FAWC Consultation on Mutilations and Environmental Enrichment for Growing Pigs

Submission by Advocates for Animals

Advocates for Animals welcomes the opportunity to submit comments on the welfare implications of mutilations for growing pigs and the effect of environmental enrichment.

For each mutilation we outline:

- The evidence for pain and distress caused by the procedure and possibilities to reduce this;
- The existence of any alternatives that could replace the procedure;
- A brief description of why the practice is considered necessary;
- The role of environmental enrichment and other management and husbandry practices in eliminating the perceived need for the mutilation;
- The current situation in the UK in terms of the extent of the practice, the legislative framework and housing and management conditions.

Tail docking

Research clearly indicates that tail docking causes pain and distress.

Behavioural responses of piglets to tail docking indicate that the procedure causes pain and distress. These responses include vocalisation, tail wagging (flicking the tail from side to side or up and down) and tail jamming (clamping of the tail stump between the hind limbs) (Noonan *et al*, 1994; Sutherland *et al*, 2008). The Scientific Panel on Animal Health and Welfare of the European Food Safety Authority concludes that tail docking causes acute pain and possibly also chronic pain due to neuroma formation (AHAW, 2007a).

Anaesthesia and prolonged analgesia must be administered if pigs are tail docked at 7 days of age or later. The Mutilations (Permitted Procedures) (England) Regulations 2007 state (Statutory Instrument 2007 No.1100):

"An anaesthetic and additional prolonged analgesia must be administered where the animal is aged 7 days or over."

Tail docking is not necessary if pigs are kept in appropriate environmental conditions (see below) and we therefore believe that the procedure should not be permitted. However, until such time as tail docking is prohibited, the pain and distress caused could be reduced by the use of anaesthesia and prolonged analgesia. As there is clear evidence that tail docking causes pain in piglets below 7 days of age, in our view it is unacceptable for the procedure to be performed without pain relief on piglets at any age.

Tail docking is performed in an attempt to address abnormal behaviour caused by inadequate environmental conditions in intensive systems.

Tail docking is performed to reduce the risk of tail biting. Tail biting arises because pigs redirect their exploratory behaviour towards other pigs (and pen structures) in the absence of appropriate enrichment. The occurrence of tail biting is therefore an indication that the environment is inadequate to meet the behavioural needs of the pigs. The AHAW Panel states (AHAW, 2007b):

"It is well known that in the absence of appropriate substrate to explore, pigs redirect their exploratory behaviour towards pen structures and the bodies of pen mates... [Tail biting is] thus a sign that the needs of pigs to show certain behaviours are not met."

The practice of tail docking has been widely adopted in an attempt to compensate for the negative effects of keeping pigs in inadequate environmental conditions. The AHAW Panel states (AHAW, 2007c).

"The practice of tail docking on farms has increased as a result of increased tail biting problems following intensification of pig production and the adoption/generalization of slatted flooring."

There is clear evidence that tail docking is not necessary if pigs are provided with sufficient quantities of appropriate environmental enrichment and adequate space.

The results of numerous studies indicate that tail biting can be largely avoided by keeping pigs in enriched environments with adequate space (e.g. Guy *et al,* 2002; Beattie *et al*, 2000). The EU Scientific Veterinary Committee concludes (SVC, 1997):

"When pigs with intact tails are fed an adequate diet, provided with sufficient water, provided with straw or other manipulable materials, or earth for rooting, and kept at a stocking density which is not too high, tail-biting is seldom serious... Tail-biting is an indication of an inadequate environment and indicates that welfare is poor in the animal carrying out the biting."

The type of enrichment material provided is important. Only complex natural materials are capable of meeting the behavioural needs of pigs and preventing tail biting.

Studnitz *et al* (2007) conclude that exploratory behaviour of pigs is best stimulated by materials that are complex, changeable, destructible, manipulable and contain sparsely distributed edible parts.

