

1 **Code of Practice for the housing and care of animals used in**
2 **scientific procedures**

3

4

5 **Introduction**

6 1. This Code of Practice is based on Appendix A of the European Convention
7 for the Protection of Vertebrate Animals Used for Experimental and Other
8 Scientific Purposes (ETS No.123), supplemented by information taken from
9 the EU Expert working groups and from UK Codes of Practice for the Housing
10 and Care of Animals used in Scientific Procedures and for the Housing and
11 Care of Animals in Designated Breeding and Supplying Establishments. One
12 of the aims of [\[UK legislation\]](#) is to protect animals used for experimental and
13 other scientific purposes to ensure that any possible pain, suffering, distress
14 or lasting harm inflicted as a consequence shall be kept to a minimum and
15 minimise scientific variables.

16

17 2. Some procedures are conducted under field conditions on free-living, self-
18 supporting, wild animals, but such procedures are relatively few in number.
19 The great majority of animals used in procedures are kept in facilities ranging
20 from outdoor corrals to cages for small animals in an animal house. This is a
21 situation where there are often highly conflicting interests between the
22 scientific requirements and the needs of the animal. In this conflict, the basic
23 physiological and ethological needs of the animals (freedom of movement,
24 social contact, meaningful activity, nutrition, water) should be restricted only
25 for the minimum necessary period of time and degree. Such restrictions
26 should be reviewed by scientists, animal technicians and those competent
27 persons charged with advisory duties in relation to the well-being of the
28 animals before procedures are undertaken to ensure that the extent of the
29 compromise to animal welfare is minimised to a level consistent with the
30 scientific objectives of the study*.

31

32 3. This Code of Practice provides guidelines for the accommodation and care
33 of animals, based on present knowledge and good practice. It explains and
34 supplements the basic principles adopted in Article 5 of ETS123. The object of

* Specific terms will be defined in the Guidance

35 the Code of Practice is thus to help authorities, institutions and individuals in
36 their pursuit of the aims of the Secretary of State in this matter.

37

38 4. The General section provides guidelines on accommodation, housing and
39 care relevant to all animals used for experimental and other scientific
40 purposes. Supplementary guidance concerning commonly used species is
41 presented in specific sections. Where no information is included in these
42 specific sections, the provisions of the general section apply.

43

44 The species-specific sections are based on proposals made by expert groups
45 on rodents, rabbits, dogs, cats, ferrets, non-human primates, farm species,
46 mini-pigs, birds, amphibians, reptiles and fish. In addition to these proposals,
47 the expert groups also submitted background information to support their
48 proposals, based on scientific evidence and practical experiences.

49

50 This background information is the sole responsibility of the respective expert
51 groups and is separately available. For some groups of species, namely
52 amphibians, reptiles and fish, these explanatory documents also provide
53 additional information on less commonly used species not referred to in the
54 species-specific guidelines.

55

56 Should behavioural or breeding problems occur, or should further information
57 on specific requirements for other species be required, advice should be
58 sought from experts specialised in the species concerned and care staff or
59 veterinary surgeon, to ensure that any particular species' needs are
60 adequately addressed.

61

62 5. Care is a word which, when used in connection with animals intended for,
63 or in actual use in procedures, or in connection with animals kept for breeding
64 purposes, covers all aspects of the relationship between animals and man. Its
65 substance is the sum of material and non-material resources provided by man
66 to obtain and maintain an animal in a physical and mental state where it
67 suffers least, and promotes good science. It starts from the moment the
68 animal is intended to be used in procedures, including breeding or keeping for

69 that purpose, and continues until it is humanely killed or otherwise disposed of
70 by the establishment in accordance with [\[UK legislation\]](#) after the completion
71 of the procedure.

72

73 6. The Code of Practice includes advice about the design of appropriate
74 animal facilities and provides recommendations and guidance about how the
75 welfare provisions contained within [\[UK legislation\]](#) can be met. However, the
76 recommended standards of space represent minimum allowances. These
77 may be increased, as environmental requirements for individual animals might
78 vary according, for example, to species, age, physiological conditions,
79 stocking density and whether the animals are kept as stock, for breeding or
80 experiments, whether long-term or short-term. Environmental enrichment is
81 also an important factor for the welfare of the animals.

82

83 7. Existing facilities or equipment that do not meet the minima in these
84 guidelines should be altered or replaced within a reasonable period of time,
85 having regard to animal welfare priorities and financial and practical concerns.
86 Pending such replacement or alteration, adjustments should be made to
87 numbers and sizes of animals in existing enclosures in order to comply, as far
88 as possible, with these guidelines.

89

90 **Definitions**

91 Definition of terms used in this Code of Practice in addition to those contained
92 in [Article 1.2 of the ETS123](#).

