

Reports and Comments

UK Government announces plan to reduce the use of animals in scientific research

The UK Government recently published a delivery plan to reduce the numbers of animals used in research building on the commitment it made to this aim in 2010. The introduction sets the context for the plan, emphasising the continuing need to use animals in research for applied purposes such as the development of new medicines and medical technologies and for the protection of the environment. Pure or blue skies research is not, however, mentioned despite the fact that the basic research is a permissible purpose under UK and European legislation. Having made a case for the continued use of animals in research, the plan then addresses the need to reduce animal use through the development of better and more relevant animal models of disease and tools that replace, reduce or refine the use of animals in research.

Specifically the Government has indicated that it intends: i) to advance the use of the 3Rs within the UK; ii) use international leadership to influence the uptake of the 3Rs; and iii) address the need for openness by emphasising the need to promote understanding and awareness about the use of animals where no alternatives exist. Approaches identified in the document include adoption of good practice and training, the development and use of alternatives, the requirement to reassess the need for research in specific areas, and refinement of animal models, endpoints and animals care. All of this is to be carried out within the Government's strategy to make the UK the location of choice for research, development and related manufacturing.

The document lists a number of initiatives that are either planned or underway under each of the main strategic priorities and repays reading in detail but there are several points worth noting here. First, although the title only refers to reducing the numbers of animals in scientific research, the document covers Refinement as well as Replacement and Reduction. Second, although reduction of animal use is a major aim, no figures are given as a reduction target. This may annoy some but reflects the reality that identifying ways of reducing animal use is usually best done within a defined piece or area of research and predicting future needs for animal use is always difficult and sometimes impossible. Third, is that government funding for the NC3Rs will increase from £5.3 million in 2010/11 to just over £8 million in 2014/15 reflecting the fact that the NC3Rs, (a partially government funded but independent body) is identified as a major player in the plan. On the other hand, although many of the action points identified in the plan fall to the NC3Rs, other bodies are also involved including UK Government offices such as Defra and the Home Office (the latter being responsible for the regulation of animal research in the UK); research councils; government centres of research; and welfare organisations. Finally, the Inspectorate is tasked with dissemination of 3Rs information to Licensees. This has been a function that they have carried out over many

years, and one that some stakeholder groups have considered important.

Not all of the initiatives to advance the 3Rs identified in the document are new. Nonetheless, the plan is useful, not just as a demonstration of the Government's political will in this area and as a management tool with identified targets, timelines and dates for review; but also because it provides examples of 3Rs' approaches that should be useful to other countries and organisations interested in finding ways of minimising the suffering of animals used in research.

Working to Reduce the Use of Animals in Scientific Research (February 2014). A4, 41 pages. Home Office, Department for Business and Skills, Department of Health, UK. Available at https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/277942/bis-14-589-working-to-reduce-the-use-of_animals-in-research.pdf.

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Guidelines for behavioural research

LASA (Laboratory Animal Science Association), BAP (British Association for Psychopharmacology), BNA (British Neuroscience Association) and the ESSWAP Foundation (European Courses in Whole Animal Pharmacology) have jointly produced a set of guidelines with the aim of helping researchers, particularly those new to the field, who plan to carry out behavioural studies on animals for biomedical purposes. The guidelines have been developed with the participation of professionals working in the field, and while this helps ensure credibility, as the authors acknowledge, it has resulted in a bias towards neurological and pharmacological procedures. Consequently, the authors consider these guidelines to be a first pass at the issue, and that subsequent editions might cover either more topics, or expand the detail of existing ones. Despite their concerns, much of the advice presented is valid for many types of research using animals.

The guidelines are split into seven sections: The 3Rs and ethical evaluation; Justifying behavioural studies of laboratory animals; Choosing the procedure; Training; The animal; The environment; and The experiment and the data. Some readers will find some of these sections more useful than others or may wish to refer back to a particular section, and so it is helpful that the sections are colour-coded. The document is full of good advice such as the need to consult statisticians at an early stage, the importance of various aspects of the environment, including that experienced prior to the research, and the need to consider strain and other animal characteristics. While some of this advice is also given in other publications this does not detract from the importance of this document as new readers may not be familiar with older publications. Many behavioural models in biomedical research are used widely, and almost routinely. It thus becomes easy to use a model rather uncritically, so one recommendation, that is very obvious but

which struck me with particular force, was the reminder to read the source literature that describes the validation of the behavioural model in question. While this research is often not easily available online, it can indicate limitations in current models and reviewing the literature could aid decisions about better alternatives. I wonder how many researchers have in fact followed this sage advice to go back to the source literature.