There is clear evidence that objects such as chains, ropes and rubber or plastic 'toys' are not able to meet the behavioural needs of pigs for foraging and exploration and are ineffective in preventing tail biting. Scott *et al* (2007) found that pigs spent less than 2% of time manipulating a hanging 'toy' (a 'helicopter'-like object with chewable arms) in either straw-bedded or fully-slatted pens, compared with 21% of time engaged in manipulation of straw in the straw-bedded system. The authors concluded that the low level of occupation with the toy was not related to spatial restriction of access because the level of toy manipulation was not affected by the number of toys provided (one vs. four).

Van de Weerd *et al* (2005) found that straw bedding prevented the development of tail biting but that the addition of a simple enrichment device (a 'bite rite tail chew') could not compensate for the deficiencies in a barren environment. Similarly, Zonderland *et al* (2008) found that provision of a chain or rubber hose was ineffective in preventing tail biting. The AHAW Panel concludes (AHAW, 2007a):

"[T]here is little evidence that provision of toys such as chains, chewing sticks and balls can reduce the risk of tail biting."

On the basis of expert opinion, Bracke (2006) concludes that the main material properties required for enrichment of pig pens are 'ability to provide occupation, exploration and maintain interest without habituation', 'rootable', 'manipulable' and 'chewable'. Other

important properties that were mentioned by a significant number of experts include 'variable/unpredictable', 'destructible', 'thick layer', 'sufficient/plenty', 'changeable', 'at least partially digestible/nutritional' and 'novelty/frequently refreshed'. A majority (84%) of the experts considered that provision of straw could be sufficient (some experts answered with qualifications, e.g. provided a sufficient quantity is provided), whilst only 3% of experts considered that providing a chain could be sufficient. The AHAW Panel recommends (AHAW, 2007d):

"Since indestructible objects such as chains or tyres are not sufficient to provide for the manipulatory needs of pigs, they may be used as a supplement to destructible and rooting materials but not as a substitute for them."

The quantity of enrichment provided is important. Pigs should be kept in bedded systems.

Day *et al* (2002) investigated the behaviour of pigs with different levels of straw provision (none, minimal, substantial and deep). The authors reported that the quantity of straw-directed behaviour was proportional to the amount of straw provided and that an increasing amount of straw resulted in an increase in rooting and ploughing behaviour and a concomitant decrease in harmful behaviours including aggression, biting other pigs, ear chewing, belly nosing and tail biting.

Van de Weerd *et al* (2006) found that enrichment use was significantly higher in a straw-bedded system compared with provision of straw from a rack or various enrichment objects (flavoured feed dispenser, flavoured liquid dispenser or 'bite rite tail chew'). Consequently, one or more pigs had to be removed as a result of tail biting in all treatments except the straw-bedded system.

Similarly, Scott *et al* (2006) found that the proportion of time pigs spent interacting with sugar beet pulp shreds in a hopper or a hanging 'bite rite' enrichment device in a fully-slatted system was very low compared with the time spent interacting with straw in a straw-bedded system.

Solid flooring is necessary to allow the provision of adequate enrichment.

Scott *et al* (2006) conclude that at present no form of enrichment suitable for use in slatted systems provides the same level of occupation as seen with straw. The AHAW Panel states (AHAW, 2007b):

"[O]nly lower quality enrichment materials are provided [in fully-slatted systems] like hanging toys, indicating a risk for pig welfare as the need for exploration will not be met in these systems. Solid floors facilitate provision of adequate enrichment materials."

The AHAW Panel recommends provision of straw, preferably as bedding, to minimise the risk of tail biting. The AHAW Panel concludes (AHAW, 2007a):

"Maintaining pigs in systems on floors without straw bedding is a major hazard for tail biting. In unbedded systems, a higher proportion of slatted flooring is an additional hazard."

Many farms in the UK currently do not provide appropriate enrichment and flooring.