93

94 “Animal enclosure” is defined as the primary accommodation in which the
95 animals are confined, such as:

96 – “cage” -a permanently fixed or movable container that is enclosed by
97 solid walls and, at least on one side, by bars or meshed wire or, where
98 appropriate, nets, and in which one or more animals are kept or
99 transported; depending on the stocking density and the size of the
100 container, the freedom of movement of the animals is relatively
101 restricted;

102

103 – “pen” -an area enclosed, for example, by walls, bars or meshed wire
104 in which one or more animals are kept; depending on the size of the
105 pen and the stocking density, the freedom of movement of the animals
106 is usually less restricted than in a cage;

107

108 – “run” -an area closed, for example, by fences, walls, bars or meshed
109 wire and frequently situated outside permanently fixed buildings, in
110 which animals kept in cages or pens can move freely during certain
111 periods of time in accordance with their ethological and physiological
112 needs, such as exercise;

113

114 – “stall” -a small enclosure with three sides, usually a feed-rack and
115 lateral separations, where one or two animals may be kept tethered.

116

117 The secondary accommodation, in which the animal enclosure(s), as defined
118 above, may be kept, will be designated as “holding rooms” for the purpose of
119 this Code of Practice. Examples of “holding rooms” are:

120

121 – rooms where animals are normally housed, either for breeding and
122 stocking, or during the course of a procedure;

123

124 – “containment systems”, such as isolators, laminar flow cabinets and
125 individually ventilated cage systems.

126

127 **General section**

128 **1. The physical facilities**

129

130 1.1 Functions and general design

131 1.1.1 All facilities should be so designed, sited and constructed as to provide a
132 suitable environment for the species to be kept, taking into account their
133 physiological and ethological needs. This includes any special requirement for
134 exercise or social contact for the species to be housed, and should
135 incorporate adequate facilities sufficient for the activities planned to be carried

136 out. Facilities should also be designed and managed to prevent access by
137 unauthorised persons and the ingress and escape of animals.

138

139 When substantial alterations to the premises are proposed, the Inspector
140 should be consulted at an early stage.

141

142 Facilities that are part of a larger building complex should also be protected by
143 appropriate security and building measures and arrangements that limit the
144 number of entrances. Advice should be taken about security from Crime
145 Prevention Officers, from the local police or other experts during the design of
146 new facilities or modifications of existing premises.

147

148 When siting an animal house, consideration should be given to the activities in
149 the adjacent buildings and any effect these may have on the welfare of the
150 animals. An animal facility forming part of a larger complex should be
151 designed to be self-contained. Wild, stray or pet animals should not be able to
152 gain entry to any part of the animal house, including stores and personnel
153 areas. Special care should be taken where drains and other services pierce
154 the walls or floors to ensure that they have been properly proofed against
155 rodents and insects.

156

157 1.1.2 There should be an active maintenance programme in order to prevent
158 and remedy any defect of buildings or equipment.

159

160 1.2 Holding rooms

161 1.2.1 All necessary measures should be taken to ensure regular and efficient
162 cleaning of the rooms and the maintenance of satisfactory hygienic standards.
163 Ceilings and walls should be damage-resistant with a smooth, impervious and
164 easily washable surface. Special attention should be paid to junctions,
165 including those with doors, ducts, pipes and cables. All joints between door
166 frames and wall etc. should be sealed. Floor to wall, wall to ceiling and wall to
167 wall junctions should be coved for easy cleaning. Where appropriate, an
168 inspection window which should ideally be fitted in the door and consideration
169 should be given to using a flush fitted window to reduce maintenance. Floors

170 should be smooth, impervious and have a non-slippery, easily washable
171 surface, which can carry the weight of racks and other heavy equipment
172 without being damaged. Drains, if present, should be adequately covered and
173 fitted with a barrier, which will prevent vermin from gaining access or animals
174 from escaping.

175

176 1.2.2 Where the animals are allowed to run freely, walls and floors should be
177 surfaced with a material resistant to the heavy wear and tear caused by the
178 animals and the cleaning process. The material should not be detrimental to
179 the health of the animals and should be such that the animals cannot hurt
180 themselves. Additional protection should be given to any equipment or fixtures
181 so that they may not be damaged by the animals or injure the animals
182 themselves. Services should be installed in such a way that they are either
183 buried within the fabric of the building, boxed in or clear of the wall surface for
184 easy cleaning.

185

186 1.2.3 Species that are incompatible, for example predator and prey, animals
187 requiring different environmental conditions, or animals of different health
188 status, should not be housed in the same room nor, in the cases of predator
189 and prey, within sight, smell or sound.

190

191 1.2.4 Holding rooms should, where appropriate, be provided with facilities for
192 carrying out minor procedures and manipulations.

193

194 1.2.5 Farm animals in pens generally require more robust wall and floor
195 finishes and there should be no projections which may present a hazard to
196 animals or staff. Farm animals which are kept in animal houses should be
197 given at least as much room as recommended in other relevant legislation and
198 codes of practice. For some procedures the standards of environment and
199 housing required may be much higher than where animals are kept under
200 farm conditions. Exercise areas should be provided for larger farm animals
201 but, in some cases, such facilities may be impracticable from an experimental,
202 environmental, disease control or security point of view.

203

204 1.3 General and special purpose procedure rooms

205 1.3.1 At breeding or supplying establishments suitable facilities for making
206 consignments of animals ready for dispatch should be available.

207

208 1.3.2 All establishments should also have available, as a minimum, laboratory
209 facilities for the carrying out of simple diagnostic tests, post-mortem
210 examinations, and/or the collection of samples which are to be subjected to
211 more extensive laboratory investigations elsewhere.

