,006	
Reptile, amphibian											13	13	
Fish											22	22	
Total	112	764	2,230	1,030	3,261	20	189	91	1,170	75	2,455	4,128	15,525

Table 4b Scientific procedures by species of animal and level of anaesthesia

Northern Ireland 2007		Type of anaesthesia				Number of procedures
Species of animal	No anaesthesia	General anaesthesia, with recovery	Local anaesthesia	General anaesthesia at end of procedure, without recovery	General anaesthesia throughout, without recovery	Total
Mouse	4,029	3,208	-	151	174	7,562
Rat	472	993	-	209	-	1,674
Other rodent	6	-	-	-	-	6
Rabbit	18	-	-	60	-	78
Cat	16	21	-	-	-	37
Dog	116	-	-	-	-	116
Other carnivore	-	-	-	-	-	-
Horse and other equids	30	-	-	-	-	30
Pig	275	-	-	-	59	334
Sheep	941	-	-	15	-	956
Other ungulates	684	-	-	7	-	691
Other mammal	-	-	-	-	-	-
Bird	3,937	-	-	-	69	4,006
Reptile / Amphibian	13	-	-	-	-	13
Fish	22	-	-	-	-	22
Total	10,559	4,222	-	442	302	15,525

Neuromuscular blocking agents (NMBA) were used in no procedures in 2006.

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

Species of animal	Northern Ireland 2007	Field of research										Number of procedures	
		Anatomy	Physiology	Bio-chemistry	Psychology	Pathology	Immunology	Micro-biology	Parasitology	Pharm-acycology	Pharmaceutical R&D	Thera-peutics	Clinical medicine
Mammal													
Mouse	739	1,394	-	537	-	614	865	84	104	20	123	271	309
Rat	469	145	406	-	-	-	55	236	28	-	-	-	100
Guinea pig	-	-	-	-	-	-	-	-	-	-	-	-	-
Hamster	-	-	-	-	-	-	6	-	-	-	-	-	-
Gerbil	-	-	-	-	-	-	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-	-	-	-	-	-	-
Rabbit	-	-	-	-	-	18	-	-	-	-	-	-	7
Cat	-	-	-	-	-	-	-	-	-	-	23	-	-
Dog	-	-	-	-	-	-	-	-	-	-	92	-	-
Beagle	-	-	-	-	-	-	-	-	-	-	-	-	-
Other including cross-bred dogs	-	-	-	-	-	-	-	-	-	-	-	-	-
Other carnivore	-	-	-	-	-	-	-	-	-	-	-	-	-
Horse, donkey and cross-bred equids	-	-	-	-	-	-	-	-	-	-	30	-	-
Pig	-	59	-	-	-	-	-	67	-	-	42	-	-
Goat	-	-	-	-	-	-	-	-	-	-	-	-	-
Sheep	-	-	-	-	-	-	-	63	284	-	2	-	182
Cattle	-	-	-	-	-	94	64	-	-	-	66	-	-
Other ungulate	-	-	-	-	-	-	-	-	-	-	-	-	-
Other mammal	-	-	-	-	-	-	-	-	-	-	-	-	-
Bird	-	-	-	-	-	-	-	-	-	-	-	-	-
Domestic fowl (<i>Gallus domesticus</i>)	-	-	-	-	-	-	1,696	-	-	-	-	-	-
Turkey	-	-	-	-	-	-	12	-	-	-	-	-	-
Quail (<i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-	-	-	-	-	-
Quail (spp. other than <i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-	-	-	-	-	-
Other bird	-	-	-	-	-	-	-	-	-	-	-	-	-
Reptile	-	-	-	-	-	-	-	-	-	-	-	-	-
Any reptilian species	-	-	-	-	-	-	-	-	-	-	-	-	-
Amphibian	-	-	-	-	-	-	-	-	-	-	-	-	-
Any amphibian species	-	-	-	-	-	-	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-	-	-	-	-	-	-
Any fish species	-	-	-	-	-	22	-	-	-	-	-	-	-
Total	1,208	1,398	-	726	2,828	604	132	275	123	460	409		