Since 2003, provision of enrichment material for pigs is a legal requirement in the EU under Commission Directive 2001/93/EC. In England, the relevant provisions are

contained within The Welfare of Farmed Animals (England) Regulations 2007 (Statutory Instrument 2007 No. 2078), which states:

"To enable proper investigation and manipulation activities, all pigs must have permanent access to a sufficient quantity of material such as straw, hay, wood, sawdust, mushroom compost, peat or a mixture of such which does not adversely affect the health of the animals."

It is clear that many farms are not complying with this requirement. Fully-slatted systems are used on 26% of farms for growing pigs and on 28% of farms for finishing pigs in the UK (Table 1). It is simply not possible to provide adequate quantities of appropriate enrichment materials (i.e. of the type specified in the legislation) in fully-slatted systems.

A further 36% of farms for growing pigs and 32% of farms for finishing pigs use partly-slatted systems or unbedded solid floor systems (Table 1). Provision of environmental enrichment may be inadequate to avoid tail biting in these systems.

Bedded systems, which provide adequate quantities of appropriate environmental enrichment, are used on 38% of farms for growing pigs and 40% of farms for finishing pigs.

Table 1: Proportion of farms using various systems for growing and finishing pigs in the UK. Source: BPEX (2008).

System	Growing pigs	Finishing pigs
Solid flooring with bedding	38%	40%
Solid flooring without bedding	12%	2%
Partly-slatted	24%	30%
Fully-slatted	26%	28%

In our view, UK legislation must be strengthened to prohibit the use of fully-slatted floors and to require bedding for all pigs. A number of other European countries have already introduced such legislation. The use of fully-slatted floors is prohibited in Sweden and Norway and is being phased out by legislation in Denmark (by 2015) and Switzerland (by 2018). Bedding is required for all pigs in Sweden.

Legal minimum space allowances in the UK are much too low and contribute to an increased risk of tail biting.

Inadequate space allowance, especially when combined with a lack of appropriate enrichment, contributes to an increased risk of tail biting. The AHAW Panel states (AHAW, 2007a):

"Stocking density, associated with lack of enrichment and fully slatted floors, is a significant risk for tail biting."

The relationship between body size and physical space occupied is not linear but can be described by the equation $A = kW^{2/3}$ where A is the floor area in m^2, W is the body weight in kg, and k is a numeric constant which varies according to the body posture of the animal (Petherick, 1983). The AHAW Panel concludes (AHAW, 2005):

"For pigs up to 110kg, aggression, skin lesions, tail-biting and responses to adrenal challenge tests, all increased with decreasing space allowance in the range equivalent to k = 0.024 to 0.060, in particular up to 0.048".

Space allowances permitted for pigs up to 110kg in the UK are equivalent to a k value of between 0.027 and 0.032 (Table 2). Clearly these space allowances are inadequate and this is likely to contribute to an increased risk of tail biting.

Table 2. Legal minimum unobstructed floor space allowance in the UK and equivalent k value (see text for explanation). Source: Statutory Instrument 2007 No. 2078.

Average live weight of pigs in the pen (kg)	Legal minimum space (m^2/pig)	k value at legal minimum space allowance
≤10	0.15	0.032
>10 to 20	0.20	0.027
>20 to 30	0.30	0.031
>30 to 50	0.40	0.029
>50 to 85	0.55	0.028
>85 to 110	0.65	0.028
>110	1.00	<0.043

Tail docking is routinely performed on a majority of pig farms in the UK despite a ban on routine tail docking

Since 2003, routine tail docking of pigs is prohibited in the EU under Commission Directive 2001/93/EC, which also requires that measures are taken to improve inadequate environmental conditions or management systems before the procedure may be performed. In England, the relevant provisions are contained within The Mutilations (Permitted Procedures) (England) Regulations 2007, which state (Statutory Instrument 2007 No.1100):

"The procedure may only be carried out where measures to improve environmental conditions or management systems have first been taken to prevent tail-biting, but there is still evidence to show that injury to pigs' tails by biting has occurred."