212

213 1.3.3 Facilities should be provided to enable newly-acquired animals to be
214 isolated until their health status can be determined, and the potential health
215 risk to established animals assessed and minimised.

216

217 1.3.4 General and special purpose procedure rooms should be made
218 available for situations where it is undesirable to carry out the procedures or
219 observations in the holding rooms. Major procedures, surgery or euthanasia
220 should not be performed in rooms where animals are normally housed or
221 where other conscious animals are undergoing procedures.

222

223 1.3.5 Where appropriate, there should be provision for one or more separate
224 rooms suitably equipped for the performance of surgical procedures under
225 aseptic conditions. There should be separate preparation areas for animals,
226 equipment and staff. There should be facilities for post-operative recovery.

227

228 1.3.6 There should be accommodation for separate housing of sick or injured
229 animals, including facilities for isolation, where necessary. Animals inoculated
230 with infective agents that are transmissible to man or to other animals held on
231 the premises should be contained within an area reserved for this purpose
232 which has been designed, built and maintained in accordance with
233 appropriate health and safety regulations.

234

235 1.4 Service rooms

236 1.4.1 Storerooms should be designed, used and maintained to safeguard the
237 quality of food and bedding. These rooms should be clean, dry, vermin and

238 insect-proof. Other materials, which may be contaminated or present a hazard
239 to animals or staff, should be stored separately. Special facilities may be
240 required for storing and handling chemicals.

241

242 1.4.2 Separate storerooms for clean cages, instruments and equipment
243 should be provided. There should be adequate storage space; corridors
244 should not be used for storage.

245

246 1.4.3 The cleaning and washing areas should be large enough to
247 accommodate the installations necessary to decontaminate and clean used
248 equipment. The cleaning process should be arranged so as to separate the
249 flow of clean and dirty equipment to prevent the contamination of newly-
250 cleaned equipment. Walls and floors should be covered with a suitably
251 durable surface material and the ventilation system should have ample
252 capacity to carry away the excess heat and humidity.

253

254 1.4.4 Provision should be made for the hygienic storage and disposal of
255 carcasses and animal waste. If incineration on the site is not possible or
256 necessary, suitable arrangements should be made for the safe disposal of
257 such material, having regard to national and local regulation and by-laws.
258 Special precautions should be taken with toxic, radioactive or infectious
259 waste.

260

261 1.4.5 The general design and construction of circulation areas should
262 correspond to the standards of the holding rooms. The corridors should be
263 wide enough to allow easy circulation of movable equipment.

264

265 **2. The environment and its control**

266

267 Experimental results may be influenced by environmental conditions and
268 animals should be kept under conditions that favour a consistency of
269 response to scientific procedures. Unstable environmental conditions are
270 likely to introduce avoidable variability into biological responses. To
271 demonstrate any experimental response against such a variable background

272 generates a requirement for greater animal usage if the result is to be
273 statistically valid. Good control of variables such as ventilation, humidity,
274 temperature, lighting and noise can therefore contribute both to good science
275 and to the minimisation of animal use. Measures should be in place to ensure
276 that breakdowns in equipment or systems controlling the environment are
277 remedied promptly. Consideration should be given to maintaining a stock of
278 critical spare parts.

279

280 Conditions should not override the welfare of the animals concerned unless
281 necessary to achieve the scientific objective.

282

283 For breeding in some species, however, a controlled daily fluctuation in
284 temperature may be positively beneficial.

285

286 2.1 Ventilation

287 2.1.1 Adequate ventilation should be provided in the holding room and the
288 animal enclosures to satisfy the requirements of the animals housed. The
289 purpose of the ventilation system is to provide sufficient fresh air of an
290 appropriate quality and to keep down the levels and spread of odours,
291 noxious gases, dust and infectious agents of any kind. It also provides for the
292 removal of excess heat and humidity.

293

294 2.1.2 The air in the room should be renewed at frequent intervals. A
295 ventilation rate of fifteen to twenty air changes per hour of fresh or conditioned
296 air distributed throughout the room is normally adequate for a fully-stocked
297 room of rodents and lagomorphs. However, in some circumstances, for
298 example where stocking density is low, eight to ten air changes per hour may
299 suffice. For cats, dogs and primates, ten to twelve changes per hour may be
300 adequate. In some cases, natural ventilation may suffice and mechanical
301 ventilation may not even be needed. Recirculation of untreated air should be
302 avoided. However, it should be emphasised that even the most efficient
303 system cannot compensate for poor cleaning routines or negligence. Any
304 smell of ammonia probably reflects overstocking, too little ventilation,
305 inadequate cleaning, or a combination of these factors; the causes should be

306 investigated and rectified. The stocking density for each room for each
307 species likely to be housed should be calculated and be readily available.

308

309 2.1.3 The ventilation system should be so designed as to avoid harmful
310 draughts and noise disturbance while delivering air as evenly as possible.

311

312 2.1.4 Smoking in rooms where there are animals should be forbidden.