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

Species of animal	Field of research							Number of procedures								
	Dentistry	Genetics	Molecular biology	Cancer research	Nutrition	Zoology	Botany	Animal science	Ecology	Animal welfare	Other	Tobacco	Alcohol	Total		
Mammal																
Mouse	-	4	24	1,559	-	-	-	-	-	-	-	-	-	6,647		
Rat	-	-	-	235	-	-	-	-	-	-	-	-	-	1,674		
Guinea pig	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Hamster	-	-	-	-	-	-	-	-	-	-	-	-	-	6		
Gerbil	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Other rodent	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Rabbit	-	-	53	-	-	-	-	-	-	-	-	-	-	78		
Cat	-	-	-	-	-	-	-	-	-	-	-	-	-	23		
Dog	-	-	-	-	-	-	-	-	-	-	-	-	-	92		
Beagle	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Other including cross-bred dogs	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Other carnivore	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Horse, donkey and cross-bred equids	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Pig	-	-	-	-	-	130	-	-	-	-	-	-	-	30		
Goat	-	-	7	-	-	-	-	-	-	-	-	-	-	298		
Sheep	-	-	15	-	168	-	-	-	9	200	-	-	-	7		
Cattle	-	-	-	-	224	-	-	47	18	-	-	-	-	923		
Other ungulate	-	-	-	-	-	-	-	-	-	-	-	-	-	513		
Other mammal	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Bird	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Domestic fowl (<i>Gallus domesticus</i>)	-	-	-	-	-	2,240	-	-	-	-	-	-	-	3,936		
Turkey	-	-	-	-	-	-	-	-	-	-	-	-	-	12		
Quail (<i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Quail (spp. other than <i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Other bird	-	-	-	-	-	58	-	-	-	-	-	-	-	58		
Reptile	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Any reptilian species	-	-	-	-	-	-	-	-	-	-	-	-	-	13		
Amphibian	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Any amphibian species	-	-	-	-	-	-	-	-	-	-	-	-	-	-		
Fish	-	-	-	-	-	-	-	-	-	-	-	-	-	22		
Any fish species	-	-	-	-	-	-	-	-	-	-	-	-	-	22		
Total	4	99	1,794	2,762	58	-	56	218	-	-	-	-	-	14,332		

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

Northern Ireland 2007		Field of research										Number of animals		
Species of animal		Anatomy	Physiology	Bio-chemistry	Psychology	Pathology	Immunology	Micro-biology	Parasitology	Pharma-cology	Pharma-ceutical R&D	Thera-peutics	Clinical medicine	Clinical surgery
Mammal														
Mouse	739	1,394	-	537	-	614	865	84	104	20	123	271	309	
Rat	469	145	-	406	-	-	55	236	28	-	-	-	100	
Guinea pig	-	-	-	-	-	-	6	-	-	-	-	-	-	
Hamster	-	-	-	-	-	-	-	-	-	-	-	-	-	
Gerbil	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other rodent	-	-	-	-	-	-	-	-	-	-	-	-	-	
Rabbit	-	-	-	-	-	-	18	-	-	-	-	-	7	
Cat	-	-	-	-	-	-	-	-	-	-	-	4	-	
Dog	-	-	-	-	-	-	-	-	-	-	-	-	-	
Beagle	-	-	-	-	-	-	-	-	-	-	-	8	-	
Other including cross-bred dogs	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other carnivore	-	-	-	-	-	-	-	-	-	-	-	-	-	
Horse, donkey and cross-bred equids	-	-	-	-	-	-	-	-	-	-	-	-	-	
Pig	59	-	-	-	-	-	67	-	-	-	-	42	-	
Goat	-	-	-	-	-	-	-	-	-	-	-	-	-	
Sheep	-	-	-	-	-	-	-	4	284	-	-	-	-	
Cattle	-	-	-	-	-	-	94	64	-	-	30	-	-	
Other mammal	-	-	-	-	-	-	-	-	-	-	-	-	-	
Bird	-	-	-	-	-	-	-	-	-	-	-	-	-	
Domestic fowl (<i>Gallus domesticus</i>)	-	-	-	-	-	-	1,696	-	-	-	-	-	-	
Turkey	-	-	-	-	-	-	12	-	-	-	-	-	-	
Quail (<i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-	-	-	-	-	-	
Quail (spp other than <i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-	-	-	-	-	-	
Other bird	-	-	-	-	-	-	-	-	-	-	-	-	-	
Reptile	-	-	-	-	-	-	-	-	-	-	-	-	-	
Any reptilian species	-	-	-	-	-	-	13	-	-	-	-	-	-	
Amphibian	-	-	-	-	-	-	-	-	-	-	-	-	-	
Any amphibian species	-	-	-	-	-	-	-	-	-	-	-	-	-	
Fish	-	-	-	-	-	-	-	-	-	-	-	-	-	
Any fish species	-	-	-	-	-	-	22	-	-	-	-	-	-	
Total	1,208	1,598	-	978	-	726	2,769	604	132	133	123	460	409	