Despite the ban on routine tail docking, the British Pig Executive reports that the tails of all pigs are docked on 63% of UK pig farms (BPEX, 2008). It is clear that tail docking continues to be performed routinely by a majority of UK pig producers. It is also clear that steps to improve the environment by providing adequate space and appropriate enrichment are often not taken.

In our view, it is completely unacceptable for producers to routinely dock piglets' tails whilst continuing to use barren systems with no more than a token effort to provide unsuitable enrichment, such as chains, ropes and rubber or plastic 'toys', which are not natural materials of the type listed in the legislation and have been shown to be ineffective in preventing tail biting.

A number of other European countries have prohibited tail docking, including Sweden, Finland, Norway and Switzerland.

Advocates for Animals believes that tail docking should be prohibited and tail biting should instead be addressed by keeping pigs in bedded systems with adequate space.

Teeth clipping

Research clearly indicates that teeth clipping causes pain and distress.

Behavioural responses of piglets to teeth clipping indicate that the procedure causes acute pain and distress. These responses include vocalisation and teeth champing (frequent opening and closing of the mouth) (Noonan *et al,* 1994; Rand *et al,* 2002).

Teeth clipping also results in chronic pain. Hay *et al* (2004) repored that tooth clipping led to pulp cavity opening, fracture, haemorrhage, infiltration or abscess, and osteodentine formation. The authors concluded that the observed histological observations were likely to cause severe pain and also noted that opening of the pulp cavity creates an opening for bacterial entry, which may lead to further health disorders.

Similarly, Prunier *et al* (2002) concluded that pigs were likely to experience chronic pain from tooth abnormalities that occur following clipping and that this pain was likely to last until the milk teeth were lost and replaced with permanent teeth at between 50 and 120 days. This represents a large proportion of the life of a pig reared for meat.

Teeth grinding generally causes less damage to the teeth than clipping but is still associated with significant pain.

Teeth grinding may be used to remove the sharp tip of the teeth as an alternative to teeth clipping. The Pig Welfare Code states (Defra, 2003):

"Teeth grinders are recommended as there is a reduced risk of shattering the teeth."

A number of European countries have prohibited teeth clipping. Teeth reduction may only be carried out by grinding in Denmark, Germany, Norway and Switzerland.

However, teeth grinding still constitutes a significant mutilation. Hay *et al* (2004) reported that all of the histological alterations associated with pain that occur following teeth clipping also occur following grinding, although most of the effects appeared sooner and were of greater magnitude after clipping than after grinding. The authors concluded:

"Because most of the observed alterations are known to cause severe pain in humans, it is likely that tooth resection – even when achieved through grinding – induces severe pain in piglets. Thus the rationale of this practice should be re-evaluated."

Prunier *et al* (2002) also reported that grinding, as well as clipping, resulted in many tooth abnormalities.

Teeth clipping is performed in an attempt to reduce injuries to sows' teats and to other piglets. However, teeth clipping often makes little difference to the level of injuries.

The AHAW Panel stated (AHAW, 2007e):

"Competition of piglets at the teats may result in udder lesions. However, the incidence of such lesions appears to be similar if the piglets' teeth are ground or left intact"

Gallois *et al* (2005) concluded that overall, teeth clipping or grinding had very little effect on sow mammary injuries and litter performance.

Teeth clipping is not necessary if steps are taken to reduce competition and fighting between piglets through provision of adequate space and enrichment in the farrowing environment and avoiding unsustainably large litter sizes.

A piglet's sharp canine and incisor teeth are designed, from birth, to enable them to compete for the best teats (Fraser and Thompson, 1991). Competition for access to teats is increased in larger litters (AHAW, 2007e). Limiting litter size to that which can be fully sustained by the sow is therefore important to minimise competition between piglets and hence the risk of injuries. The AHAW Panel recommended (AHAW, 2007f):

"Genetic selection for litter size should not aim at exceeding having, on average, 12 piglets born alive in a litter."