313

314 2.1.5 The ventilation system can be used to create differential air pressures
315 within the building as part of a “barrier system”. “Clean” areas are generally
316 maintained at higher pressure and “hazardous” areas at lower pressure than
317 those adjacent to them to minimise the leakage of “dirty” air into “cleaner”
318 areas and the escape of airborne hazards into the air outside the premises.
319 This is effective only if the supply air is itself clean or is suitably filtered to be
320 free from contaminants.

321

322 2.2 Temperature

323 2.2.1 The subsequent species-specific sections give the range within which it
324 is recommended that the temperature should be maintained. It should also be
325 emphasised that the figures given in these sections apply only to adult, normal
326 animals. New-born, young, hairless, newly-operated, sick or injured animals
327 will often require a much higher temperature level. The temperature of the
328 premises should be regulated according to possible changes in the animals'
329 thermal regulation, which may be compromised due to special physiological
330 conditions or to the effects of the procedures.

331

332 Temperature in the holding rooms should be monitored continually and logged
333 on a daily basis.

334

335 2.2.2 It may be necessary to provide a ventilation system having the capacity
336 both to heat and cool the air supplied.

337

338 2.2.3 In user establishments a precise temperature control in the holding
339 rooms may be required, because the temperature of the environment is a

340 physical factor which has a profound effect on the metabolism and behaviour
341 of all animals, and therefore affects the validity of certain scientific outcomes.

342

343 Outdoor areas provided for animals to exercise and interact cannot have strict
344 temperature regulation. Animals should not be restricted to such areas under
345 climatic conditions which may cause them distress.

346

347 2.3 Humidity

348 For some species, such as rats and gerbils, the relative humidity may need to
349 be controlled within a fairly narrow range to minimise the possibility of health
350 or welfare problems, whereas other species, such as dogs, tolerate well wide
351 fluctuations in humidity levels. As a general rule, prolonged periods below
352 40% or above 70% should be avoided.

353

354 2.4 Lighting

355 Where natural light does not provide an appropriate light/dark cycle, it is
356 necessary to provide controlled lighting both to satisfy the biological
357 requirements of the animals and to provide a satisfactory working
358 environment. Exposure of some species to bright light should be avoided and
359 darker areas for withdrawal should be available within the animal enclosures.
360 There should be adequate illumination for the performance of husbandry
361 procedures and inspection of the animals.

362

363 Regular photoperiods and intensity of light suitable to the species should be
364 provided and interruptions to these should be avoided. The circadian "clock"
365 of some species may be affected as much by light pulses of less than one
366 second during the dark phase as by a long photoperiod; thus it may be
367 important not to turn on lights during the dark period. On the other hand,
368 intervals of darkness during the light period are not known to be disruptive.
369 When animals are maintained on reverse photoperiod, daily inspections of the
370 animals must still be undertaken.

371

372 When keeping albino animals, one should take into account their sensitivity to
373 light.

374

375 Consideration should be given to the inclusion of windows in holding rooms,
376 since they are a source of natural light and can provide environmental
377 enrichment for some species, especially non-human primates, dogs, cats,
378 some farm animals and other large mammals.

379

380 2.5 Noise

381 Noise can be a disturbing factor for animals. High noise levels and sudden
382 noises can cause stress which, in addition to the welfare consequences for
383 the animal, may influence experimental data. Noise levels within the hearing
384 ranges of animals, including in some cases ultrasound (sound above the
385 hearing range of the human being, conventionally taken to be sounds
386 exceeding 20 kHz) should be minimised particularly during their resting phase.
387 Alarm systems should sound outside the sensitive hearing range of the
388 animals, where this does not conflict with their audibility to humans or should
389 be of a silent type, including flashing lights. The layout of rooms and corridors
390 can be major factors influencing the acoustic environment and this should be
391 taken into account in their design. Holding rooms should be provided with
392 adequate noise insulation and absorption materials. It has been found
393 empirically that if the general background sound level in an empty animal
394 room can be kept below about 50dB; below a noise rating curve of 45; and
395 free from distinct tonal content, then it is unlikely that there will be damage to
396 animals or personnel when the room is in use.

397

398 2.6 Vibration

399 *[text to be added]*

400

401 2.7 Alarm systems

402 A technologically dependent animal facility is a vulnerable entity. It is strongly
403 recommended that such facilities are appropriately protected to detect
404 hazards such as fires, the intrusion of unauthorised persons, and the
405 breakdown of essential equipment, such as ventilation fans, air heaters or
406 coolers and humidifiers.

407

408 Animal facilities which rely heavily on electrical or mechanical equipment for
409 environmental control and protection should have a stand-by system to
410 maintain essential services and emergency lighting systems as well as to
411 ensure that alarm systems themselves do not fail to operate.

412

413 Heating and ventilation systems should be equipped with monitoring devices
414 and alarms to ensure that any faults can be quickly identified and promptly
415 rectified.

416

417 Clear instructions on emergency procedures should be prominently displayed.
418 Alarms are recommended for water tanks for fish and other aquatic animals in
419 case of failure of the water or air supply. Care should be taken to ensure that
420 the operation of an alarm system causes as little disturbance as possible to
421 the animals.

422

423 **2.8 Special environments e.g. IVCs, isolators**

424 *[Text in preparation]*

425

426 **3. Education and Training**

427 *[Text in preparation]*

428

429 **4. Care**

430

431 **4.1 Health**

432 4.1.1 Animals within an animal facility are totally dependent on humans for
433 their health and well-being. The physical and psychological state of the
434 animals will be influenced by their local environment, food, water and the care
435 and attention provided by the animal care staff.