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

Northern Ireland 2007		Field of research										Number of animals			
Species of animal		Dentistry	Genetics	Molecular biology	Cancer research	Nutrition	Zoology	Botany	Animal science	Ecology	Animal welfare	Other	Tobacco	Alcohol	Total
Mammal															
Mouse	-	4	24	1,559	-	-	-	-	-	-	-	-	-	-	6,647
Rat	-	-	-	235	-	-	-	-	-	-	-	-	-	-	1,674
Guinea pig	-	-	-	-	-	-	-	-	-	-	-	-	-	-	6
Hamster	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Gerbil	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Rabbit	-	-	53	-	-	-	-	-	-	-	-	-	-	-	78
Cat	-	-	-	-	-	-	-	-	-	-	-	-	-	-	4
Dog	-	-	-	-	-	-	-	-	-	-	-	-	-	-	8
Beagle	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other including cross-bred dogs	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other carnivore	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Horse, donkey and cross-bred equids	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Pig	-	-	-	-	-	130	-	-	-	-	-	-	-	-	298
Goat	-	-	-	7	-	-	-	-	-	-	-	-	-	-	7
Sheep	-	-	-	15	-	120	-	-	-	-	200	-	-	-	805
Cattle	-	-	-	-	-	177	-	-	-	45	18	-	-	-	428
Other ungulate	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other mammal	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Bird															
Domestic fowl (<i>Gallus domesticus</i>)	-	-	-	-	-	2,240	-	-	-	-	-	-	-	-	3,936
Turkey	-	-	-	-	-	-	-	-	-	-	-	-	-	-	12
Quail (<i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Quail (spp. other than <i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Other bird	-	-	-	-	-	-	58	-	-	-	-	-	-	-	58
Reptile	-	-	-	-	-	-	-	-	-	-	-	-	-	-	13
Any reptilian species	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Amphibian	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Any amphibian species	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-	-	-	-	-	-	-	-	22
Any fish species	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Total	-	4	99	1,794	2,667	58	-	-	-	45	218	-	-	-	14,025

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

Species of animal	Infectious agents	Vectors	Neoplasms	Production				Breeding				Number of procedures	
				Monoclonal antibodies (ascites model)	Monoclonal antibodies (initial immunisation)	Polyclonal antibodies	Other biological materials	Animals used to generate GM animals	GM animals created by recognised husbandry methods	GM animals used in research programmes	Harmful mutant animals created by recognised husbandry methods		
Mouse	84	-	80	-	142	-	391	67	1,210	974	111	523	
Rat	236	-	-	-	-	-	-	-	460	-	-	978	
Other rodent	-	-	-	-	-	-	6	-	-	-	-	-	
Rabbit	-	-	-	-	-	78	-	-	-	-	-	78	
Cat	-	-	-	-	-	-	-	-	-	-	-	23	
Dog	-	-	-	-	-	-	-	-	-	-	-	92	
Other carnivore	-	-	-	-	-	-	-	-	-	-	-	-	
Horse and other equids	-	-	-	-	-	-	-	-	-	-	-	30	
Other ungulate	11	-	-	-	-	204	133	-	-	-	-	1,393	
Other mammal	-	-	-	-	-	-	-	-	-	-	-	-	
Bird	150	-	-	-	-	24	245	-	-	-	-	3,587	
Reptile / Amphibian	-	-	-	-	-	-	-	-	-	-	-	13	
Fish	-	-	-	-	-	-	-	-	-	-	-	22	
Total	481	-	80	-	142	306	775	67	1,670	974	111	523	9,203
													14,332

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

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		
Mouse	72	262	-	180	-	-	154	251
Rat	60	55	-	30	-	-	-	5,728
Other rodent	-	-	-	-	-	-	-	1,529
Rabbit	-	-	-	-	-	-	-	1,674
Cat	-	-	-	-	-	-	-	6
Dog	-	-	-	-	-	-	-	78
Other carnivore	-	-	-	-	-	-	-	78
Horse and other equids	-	-	-	-	-	-	-	23
Other ungulate	-	-	-	-	-	-	-	23
Other mammal	-	-	-	-	-	-	-	92
Bird	-	-	-	-	-	-	-	92
Reptile / Amphibian	-	-	-	-	-	-	-	13
Fish	-	-	-	-	-	-	-	22
Total	132	317	-	245	12	-	154	251
								13,221
								14,332