Competition at the udder is also affected by sow health and milk production (AHAW, 2007e). Providing enrichment and adequate space in the farrowing environment has a beneficial effect on sow health and welfare and consequently on milk production. Algers *et al* (1990) found that sows provided with straw performed more rapid suckling grunts during nursing, which are associated with oxytocin release and milk let down. Enrichment is not commonly provided in farrowing crates (AHAW, 2007e). Milk production is likely to be increased in farrowing systems that allow the sow freedom of movement, both as a general consequence of improved welfare and comfort leading to higher feed intake (Dunn, 2005) and from a reduction in the incidence of specific conditions affecting lactation. For example, mastitis-metritis-agalactia (MMA) is a common lactation failure syndrome in sows. MMA is rare in pasture-based systems and the incidence of MMA in indoor systems is significantly higher in sows confined in farrowing crates compared with loose-farrowing systems (AHAW, 2007e).

Restriction of movement in farrowing crates also directly contributes to an increased risk of teat injuries. Sows in crates are unable to move away from their piglets and the restricted space can impair getting up and lying down behaviour (AHAW, 2007e). It is therefore likely to be more difficult for the sow to change position quickly if her teats are bitten. The combination of slatted flooring and restriction of getting up and lying down behaviour in crates can also lead to udder injuries caused by abrasions from the sow's hind limbs (Verhovsek *et al*, 2007).

Provision of enrichment and adequate space in the farrowing environment also directly influences piglet behaviour. Lewis *et al* (2006) found that enrichment of the farrowing environment with shredded paper tended to reduce both teat lesions and piglet facial lesions. Piglets with paper spent less time inactive or manipulating pen fittings and more time interacting with the enrichment. Hvozdik *et al* (2002) found that piglets housed in small pens ($3.6m^2$ or $6.8m^2$, sow could not move freely) showed abnormal development of agonistic behaviour compared with piglets in larger pens ($29m^2$, free movement of sow). Piglets in the small pens showed increased levels of aggression, including biting of other piglets.

A number of studies indicate that teeth clipping is not necessary in outdoor farrowing systems (Brown *et al,* 1996; Delbor *at al,* 2000).

Given the increased risk of injuries in farrowing crates due to the negative effects of inadequate space and lack of enrichment on the welfare of both sows and piglets, in our view, confinement of sows in crates during farrowing and lactation should be prohibited.

Teeth clipping is routinely performed on a majority of pig farms in the UK despite a ban on routine teeth reduction

Since 2003, routine teeth reduction of pigs is prohibited in the EU under Commission Directive 2001/93/EC, which also requires that measures must be taken to improve inadequate environmental conditions or management systems before the procedure may be performed. In England, the relevant provisions are contained within The Mutilations (Permitted Procedures) (England) Regulations 2007, which state (Statutory Instrument 2007 No. 1100):

"The procedure may only be carried out where measures to improve environmental conditions or management systems have first been taken to prevent tail-biting and other vices, but there is still evidence to show that injury to sows' teats or to other pigs' ears or tails by biting has occurred."

Despite the ban on routine teeth reduction, BPEX report that the teeth of all piglets are clipped on 57% of pig farms in the UK (BPEX, 2008).

It is clear that teeth clipping continues to be performed routinely by a majority of UK pig producers. It is also clear that steps to improve the environment by providing adequate space and enrichment are often not taken.

In our view it is completely unacceptable for producers to routinely clip piglets' teeth whilst continuing to use farrowing systems which severely restrict the movement of the sow and failing to provide adequate enrichment either in the farrowing environment or subsequently in the rearing environment.

Advocates for Animals believes that teeth reduction should be prohibited and injuries to sows' teats and other pigs should instead be addressed by providing adequate space and enrichment in both the farrowing and rearing environment and by limiting litter size to that which can be fully sustained by the sow.

Castration

Research clearly indicates that castration causes pain and distress.