436

437 Healthy animals are an essential prerequisite for good animal welfare and
438 good science. Intercurrent infection in the animal population may call into
439 question the validity of information obtained from scientific procedures and
440 make interpretation of results impossible.

441

442 A strategy should be in place in all establishments to ensure that an
443 appropriate health status is maintained, which safeguards animal welfare and
444 meets scientific requirements. This strategy should include a microbiological
445 surveillance programme, plans for dealing with health breakdowns, and
446 should define health parameters and procedures for the introduction of new
447 animals. The aim is to maintain animals in good health and physical condition,
448 behaving in a manner normal for the species and strain and with a reasonably
449 full expression of their behavioural repertoire, and amenable to handling.

450

451 4.1.2 The person responsible for the establishment should ensure regular
452 inspection of the animals and supervision of the accommodation and care by
453 a veterinarian or other competent person. Inspection of the animals should be
454 made at least daily by a person trained in accordance with paragraph 3 of the
455 **General section**, to check the general well-being of all animals, ensure that all
456 sick or injured animals are identified and appropriate action taken.

457

458 More detailed examinations should be carried out with sufficient frequency to
459 ensure that the health and well-being of the animals is maintained. Animals
460 which are undergoing scientific procedures must be inspected at a frequency
461 commensurate with the severity of the procedure.

462

463 4.1.3 Because of the potential risk of contamination of animals and staff
464 presented by the handling of animals, particular attention should be paid to
465 the institution of hygiene procedures and supervision of staff health.

466

467 4.2 Capture from the wild

468 4.2.1. Many wild animals, including birds, reptiles and amphibians, and their
469 capture are protected by other relevant legislation. When animals need to be
470 captured, it should only be done by humane methods and by persons
471 competent to apply them. The impact of the capturing procedures on the
472 remaining wildlife and habitats should be minimised.

473

474 4.2.2. Any animal found, at or after capture, to be injured or in poor health
475 should be examined by a competent person as soon as possible, and

476 appropriate action taken. This may require referral to a veterinarian for
477 treatment, or, in the case of serious injury, the animal should be killed
478 immediately by a humane method, in line with the principles set out in the
479 *[document in preparation]*. Appropriate and sufficient transport containers and
480 means of transport should be available at capture sites, in case animals need
481 to be moved for examination or treatment.

482

483 4.2.3. Special consideration should be given to the acclimatisation,
484 quarantine, housing, husbandry and care of wild caught animals. The eventual
485 fate of wild caught animals following the conclusion of scientific procedures
486 should also be given due consideration before the work begins. This is to
487 ensure that the practical difficulties and welfare issues associated with any
488 subsequent release to the wild can be satisfactorily addressed.

489

490 4.3 Transport of the animals

491 4.3.1. For animals, transportation is a stressful experience which should be
492 mitigated as far as possible. The following principles should apply to all animal
493 movements, from short journeys by vehicle within scientific establishments to
494 international transportation.

495

496 Animals should be transported in accordance with the principles of the
497 [European Convention on the Protection of Animals during International](#)
498 [Transport \(ETS No. 65 and ETS No. 193\)](#), having regard to the Resolution on
499 the acquisition and transport of laboratory animals, adopted by the [May 1997](#)
500 [Multilateral Consultation of the Parties to Convention ETS No. 123](#).

501 *[Further detail may be added]*

502

503 4.3.2. Both sender and recipient should agree the conditions of transport,
504 departure and arrival times to ensure that full preparation can be made for the
505 animals' arrival. The sender should ensure that the animals are examined and
506 found to be fit for transport before being placed in the transport container.
507 Animals that are incompatible should not be transported together.

508

509

510 Containers for travel should:

- 511 a. Confine the animals in comfortable hygienic conditions with minimal
- 512 stress for the duration of the journey;
- 513 b. Contain sufficient food and water or moisture in a suitable form;
- 514 c. Contain sufficient bedding so that animals remain comfortable and in
- 515 conditions close to their thermo-neutral zone;
- 516 d. Be of such a design and finish that an animal will not damage itself
- 517 during loading, transport and whilst being removed from the container;
- 518 e. Be escape-proof, leak-proof and capable of being handled without
- 519 the animals posing a risk to handlers;
- 520 f. Be designed to prevent or limit the entry of micro-organisms;
- 521 g. Be designed so that they can be thoroughly disinfected between
- 522 shipments, if intended to be reusable;
- 523 h. Allow sufficient ventilation;
- 524 i. Be clearly labelled.

525

526 4.3.3. Animals that are sick or injured shall not be considered fit for transport,
527 except for slightly injured or sick animals whose transport would not cause
528 additional suffering, or where the transport is under veterinary supervision for,
529 or following, veterinary treatment. Sick or injured animals may also be
530 transported for experimental or other scientific purposes approved by the
531 relevant competent authority, if the illness or injury is part of the research
532 programme. No additional suffering should be imposed by the transport of
533 such animals, and particular attention should be paid to any additional care
534 which may be required. A competent person should confirm that such animals
535 are fit for the intended journey. Pregnant animals need special care.

