

(after confirming that the animal is insensitive) instantaneous destruction of the body in a macerator.

The Code of Practice is an informative and well-presented document which provides background, interpretation and advice on the matters outlined in the Schedule and on related subjects, such as carcase disposal. The Code is divided into sections on legislation, safeguards for humane killing, ensuring animals are dead, disposal of carcasses and appropriate methods of humane killing. The approved methods of killing for animals other than foetal, larval or embryonic forms include, with various provisos and caveats: overdose of anaesthetic agents (potentially for all species); exposure to rising concentrations of carbon dioxide (rodents, rabbits and birds up to 1.5kg); dislocation of the neck (rodents up to 500g, rabbits up to 1kg, birds up to 3kg); concussion of the brain by striking the cranium (rodents, rabbits, amphibians and reptiles up to 1kg, birds up to 250g, fish) and destruction of the brain by free or captive bullet (ungulates). The methods of killing listed for foetal, larval and embryonic forms are: overdose of anaesthetic (potentially all species); refrigeration, disruption of membranes, maceration or exposure to near 100% concentration of carbon dioxide (birds and reptiles); cooling of foetuses followed by immersion in cold tissue fixative (rats, mice and rabbits) and decapitation (mammals and birds up to 50g). This Code of Practice is a useful publication for all involved with research, care and welfare of laboratory animals and will be required reading for those working in this field in the UK.

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*The Humane Killing of Animals under Schedule 1 to the Animals (Scientific Procedures) Act 1986: Code of Practice.* The Home Office (1997). The Stationery Office Limited: London. 10pp. Paperback. Obtainable from the publishers, The Publications Centre, PO Box 276, London SW8 5DT, UK and other usual HMSO sources. Price £3.45.

### **Ethics of Xenotransplantation**

In January 1995 the Nuffield Council on Bioethics set up a working party which produced a well-balanced report in March 1996 entitled *Animal-to-Human Transplants: the Ethics of Xenotransplantation*. In September 1995, the Government set up its own advisory group which has now produced its own report and this has been published together with the Government's response to the issue. There are many areas of agreement between the two reports but they do differ in emphasis and coverage of various topics. Significantly, both agree that protection under The Animals (Scientific Procedures) Act 1986 for animals bred for xenotransplantation purposes needs to be extended. Together, the two reports provide an extremely detailed investigation into the controversial issues involved in xenotransplantation.

The most important conclusion of the report by the Advisory Group to the Government is the recommendation that clinical trials should not proceed in the UK at present, as there is a risk that diseases might jump species barriers. However, it does concede that this situation might change in the future.

The report argues that it is unacceptable to use primates as source animals not only because of the health hazard due their phylogenetic closeness to humans, but also because they would be exposed to much suffering. It would, however, be acceptable to use them in research to develop techniques. The Government does not entirely accept the first recommendation and is consulting on this and other issues.

The report considers a number of other animal welfare issues, such as the degree of suffering that animals are likely to undergo during xenotransplantation procedures, the risk of mutated pathogens infecting animals and whether it is ethically acceptable to genetically modify a pig. The report's conclusion that it is acceptable to genetically modify a pig providing that there is a concomitant benefit to humans and that the pig neither suffers unduly nor ceases to recognisably be a pig, raises some interesting questions of definition!

Finally, it is good news that the Government has accepted the recommendation in the report that there should be a National Committee (the UK Xenotransplantation Interim Regulatory Authority (UKXIRA) chaired by Lord Habgood of Calverton) to oversee xenotransplantation and that such a committee should be backed by legislation.

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*Animal-to-Human Transplants: the Ethics of Xenotransplantation* (1996). Nuffield Council on Bioethics: London. 147pp. Paperback. Obtainable from the publishers, 28 Bedford Square, London WC1B 3EG, UK (ISBN 0 9522701). Price £10.00 including postage and packing within Europe.

*Animal Tissue into Humans. A Report by the Advisory Group on the Ethics of Xenotransplantation 1996.* The Stationery Office: London. 258pp. Paperback. Obtainable from the publishers, Publications Centre, PO Box 276, London SW8 5DT, UK (ISBN 011 32866 4). Price £25.00.

### **Farmed fish welfare**

This report covers the welfare of farmed salmon and trout with some brief references to carp. The report is the published findings of a study carried out by the Farm Animal Welfare Council (FAWC) to provide advice to Ministers on the development of a Council of Europe Recommendation about the welfare of farmed fish.

The report is in 13 sections and deals with all aspects of fish farming beginning at structure of the industry and site selection. Production-related issues such as feeding, stockmanship and inspection, disease and veterinary care, predators, genetics and slaughter are subsequently covered. At the end of each section there are a series of recommendations of relevance to the welfare of salmon and trout which summarize the main points of the section. A 'quick reference' guide to the main recommendations of the report is also provided. Five appendices are presented which provide information on the FAWC, bodies which gave assistance to the report and also include a glossary of terms, a list of fish diseases and parasites and a full list of references.

This is a detailed report on all aspects of fish farming which contains good, practical recommendations on welfare. Fish have the capacity to experience both stress and pain and guidelines to protect the welfare of these animals, in what is a comparatively recent development in farming, are welcome.

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*Report on the Welfare of Farmed Fish.* Farm Animal Welfare Council (FAWC) (1996). Ministry of Agriculture, Fisheries and Food: London. 52pp. Paperback. Obtainable from FAWC, Government Buildings, Hook Rise South, Tolworth, Surbiton, Surrey KT6 7NF, UK. Free.

### **Humane control of vertebrate pests**

As the editors of this recently-published proceedings point out in their introduction 'The practice of controlling animals perceived as threats to human or environmental interests is uniquely placed on an intersection of various ethical, scientific, economic, social and