Most piglets vocalise when restrained but piglets who are castrated emit more high frequency calls and these calls are of higher intensity and of longer duration than in sham-castrated piglets (Weary *et al*, 1998; Taylor and Weary, 2000; Marx *et al*, 2003; Puppe *et al*, 2005). Puppe *et al* (2005) conclude that the observed changes of acoustical parameters during surgical castration can be interpreted as vocal indicators for experienced pain and suffering.

Piglets show behavioural changes indicative of pain following castration, including trembling, spasms, stiffness, prostration, huddling up, avoidance of certain postures, tail wagging and scratching the rump, and some of these behaviours persist for several days following the procedure (Hay *et al*, 2003; Moya *et al*, 2008).

Castration also results in significant increases in adrenocorticotropin hormone (ACTH), lactate and cortisol, indicative of stress and tissue damage (Prunier *et al*, 2005).

Numerous studies indicate that the pain and stress caused by castration can be reduced by the use of local anaesthetic (Horn *et al,* 1999; Marx *et al,* 2003) or general anaesthesia (Walker *et al,* 2004; Hodgson, 2006; Hodgson, 2007; Schultz *et al*, 2007; Axiak *et al*, 2007). General anaesthesia using carbon dioxide should not be permitted because it causes violent struggling, vocalisation and a greater stress response (Kohler *et al,* 1998). The AHAW Panel recommends (AHAW, 2004a):

"Local anaesthesia should be used for castration of piglets. Analgesia should be used to prevent pain in piglets which are castrated."

Anaesthesia and prolonged analgesia must be administered if pigs are castrated at 7 days of age or later. The Mutilations (Permitted Procedures) (England) Regulations 2007 state (Statutory Instrument 2007 No.1100):

"An anaesthetic and additional prolonged analgesia must be administered where the animal is aged 7 days or over."

Castration is not necessary if pigs are reared to lower slaughter weights, as is generally the case in the UK (see below), and we therefore believe that the procedure should not be permitted. However, until such time as castration is prohibited, the pain and distress caused could be reduced by the use of anaesthesia and prolonged analgesia. As there is clear evidence that castration causes severe pain in piglets below 7 days of age, in our view, it is unacceptable for the procedure to be performed without pain relief on piglets at any age. Castration of piglets without anaesthesia at any age is prohibited in Norway and will be prohibited in Switzerland from 2010.

Castration is not necessary if pigs are reared to lower slaughter weights, as is usually the case in the UK.

Castration of male piglets is performed in order to reduce boar taint, an odour and/or taste that affects the meat from some entire male pigs and which some consumers find unpleasant. However, boar taint is rarely a problem if entire male pigs are slaughtered earlier before they reach sexual maturity. Rearing entire males has advantages in terms of improved growth rate and feed conversion, increased leanness of the carcass and a reduction in waste (AHAW, 2004b).

In the UK, pigs are generally reared to lower slaughter weights compared with many European countries and castration is usually not considered necessary. Only around 2% of male piglets are castrated in the UK (PIGCAS, 2008).

If it is desired to rear some pigs to higher slaughter weights in the UK, other methods of reducing boar taint should be used instead of surgical castration.

Taylor and Weary (2000) conclude that rather than focusing on pain control, welfare problems associated with castration may be better reduced by using non-surgical approaches (e.g. immunocastration) or by eliminating the need for castration by rearing entire males to lighter slaughter weights or selecting boars for slightly later sexual maturity.

Immunocastration is effective in reducing boar taint, whilst partially retaining the production advantages of entire male pigs (Zeng *et al*, 2002; Cronin *et al*, 2003; Jaros *et al*, 2005; Zamaratskaia *et al*, 2008). Sexual behaviour and aggression are also reduced by immunocastration (Cronin *et al*, 2003). Zamaratskaia *et al* (2008) conclude that immunocastration offers advantages over surgical castration through improved animal welfare and better carcass quality.