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

Species of animal	Northern Ireland 2007	Toxicology or other safety/efficacy evaluation						Number of procedures	
		Pharmaceutical safety/efficacy evaluation			ADME and residue	Toxicology research	Other		
		Other foodstuffs	Safety testing	Efficacy testing					
Mammal									
Mouse	915	-	-	-	-	-	-	915	
Rat	-	-	-	-	-	-	-	-	
Guinea pig	-	-	-	-	-	-	-	-	
Hamster	-	-	-	-	-	-	-	-	
Gerbil	-	-	-	-	-	-	-	-	
Other rodent	-	-	-	-	-	-	-	-	
Rabbit	-	-	-	-	-	-	-	-	
Cat	-	14	-	-	-	-	-	14	
Dog	-	-	-	-	-	-	-	-	
Beagle	-	24	-	-	-	-	-	24	
Other including cross-bred dogs	-	-	-	-	-	-	-	-	
Other carnivore	-	-	-	-	-	-	-	-	
Horse, donkey and cross-bred equids	-	-	-	-	-	-	-	-	
Pig	-	18	-	-	-	18	-	36	
Goat	-	-	-	-	-	-	-	-	
Sheep	-	-	-	-	19	14	-	33	
Cattle	-	75	54	-	-	42	-	171	
Other ungulate	-	-	-	-	-	-	-	-	
Other mammal	-	-	-	-	-	-	-	-	
Bird	-	-	-	-	-	-	-	-	
Domestic fowl (<i>Gallus domesticus</i>)	-	-	-	-	-	-	-	-	
Quail (<i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-	
Quail (spp other than <i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-	
Other bird	-	-	-	-	-	-	-	-	
Reptile	-	-	-	-	-	-	-	-	
Any reptilian species	-	-	-	-	-	-	-	-	
Amphibian	-	-	-	-	-	-	-	-	
Any amphibian species	-	-	-	-	-	-	-	-	
Fish	-	-	-	-	-	-	-	-	
Any fish species	-	-	-	-	-	-	-	-	
Total	915	131	73	-	74	-	1,193	-	

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

Species of animal	Toxicology or other safety/efficacy evaluation					Number of animals		
	Pharmaceutical safety/efficacy evaluation		Other purposes			Total		
	Other foodstuffs	Safety testing	Efficacy testing	Quality control	ADME and residue	Toxicology research	Other	
Mammal								
Mouse	-	-	-	-	-	-	915	915
Rat	-	-	-	-	-	-	-	-
Guinea pig	-	-	-	-	-	-	-	-
Hamster	-	-	-	-	-	-	-	-
Gerbil	-	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-	-
Rabbit	-	-	-	-	-	-	-	-
Cat	-	-	-	-	-	-	-	2
Dog	-	-	-	-	-	-	-	-
Beagle	-	-	-	-	-	-	17	17
Other including cross-bred dogs	-	-	-	-	-	-	-	-
Other carnivore	-	-	-	-	-	-	-	-
Horse, donkey and cross-bred equids	-	-	-	-	-	-	-	-
Pig	-	-	-	-	-	18	-	-
Goat	-	-	-	-	-	-	-	-
Sheep	-	-	-	-	19	-	-	-
Cattle	-	-	49	48	-	29	-	36
Other ungulate	-	-	-	-	-	-	-	126
Other mammal	-	-	-	-	-	-	-	-
Bird								
Domestic fowl (<i>Gallus domesticus</i>)	-	-	-	-	-	-	-	-
Quail (<i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-
Quail (spp. other than <i>Coturnix coturnix</i>)	-	-	-	-	-	-	-	-
Other bird	-	-	-	-	-	-	-	-
Reptile								
Any reptilian species	-	-	-	-	-	-	-	-
Amphibian								
Any amphibian species	-	-	-	-	-	-	-	-
Fish								
Any fish species	-	-	-	-	-	-	-	-
Total	-	86	67	-	61	-	915	1,129

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

Northern Ireland 2007		Number of procedures		
Species	Legislative requirements	Toxicological purpose		Total
		Safety testing	Pharmaceutical safety	
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	915	-	915
	Non-legislative purposes	-	-	-
	Total	915	-	915
Cat	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
Beagle	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	-	24	24
	Non-legislative purposes	-	-	-
	Total	-	24	24
Other ungulate	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	-	240	240
	Non-legislative purposes	-	-	-
	Total	-	240	240
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	915	278	1,193
	Non-legislative purposes	-	-	-
	TOTAL	915	278	1,193