536 Compliance with all relevant legislation and guideline is expected.

537

538 4.3.4. The person responsible for the transport of the animals has the overall
539 control over the organisation, carrying out and completion of the whole
540 journey, regardless of whether duties are subcontracted to other Parties
541 during transport.

542

543 4.3.5. The person in charge of the welfare of the animals has direct physical
544 responsibility for the care of the animals during transport. Such a person may
545 be the attendant or the driver of a vehicle if fulfilling the same role. The person
546 in charge of the welfare of animals being transported should be aware of the
547 special needs of the animals in their care.

548

549 4.3.6. The route should be planned in order to ensure that the transport is
550 carried out efficiently to minimise journey time, from loading to unloading, and
551 to avoid delays in order to limit any stress and suffering of the animals. Care is
552 needed to ensure that animals are maintained under suitable environmental
553 conditions for the species, and that measures are taken to minimise sudden
554 movements, excessive noise, or vibration during transport.

555

556 4.3.7. Where appropriate, the container should be designed to prevent or
557 restrict the entry or spread of micro-organisms. It should allow visual
558 inspection of the animals without compromising the microbiological status of
559 the animals.

560

561 4.3.8. On arrival at their destination the animals should be removed from their
562 transport containers and examined by a competent person with the least
563 possible delay. After inspection, the animals should be transferred to clean
564 cages or pens and be supplied with food and water as appropriate. Animals
565 that are sick, injured or otherwise out of condition should be examined by a
566 veterinary surgeon (or other competent person), kept under close observation
567 and housed separately from other animals. These animals should be provided
568 with veterinary treatment as appropriate or, if deemed necessary, promptly
569 killed by a humane method.

570

571 4.4 Quarantine, acclimatisation and isolation

572 The objectives of quarantine and isolation periods are:

- 573 a. to protect other animals in the establishment;
- 574 b. to protect man against zoonotic infection; and
- 575 c. together with an acclimatisation period, to foster good scientific
576 practice.

577 According to the circumstances, these periods may vary and are determined
578 by national regulation or by a competent person, normally the veterinarian
579 appointed by the establishment.

580

581 4.4.1. Quarantine

582 Quarantine is defined as a period of housing newly introduced or reintroduced
583 animals separate from existing animals in the establishment to establish the
584 state of health of the animals and to prevent the introduction of disease. Such
585 a period is recommended when the health status of the animal is not known.

586

587 4.4.2. Acclimatisation

588 A period of acclimatisation is needed to allow animals to recover from
589 transport stress, to become accustomed to a new environment and to
590 husbandry and care practices. Even when the animals are seen to be in good
591 health, it is necessary for them to undergo a period of acclimatisation before
592 being used in a procedure. The time required depends on several factors,
593 such as the stress to which the animals have been subjected which in turn
594 depends on several factors such as the duration of the transportation and the
595 age of the animal and change of the social environment. It should also be
596 taken into account that international transport may necessitate an extended
597 period of acclimatisation due to disturbance of the diurnal rhythm of the
598 animals.

599

600 4.4.3. Isolation

601 A period of isolation is intended to reduce the risk of infection to other animals
602 or humans. Any animal suspected of posing such a risk should be housed
603 separately for an appropriate period of time.

604

605 4.5 Housing and enrichment

606 4.5.1. Introduction

607 All animals should be allowed adequate space to express a wide behavioural
608 repertoire. Animals should be socially housed wherever possible and provided
609 with an adequately complex environment within the animal enclosure to
610 enable them to carry out a range of normal behaviours. Restricted

611 environments can lead to behavioural and physiological abnormalities and
612 affect the validity of scientific data.

613

614 Consideration should be given to the potential impact of the type of
615 accommodation, and that of the environmental and social enrichment
616 programmes, on the outcome of scientific studies, in order to avoid the
617 generation of invalid scientific data and consequential animal wastage.

618

619 The housing and enrichment strategies used in all establishments should be
620 designed to fulfil the needs of the species housed and to ensure that the
621 animals can make the best use of the space available. Their design should
622 also take into account the need to observe the animals with minimum
623 disruption and to facilitate handling. Suggested minimum animal enclosure
624 sizes and space allowances are included in the subsequent individual species
625 sections.

626

627 The shape of the enclosure and the furniture provided may be as important to
628 the animal as overall size. Room must be allowed for growth of the animals.
629 Some animals continue to grow into old age although they may become less
630 active.

631

632 Unless otherwise specified, additional surface areas provided by enclosure
633 additions, such as shelves, should be provided in addition to the
634 recommended minimum floor areas.

635

636 Where the minimum enclosures sizes cannot be provided for scientific
637 reasons, the duration of the confinement must be justified by the experimenter
638 and permission obtained from the competent authority.