Other methods of avoiding unacceptable levels of taint could also be developed. A number of compounds are thought to be involved in the development of boar taint, primarily androstenone and skatole. Boar taint can be reduced by various feeding and management practices and by genetic selection. Skatole levels can be reduced by modulating nutrition, feeding, rearing and management (including hygienic) conditions, whereas genetic selection is more efficient at lowering androstenone levels, and both compounds can be reduced by measures that delay or suppress sexual development (AHAW, 2004b). There is evidence that feeding high-fibre diets and the use of certain feed ingredients can reduce boar taint (*Ibid*). Provision of wallows or showers is also important to avoid pigs wallowing in excreta. Rearing entire males in sibling groups from birth to slaughter reduces both aggression (Fredriksen *et al*, 2008) and boar taint (AHAW, 2004a).

Electronic methods of detecting boar taint in carcasses are being developed to facilitate easy and rapid identification of tainted carcasses. Further development of pork processing techniques to mask taint would also be beneficial. Consideration could also be given to slaughtering males earlier and rearing only females to higher slaughter weights.

Advocates for Animals believes that surgical castration should be prohibited and pigs should continue to be reared to lower slaughter weights to avoid unacceptable levels of taint, as is currently the case for the vast majority of pigs in the UK. Pigs should only be reared to higher slaughter weights if this can be achieved without resorting to surgical castration.

Identification techniques

The following identification procedures are currently permitted for pigs in the UK (Statutory Instrument 2007 No. 1100):

- Ear clipping
- Ear notching
- Ear tagging
- Micro-chipping
- Tattooing
- Other methods of identification involving a mutilation required by law.

Insertion of an ear tag causes tissue damage. Tattooing creates multiple smaller wounds. Ear clipping and notching result in more substantial tissue damage. The Scientific Veterinary Committee concludes (SVC, 1997):

"If tissue is removed from the ear of a pig, the pain which results is likely to be proportional to the area of the cut surface. If major structural parts of the pinna of the ear are damaged, the pain may be greater. Cuts on the ear may not heal properly, thus resulting in further pain. Well designed ear tags cause a small area of damage to the ear. Ear notches cause a larger area of damage and would appear to be entirely unjustifiable."

Behavioural responses of piglets to ear notching indicate that the procedure causes pain and distress. These responses include vocalisation and head shaking (Noonan *et al,* 1994; Rand *et al,* 2002).

Ear notching and tattooing are currently used for identification on a small minority of pig farms in the UK. Ear notching is used for some pigs on 15% of farms and ear tattooing is used for all pigs on 2% of farms and for some pigs on 7% of farms (BPEX, 2008).

Puncture wounds created by ear tagging can become infected (Elst-Wahle *et al*, 1997) and tags can cause trauma to the ears due to rubbing on pen structures and/or chewing by other pigs (Sherwin, 1990).

Micro-chipping allows for reliable identification of pigs with minimal pain and distress. The SVC (1997) concludes:

"The insertion of electronic identifiers should be possible without much tissue damage".

Babot *et al* (2006) conclude that injectable transponders are efficiently retained under commercial conditions and are preferable to ear tags because they are easier and faster to read.

Given the welfare and other advantages of micro-chipping, Advocates for Animals believes that other methods of identification which inflict greater skin damage should be prohibited.

Summary of conclusions and recommendations:

- Tail docking should be prohibited and tail biting should instead be addressed by keeping pigs in bedded systems with adequate space.
- Teeth reduction should be prohibited and injuries to sows' teats and other pigs should instead be addressed by providing adequate space and enrichment in both the farrowing and rearing environment and by limiting litter size to that which can be fully sustained by the sow.
- Surgical castration should be prohibited and pigs should continue to be reared to lower slaughter weights to avoid unacceptable levels of taint, as is currently the case for the vast majority of pigs in the UK. Pigs should only be reared to higher slaughter weights if this can be achieved without resorting to surgical castration.
- Given the welfare and other advantages of micro-chipping, other methods of identification which inflict greater skin damage should be prohibited.

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