These guidelines, if read and used, will help behavioural scientists to improve the quality of the science that they obtain from animal research, and should also help them to ensure that the Three Rs have been properly considered and that their research is ethically justifiable.

Guiding Principles for Behavioural Laboratory Animal Science: LASA, BAP, BNA & ESSWAP (2013). A4, 61 pages. Available at <http://www.lasa.co.uk/publications.html>.

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FAWC Report considers the welfare of farmed fish

Within England, Scotland and Wales the Farm Animal Welfare Committee (FAWC) acts as an advisory body to government, and others, and periodically publishes reports that cover issues considered important to the welfare of farmed animals. FAWC believes that all farmed animals should have ‘a life worth living’ and increasingly ‘a good life’.

The latest Opinion published by FAWC explores the welfare of farmed fish for human consumption within Great Britain (GB). FAWC last considered farmed fish welfare in 1996. Since this time fish welfare science has greatly advanced and, similar to other farming sectors, the aquaculture industry has undergone a period of increasing intensification with fewer, but larger units. Fish farming is the second largest livestock sector in GB (following broiler chicken production) and in 2012 approximately 35 million salmon were harvested in Scotland (the vast majority of salmon farming in GB takes place in Scotland).

The Opinion focuses on the welfare of finfish, specifically Atlantic salmon and rainbow trout, although other species are also mentioned (including brown trout, sea bass, halibut and tilapia) and the welfare of wrasse is briefly commented upon (wrasse are not themselves farmed for human consumption but considerable numbers are used on salmon farms to help control sea lice, a disease problem in farmed salmon).

The Report opens with a general background of the industry and follows with an overview of: relevant regulations and legislation; international considerations; and commercial and other codes of recommendations. It is apparent from the report that in GB there is currently limited legislation to protect fish welfare. The Animal Welfare Act 2006, and the Animal Health and Welfare (Scotland) Act 2006, afford fish a basic level of protection (due to a duty of care requirement and prevention of unnecessary suffering), but fish are excluded from the more detailed Welfare of Farm Animals (England) Regulations 2007 (and similar legislation in Scotland and Wales). In effect, there are no legislative

requirements or codes of recommendations that specify how fish should be kept during production. To fill this void, various industry bodies have already put in place their own codes of practice (or are in the process of doing so) and FAWC acknowledges industry efforts in this regard: “Industry has been proactive in developing and implementing standards of good practice and information exchange is supported by industry organisations”. However, FAWC also note that these standards vary in detail and may differ in their requirements for smolting, fasting, removal of dead fish and use of medicines.

Other legislation relevant to fish keeping is also commented upon and includes the Aquatic Animal Health (England and Wales) Regulations 2009 (which cover fish health and disease control), The Aquaculture and Fisheries (Scotland) Act 2013, and the Veterinary Medicines Regulations (VMR) 2011. Additionally, fish farming is affected by environmental legislation due to restrictions on the amount of medicines which may be used to treat fish disease due to the discharge of medicines into fresh and sea water.

FAWC goes on to examine fish welfare issues in more detail. Water quality is considered to be the most important factor affecting fish welfare. Other issues raised include: fin damage, disease transmission and social behaviour (eg feed competition, displacement of subordinate fish, territoriality); bacterial and viral diseases; parasites; skin damage; crowding before and during transport; handling of fish out of water; genetics (many eggs are imported and there may be a mismatch of genotype to environment); and nutrition.

Understanding and managing fish welfare is no easy task since there are still many gaps in our knowledge on the biological and behavioural needs of fish. There is also wide variation in needs between species. FAWC compare salmon and trout to halibut — halibut, unlike salmon and trout, is a bottom-dwelling fish and they may lie on top of each other in farmed situations if adequate loose substrate is not provided, this is likely to have implications for fish welfare. Farmed halibut also experience greater variation in growth than salmon and trout, and disparities in fish size can lead to inter-fish aggression, also a welfare issue. Variation in domestication can add another layer of complexity. Carp may be considered domesticated, since they have been kept in captivity for hundreds of years, and over time they have been selectively bred for reduced mortality and increased growth. Farmed salmon, however, are still considered semi-wild since they are only 3 to 15 generations removed from their wild ancestors. The needs of domesticated fish can be very different to those of their semi-wild counterparts.

Additionally, a number of features inherent to fish farming systems make assessing and managing fish welfare challenging, such as: very large group numbers (tanks or pens may hold in excess of 100,000 fish); limited viewing opportunities (often only the surface of a pen is visible which raises difficulties when monitoring, inspecting and for individual identification); and operational variation (farms may consist of on-shore tanks, freshwater systems or sea pens).