639

640 4.5.2. Housing

641 Animals, except those which are naturally solitary, should be socially housed
642 in stable groups of compatible individuals. Single housing or housing in a
643 barren environment on experimental grounds will require permission from the
644 competent authority. If single housing is necessary on health or welfare

645 grounds it should be agreed with the competent person charged with advisory
646 duties in relation to the well-being of the animals and/or the veterinarian. In
647 such circumstances, additional resources should be targeted to the welfare
648 and care of these animals. In such cases, the duration should be limited to the
649 minimum period necessary and, where possible, visual, auditory, olfactory and
650 tactile contact should be maintained. The introduction or re-introduction of
651 animals to established groups should be carefully monitored by adequately
652 trained staff, to avoid problems of incompatibility and disrupted social
653 relationships. The possibility of social housing should be promoted by
654 purchasing compatible individuals when procuring animals of gregarious
655 species.

656

657 Animals should be housed so that they can be easily inspected: animals
658 should not be held in cages which are stacked so high that they cannot be
659 inspected without removing them from the rack. Some procedures may
660 require a more restrictive system of housing to cater for special requirements
661 imposed by experimental procedures, for example, the need to collect excreta
662 or expired air, or the use of radioactive isotopes. Such housing should be
663 used for the minimum time only.

664

665 4.5.3. Enrichment

666 All animals should be provided with sufficient space of adequate complexity to
667 allow expression of a wide range of normal behaviour. They should be given a
668 degree of control and choice over their environment to reduce stress-induced
669 behaviour. This may be achieved by using appropriate enrichment techniques,
670 which extend the range of activities available to the animal and increase their
671 coping activities. In addition to social activities, enrichment can be achieved
672 by allowing and promoting physical exercise, foraging, manipulative and
673 cognitive activities, as appropriate to the species. It is advisable to allow the
674 animals to exercise at every possible opportunity. Environmental enrichment
675 in animal enclosures should be appropriate to the species-specific and
676 individual needs of the animals concerned. Forms of enrichment should be
677 adaptable so that innovation based on new understanding may be
678 incorporated. The enrichment programme should be regularly reviewed and

679 updated. The staff responsible for animal care should understand the natural
680 behaviour and biology of the species, so that they can make sensible and
681 informed choices on enrichment. They should be aware that all enrichment
682 initiatives are not necessarily to the advantage of the animal and therefore
683 should monitor their effects and adjust the programme as required.

684

685 4.5.4. Animal enclosures

686 Animal enclosures should not be made out of materials detrimental to the
687 health of the animals. Their design and construction should be such that no
688 injury to the animals is caused. Unless they are disposable, they should be
689 made from materials that will withstand cleaning and decontamination
690 techniques. In particular, attention should be given to the design of animal
691 enclosure floors, which should be appropriate to the species and age of the
692 animals and be designed to facilitate the removal of excreta.

693

694 4.6 Feeding

695 4.6.1. The form, content and presentation of the diet should meet the
696 nutritional and behavioural needs of the animal. For some species, the
697 opportunity for foraging should be given. Roughage is an important
698 component of the diet for some species of animals, as well as a means of
699 satisfying some behavioural needs.

700

701 4.6.2. The animals' diet should be palatable and non-contaminated. In the
702 selection of raw materials, production, preparation and presentation of food,
703 precautions should be taken to minimise chemical, physical and
704 microbiological contamination. The food should be packed in bags that
705 provide clear information on the identity of the product and its date of
706 production. An expiry date should be clearly defined by the manufacturer and
707 adhered to.

708

709 Packing, transport and storage should also be such as to avoid contamination,
710 deterioration or destruction. Storerooms should be cool, dark, dry, provided
711 with ventilation and vermin and insect-proof. Perishable food like greens,

712 vegetables, fruit, meat, fish should be stored in cold rooms, refrigerators or
713 freezers.

714

715 All feed hoppers, troughs or other utensils used for feeding should be
716 regularly cleaned and, if necessary, sterilised. If moist food is used, or if the
717 food is easily contaminated with for example water or urine, daily cleaning is
718 necessary.

719

720 4.6.3. Each animal should be able to access the food, with sufficient feeding
721 space provided to limit competition. In some circumstances, food intake may
722 need to be controlled to avoid obesity.

723

724 Where “with-holding of food” is necessary for experimental or safety reasons,
725 such as prior to anaesthesia, care should be taken that “deprived” animals are
726 not stressed by exclusion from food whilst other animals around them are fed.
727 This may necessitate removal to another cage or room.

728

729 Diets for disease-free animals should be treated to destroy vegetative
730 organisms, parasites, pests and spores. Autoclaving or irradiation may be
731 required. Where special diets containing chemicals for testing have been
732 used, the nutritional consequences of the preparation and storage of the diet
733 should be considered.

734

735 4.7 Watering

736 4.7.1. Uncontaminated drinking water should always be available to all
737 animals. Water is, however, a vehicle for micro-organisms, and the supply
738 should therefore be so arranged that the contamination risk is minimised.

739

740 4.7.2. Watering systems should be designed and used to provide an adequate
741 quantity of water of suitable quality. Sufficient watering points (drinkers)
742 should be available. When automatic watering systems are used, their
743 functioning should be regularly checked at least daily, serviced and flushed to
744 avoid accidents, such as blockages or leakages and the spread of infections.
745 If solid-bottomed cages are used, care should be taken to minimise the risk of

746 flooding. Emergency supplies should be available in case pipes freeze or
747 supplies otherwise fail.

