

## Reports and Comments

### Royal Society comments on European Food Safety Authority Report on Aspects of the Biology and Welfare of Research Animals

The Royal Society has published an open letter to the Environment Directorate General of the European Commission expressing concerns that a recent report of the European Food Safety Authority (EFSA) on aspects of the biology and welfare of research animals “has failed in certain instances to incorporate objective scientific data to inform their answers”. This refers to an EFSA opinion that had been adopted on 14th November 2005 (available at [http://www.efsa.europa.eu/en/science/ahaw/ahaw\\_opinions.html](http://www.efsa.europa.eu/en/science/ahaw/ahaw_opinions.html)) which addressed four questions relating to:

- the sentience of invertebrate species;
- the sentience of foetal and embryonic forms;
- purpose bred animals;
- and humane euthanasia.

This dealt, among other things, with the very difficult issues of which species are sentient and at what stage during their development do they become so. It concluded, on the basis that they have a pain system and considerable learning ability, that all cyclostomes (lampreys and hagfish), all Cephalopoda (squid, octopus and nautiloids) and decapod crustaceans “fall into the same category of animals as those that are at present protected”. The Royal Society’s criticism here is that “the evidence presented focuses on the learning skills, memory and sensitive response of invertebrates without clearly demonstrating the ability/inability to suffer”.

The problem here is that there is no scientific test for sentience or capacity to suffer. Which species might or might not have these capacities is a matter of judgment. Furthermore, there is not unanimity about the criteria upon which this judgment should be made. This debate began centuries ago and, whilst very excellent progress has been made in the science that can inform it, it seems likely that disputes about where, precisely, lines should be drawn will continue for some time.

Regarding the question about embryonic and foetal sentience, the summary of the EFSA report reads: “the weight of evidence suggests that consciousness does not occur in the foetus until it is delivered and starts to breathe air”. The Royal Society’s criticism here is that no recommendations, based on scientific data, are proposed and that, although the conclusion suggests that there is no clear reason to give protection to embryos and foetuses, this is not stated explicitly.

The Royal Society also questions EFSA’s conclusion that the use of carbon dioxide is unacceptable from the animal welfare point of view, stating: “...data to support this conclusion is based on three parameters; aversion, behavioural data and physiological data. However limited physiological data is (sic) presented to support the ban on CO<sub>2</sub>-based euthanasia, and EFSA’s opinion conflicts with

current scientific opinion”. This issue about aversiveness of gases used for euthanasia would seem to be, in principle, considerably more scientifically tractable than assessing sentience and, as it happens, recommendations have just been published on future research to identify possible alternatives to, and also to define good practice for, killing with carbon dioxide (see below - Newcastle Consensus Meeting on Carbon Dioxide Euthanasia of Laboratory Animals).

**Letter from Professor Eric Keverne on behalf of the Royal Society to the European Commission, Environment Directorate General, on ‘EFSA opinion: aspects of the biology and welfare of animals used for experimental and other scientific purposes’.** (18th July 2006). A4, 3 pages. Published by The Royal Society and available at <http://www.royalsoc.ac.uk/news.asp?year=&id=5000> (accessed 8th August 2006).

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### Newcastle Consensus Meeting on Carbon Dioxide Euthanasia of Laboratory Animals

An international meeting was held on 27th and 28th February 2006 at the University of Newcastle-upon-Tyne to address uncertainties relating to the humaneness of the use of carbon dioxide for killing laboratory animals. This gas is widely used for killing laboratory rodents but, as stated in the introduction to the report of the meeting (see details below), “there is no definitive guidance on whether and how CO<sub>2</sub> can be administered humanely”.

The aims of this meeting were to bring together scientists with research experience in this field to, amongst other things, try to reach a consensus view to inform best practice in carbon dioxide euthanasia, identify what further research needs to be done, meet the immediate need for practical guidance, and to consider whether any preferable alternatives are currently available.

A brief summary of the consensus points is presented in the report, followed by outlines of the background that informed the views reached. It was concluded that: “There is no ‘ideal’ way of killing rodents with CO<sub>2</sub>” because both pre-fill and rising concentrations can cause welfare problems (through, respectively, pain or possible dyspnoea). It was also concluded that it is not yet possible to recommend, as alternatives, the use of gases such as argon or nitrogen that cause death by hypoxia, because of uncertainty that they are non-aversive in rodents. The Report states that: “More research is needed into the physiological and affective responses to a range of gaseous agents; to identify good practice and possible alternatives to CO<sub>2</sub>”.

The report provides a valuable summary and overview of the key research findings relevant to decisions about the humaneness of euthanasia of laboratory animals using carbon dioxide. The subject is one about which there has been controversy for many years and it is therefore helpful

also that the meeting reached, and the report presents, the majority views of the participants including those outlined above (it is noted that, although the aim was to achieve consensus views wherever possible, there were, unsurprisingly, some differences of opinion between the experts present and that the conclusions reached represented the majority views).