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

Species of animal	Type of toxicological test or procedure					Number of procedures
	Acute lethal toxicity	Acute limit setting	Acute non-letal clinical sign	Subacute limit setting or dose ranging	Subacute toxicity	
Mouse	-	-	-	-	-	915
Rat	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-
Rabbit	-	-	-	-	-	-
Cat	-	-	-	-	-	14
Dog	-	-	-	-	-	24
Other carnivore	-	-	-	-	-	-
Horse and other equids	-	-	-	-	-	-
Other ungulate	-	-	-	-	-	240
Other mammal	-	-	-	-	-	-
Bird	-	-	-	-	-	-
Reptile / Amphibian	-	-	-	-	-	-
Fish	-	-	-	-	-	-
Total	-	-	-	-	-	1,193

Table 13: Scientific procedures (toxicology) by species of animal and type of toxicological test: safety testing of non pharmaceuticals

Northern Ireland 2007		Number of procedures							
Species of animal	Other reproductive toxicity	Type of toxicological test or procedure				Enzyme induction for in vitro tests	Immuno-toxicology	Other toxicology	Total
		For skin sensitisation	Toxicokinetics	Pyrogenicity	Biocompatibility				
Mouse	-	-	-	-	-	-	-	-	915
Rat	-	-	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-	-	-
Rabbit	-	-	-	-	-	-	-	-	-
Dog	-	-	-	-	-	-	-	-	-
Horse and other equids	-	-	-	-	-	-	-	-	-
Other ungulate	-	-	-	-	-	-	-	-	-
Bird	-	-	-	-	-	-	-	-	-
Reptile / Amphibian	-	-	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	915	-	-	915

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

Northern Ireland 2007						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	Tera-togenicity	Other toxicology	
Mouse	-	-	-	-	-	-	-
Rat	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-
Rabbit	-	-	-	-	-	-	-
Cat	-	-	-	-	-	14	14
Dog	-	-	-	-	-	24	24
Horse and other equids	-	-	-	-	-	-	-
Other ungulate	-	-	-	-	-	240	240
Bird	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-
Total	-	-	-	-	-	278	278

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

Species of animal	Type of toxicological test or procedure							Number of procedures
	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	
Mouse	-	-	-	-	-	-	-	-
Rat	-	-	-	-	-	-	-	-
Other rodent	-	-	-	-	-	-	-	-
Rabbit	-	-	-	-	-	-	-	-
Cat	-	-	-	-	-	-	-	-
Dog	-	-	-	-	-	-	-	-
Other carnivore	-	-	-	-	-	-	-	-
Horse and other equids	-	-	-	-	-	-	-	-
Other ungulate	-	-	-	-	-	-	-	-
Bird	-	-	-	-	-	-	-	-
Reptile / Amphibian	-	-	-	-	-	-	-	-
Fish	-	-	-	-	-	-	-	-
Total	-	-	-	-	-	-	-	-

no procedures were recorded in 2007

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

Northern Ireland 2007		Number of procedures		
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)	50	44	94	10,097
Non-profit making organisations	38	13	51	4,713
Commercial concerns	4	2	6	715
Total	92	59	151	15,525

(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: 2000-2007
Number of designated places at 31 December

Northern Ireland	2000	2001	2002	2003	2004	2005	2006	2007
Scientific procedure establishments	5	5	5	5	5	5	5	5
Scientific procedure and breeding establishments	1	1	1	1	0	0	0	0
Scientific procedure breeding and supplying establishments	7	7	7	6	6	5	5	5
Scientific procedure and supplying establishments	0	0	0	0	0	0	0	0
Breeding and supplying establishments	0	0	0	0	0	1	1	1
Total designated places	13	13	13	12	11	11	11	11

Table 19 - Personal Licensees: 2000-2007
Number of personal licences at 31 December

Northern Ireland							
2000	2001	2002	2003	2004	2005	2006	2007
509	484	567	624	501	535	607	523

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 (including 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 2007 the Inspectorate made 146 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 introduced and in 2004 mandatory training was introduced for Named Animal Care and Welfare Officers.

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 237 licences, amendments and cancellations were processed during the year. Seventy-Eight percent (78%) were processed within the targets.

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