748

749 4.7.3. The tolerance of fish, amphibians and reptiles, to acidity, chlorine and
750 many other chemicals differs widely from species to species. Therefore
751 provision should be made to adapt the water supply for aquaria and tanks to
752 the needs and tolerance limits of the individual species.

753

754 4.8 Flooring, substrate, litter, bedding and nesting material

755 4.8.1. Appropriate bedding materials or sleeping structures should always be
756 provided for animals, as well as appropriate nesting materials or structures for
757 breeding animals.

758

759 Various materials are commonly placed into the animal enclosure to serve the
760 following functions: to absorb urine and faeces, and thus facilitate cleaning; to
761 allow the animal to perform certain species-specific behaviour, such as
762 foraging, digging or burrowing; to provide a comfortable, yielding surface or
763 secure area for sleeping; to allow the animal to build a nest for breeding
764 purposes. Certain materials may not serve all of these needs, and it is
765 therefore important to provide sufficient and appropriate materials. Any such
766 materials should be dry, absorbent, dust-free, non-toxic and free from
767 infectious agents or vermin and other forms of contamination. Materials
768 derived from wood that has been chemically treated or containing toxic natural
769 substances as well as products which cannot be clearly defined and
770 standardised should be avoided.

771

772 4.8.2. Within the animal enclosure, the flooring should provide a solid,
773 comfortable resting area for all animals. All sleeping areas should be kept
774 clean and dry.

775

776 4.9 Cleaning

777 4.9.1. The standard of a facility, including good husbandry, depends very
778 much on good hygiene. A very high standard of cleanliness and order should
779 also be maintained in holding, washing and storage rooms. Adequate routines

780 for the cleaning, washing, decontamination and, when necessary, sterilisation
781 of enclosures and accessories, bottles and other equipment should be
782 established and carried out.

783

784 4.9.2. These cleaning and disinfection regimes should not be detrimental to
785 animal health or welfare. Clear operating procedures, including a recording
786 system, should be in place for the changing of bedding in animal enclosures.

787

788 4.9.3. There should be regular cleaning and, where appropriate, renewal of
789 the materials forming the ground surface in animal enclosures to avoid them
790 becoming a source of infection and parasite infestation.

791

792 4.9.4. Odour-marking is an important form of behaviour in some species, and
793 cleaning disturbances will cause some degree of social disruption. Cleaning
794 regimes should have regard for these behavioural needs. Decisions on
795 frequency of cleaning should be based on the type of animal enclosure, the
796 type of animal, the stocking density, and the ability of the ventilation system to
797 maintain suitable air quality.

798

799 4.10 Handling

800 The quality of care animals are given may influence not only breeding
801 success, growth rate and welfare, but also the quality and outcome of
802 experimental procedures. Accustoming animals to competent and confident
803 handling during routine husbandry and procedures reduces stress both to
804 animals and personnel. For some species, for example dogs and non-human
805 primates, a training programme to encourage co-operation during procedures
806 can be beneficial to the animals, the animal care staff and the scientific
807 programme. For certain species, social contact with humans should be a
808 priority.

809

810 However, in some cases, handling should be avoided. This may be
811 particularly the case with wild animals, and is one reason why wild animals
812 can be less suitable as experimental subjects. Staff caring for animals are
813 expected, at all times, to have a caring and respectful attitude towards the

814 animals in their care, and to be proficient in the handling and restraint of the
815 animals. Where appropriate, staff time should be set aside for talking to,
816 handling, training and grooming animals.

817

818 4.11 Humane Killing

819 4.11.1. All humane methods of killing animals require expertise, which can
820 only be attained by appropriate training. Animals should be killed using a
821 method as set out *[Document in preparation]*

822

823

824 4.11.2. A deeply unconscious animal can be exsanguinated, but drugs which
825 paralyse muscles before unconsciousness occurs, drugs with curariform
826 effects and electrocution without passage of current through the brain, should
827 not be used without prior anaesthesia.

828

829 Disposal should not be allowed until death has been confirmed.

830

831 Wherever practicable, animals to be killed should be removed from the
832 immediate presence of others and handled carefully to ensure that they are
833 not frightened or antagonised. With methods that are not instantaneous,
834 unconsciousness should be induced as quickly as possible with minimum
835 stress and should be fully maintained until death. Death must be confirmed by
836 physical checks or ensured by exsanguinations, severance of the major blood
837 vessels or ventricles of the heart, before disposal of the body. Personnel
838 allowed to kill animals must be suitably trained.

839

840 4.12 Records

841 Records of source, use, retrospective severity of procedures and final
842 disposal of all animals bred, kept for breeding, or for subsequent supply for
843 use in scientific procedures should be used not only for statistical purposes
844 but, in conjunction with health and breeding records, as indicators of animal
845 welfare and for husbandry and planning purposes.

846

847

848 4.13 Identification

849 In some instances, it is necessary for animals to be individually identified, for
850 example, when being used for breeding purposes or scientific procedures, to
851 enable accurate records to be kept. The method chosen should be reliable
852 and cause the minimum pain and discomfort to the animal when applied and
853 in the long-term. Sedatives or local anaesthetics and analgesics should be
854 used if necessary. Staff should be trained in carrying out the identification and
855 marking techniques.

856

DRAFT