As regards current good practice, it was the general opinion of the participants that minimising unpleasant feelings is more important than minimising time to loss of consciousness. Since all delegates agreed that placing animals into chambers pre-filled with high levels of CO<sub>2</sub> causes serious welfare problems, using a rising concentration is better. Although optimum filling rate is uncertain, it is reported that use of 100% CO<sub>2</sub> at a flow rate of 20% of chamber volume per minute has been shown to produce loss of consciousness without evidence of pain (but not without evidence of dyspnoea).

This report shines light on this controversial subject and is a valuable contribution in taking the debate forward. It identifies the key areas of remaining scientific uncertainty and outlines the research needed to address them.

**Newcastle Consensus Meeting on Carbon Dioxide Euthanasia of Laboratory Animals** (August 2006).

Hawkins P, Playle L, Golledge H, Leach M, Banzett R, Coenen A, Cooper J, Danneman P, Flecknell P, Kirkden R, Niel L & Raj M. A Report of a meeting held at the University of Newcastle-upon-Tyne, 27th & 28th February 2006. 17 pages, A4. Available at the websites of the National Centre for the Three Rs and of Laboratory Animals Ltd: [www.nc3rs.org.uk/CO2ConsensusReport](http://www.nc3rs.org.uk/CO2ConsensusReport) and [www.lal.org.uk/news.html](http://www.lal.org.uk/news.html)

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**Review of Livestock Movement Controls in the UK**

There is a tension between the needs for moving livestock for economic and trade reasons and the risks of infectious disease transmission that movements present. Rules about livestock movements in the UK developed in a piecemeal way over the years and the major Foot and Mouth Disease epidemic in the country during 2001 drew attention both to the scale of within-country movements and the need for better biosecurity arrangements. In 2001 tighter controls were introduced which banned the movement of animals from a premises for 21 days after new animals had arrived on it (the 'standstill' period has since been reduced to 6 days for cattle, sheep and goats and to zero for deer). New rules have recently been introduced in England and Wales requiring the pre-movement testing of cattle aged over 15 months for bovine tuberculosis.

The Minister for Local Environment, Marine and Animal Welfare at the Department for Environment, Food and Rural Affairs, Ben Bradshaw, asked Bill Madders to examine current policy on the movement of farmed livestock (except pigs and poultry): "To review and make recommendations

on the degree to which current rules in England and Wales on the movement of cattle, sheep and deer deliver a sufficient reduced risk of disease taking account of the need to support the sustainability of the livestock industry...". The review was conducted between February and the end of June 2006 and the Report (see details below) has been recently published.

The Report concludes that various changes need to be made to the rules. These include: simplification to enable livestock keepers to understand them and to understand their responsibilities; measures to enable trading practices convenient or necessary for profitability whilst minimising disease risks; and, measures to be undertaken by Defra and its agencies to identify more accurately places between which livestock are moved and thus to improve traceability. Annexes outlining various existing relevant provisions are included and a total of 21 recommendations are made. The keys to the prevention and control of disease are, the Report states: "...good biosecurity, not allowing animals to move more than once per week, the appropriate use of isolation facilities and knowing what is where and when...".

Striking the right balance here; to enable necessary movements whilst minimising infectious disease risks, is important for livestock welfare. This Report provides a helpful review of the present regulations, with clarifications about interpretation of some of these, and draws attention to various points where changes could be made.

**Review of the Livestock Movement Controls** (July 2006).

Madders B. Report commissioned by Defra. Publication number PB 12097. 36 pages, A4. Published by the Department for Environment, Food and Rural Affairs, and available from Defra, Nobel House, 17 Smith Square, London SW1P 3JR, UK and at the Defra website: [www.defra.gov.uk](http://www.defra.gov.uk)

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**The Humaneness of Badger Dispatch Procedures in the Randomised Culling Trial for the Control of Bovine TB in the UK**

The Randomised Badger Culling Trial (RBCT) began in the UK in 1998 as part of the Government's strategy to investigate the control of tuberculosis in cattle. Aspects of the trial have been subject to independent audit and the fifth of these audits, concerning the humaneness of dispatch procedures, has recently been published. This audit was carried out by Dr James Anderson and is published (see details below) together with Defra's response. It outlines observations made during twelve field visits on the dispatch of 9 badgers and the blood sampling, under anaesthetic, of 18 animals. The auditor commended the field staff involved "for carrying out the unpleasant task of killing badgers in a particularly conscientious, efficient and humane manner" and noted that no new recommendations were required to the standard operating procedures.

During the period covered by this Report, blood samples were collected from some badgers under anaesthesia, and