

## REVIEW ARTICLE

# Using Animals in Biomedical Research: Legal and Ethical Imperatives

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### ABSTRACT

*The seemingly contradictory goal of a substantial component of animal-based biomedical research is to alleviate severe human injuries and illnesses without inflicting severe pain, suffering, or discomfort on the animals by conforming to animal welfare regulations applicable in their respective jurisdictions. These regulations also call for the adoption of alternatives such as reduction, replacement, refinement, and rehabilitation, as well as the development of guiding principles for conducting animal subject research and assessing its ethical consequences. The majority of countries' current public policy requires the treatment or prevention of pain experienced by experimental animals wherever possible. To assess whether research may permissibly cause pain and suffering in laboratory animals and how that discomfort may be reduced or regulated, clear ethical reasoning and as much knowledge of the legal and regulatory context as possible are essential. The current research work focuses mostly on systems utilized in the United Kingdom and India; nevertheless, the broad themes highlighted here are applicable to any country's scientific research on animals. Thus, an attempt has been made to highlight philosophical thinking on the moral status of animals and the need for a biocentric legal system to provide legal and ethical protection to all species.*

**Keywords:** Biomedical research, Laboratory animals, Animal welfare laws, Ethical considerations, Biocentrism

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## INTRODUCTION

One of the primary concerns in animal research is ensuring the welfare of laboratory animals. Modern views on animal welfare emphasize the role of animal sentience, i.e., the capacity to experience subjective states such as pleasure or suffering, as a central component of welfare. The increasing official recognition of animal sentience has had large effects on laboratory animal research. The Cambridge Declaration on Consciousness marked an official scientific recognition of the presence of sentience in mammals, birds, and cephalopods. Animal sentience has furthermore been recognized in legislation in the European Union, UK [1], New Zealand [2], parts of Australia [3], and India [4] with discussions underway in other parts of the world to follow suit [5].

Animal ethics applies in the evaluation of what should or should not be done when animals are proposed for use, or are used, for scientific purposes. Scientific purposes include all activities conducted within schools with the aim of acquiring, developing or demonstrating knowledge or techniques in all areas of science, including teaching, field trials, agricultural and environmental studies and research [6].

Animal ethics examines both human-animal relationships, and how humans should treat animals. Questions in animal ethics can be hotly contested as there is no general agreement about how we ought to engage with nonhuman animals. Each context in which animals are used raises contentious ethical issues and difficult questions. For instance, with respect to companion animals – is it right to keep animals as pets, and what obligations do owners have to their animals? In the case of production animals, we can ask – how should we house animals that we will eat, and is it even appropriate to eat animals? For animals in the wild – what lengths should we go to save animals that are injured, and is it okay to hunt wild animals? With respect to animals used in research and for teaching – is it right to kill

animals for teaching, and is it appropriate to use our fellow primates in biomedical research? For animals used for work, sport, recreation, or display – is it okay to kill animals which are unsuitable for the sports they are bred to participate in, and is it permissible to confine animals in zoos? In the case of aquatic animals – is it appropriate to keep large aquatic mammals in captivity, and given our growing knowledge of fish sentience, should we routinely kill and eat these creatures? These are just a sample of the many questions raised by our use of nonhuman animals. As professionals who work in direct contact with animals and who have special knowledge regarding them, veterinarians may be well placed to make informed responses to these questions [7].

### **SHIFTING ATTITUDES: BIOCENTRISM TO ANTHROPOCENTRISM**

Since the natural world operates according to biocentric principles, a biocentric legal system would be in conformity with the law of nature. The moral consideration of both humans and animals that would follow from biocentrism's introduction to the law would lead to legal and political protection for all species. This would mean that animals' worth is no longer based primarily on their utility. Instead, animals would be valued for what they are (intrinsic value). As a result of these animals' precarious position on the moral spectrum, we frequently award them a high moral status while at other times denying them any moral value at all. At this point, it wouldn't be too much of a stretch to claim that anthropocentric laws and policies have taken over the planet, guaranteeing that human needs will always come before animal welfare. Humans, according to the philosophy known as anthropocentrism, are the pinnacle of everything that is. As a result, it argues that humankind has the right to be superior to other species. Poor treatment of animals is a product of anthropocentrism in legal systems, which sets tiers of safeguards based on the values society prescribe [8].

Philosophical thinking on the moral standing of animals, however, is diverse and poses different questions:

- Why animals are not equal to human beings?
- Why animals have direct moral status?
- Why only human beings have rights?
- Why only human beings can act morally?
- Why only human beings are rational, autonomous, and self-conscious?

These questions can be answered with three different categories of explanations, commonly grouped under three theories:

- i. Indirect theories;
- ii. Direct but Unequal theories, and
- iii. Moral Equality theories.

Indirect theories contend that animals lack consciousness, reason, and autonomy and hence should not be accorded the same moral standing as humans. These views may still entail not harming animals, but only because doing so harms a human's morality, ultimately denying moral value to animals. Philosophers like Immanuel Kant and René Descartes as well as theologians like Thomas Aquinas and Peter Carruthers have developed arguments in this vein. René Descartes, the great moral philosopher best known for the words "cogito ergo sum" (I think, therefore I am), held the view that animals lacked any sort of inner life, and were as emotionless and self-aware as a set of mechanical dolls[9].

Direct but unequal theories accord some moral consideration to animals, but deny them a fuller moral status due to their inability to respect another agent's rights or display moral reciprocity within a community of equal agents. Arguments in this category consider the sentience of the animal as sufficient reason not to cause direct harm to animals. However, where the interests of animals and human conflict, the special properties of being human such as rationality, autonomy, and self-consciousness accord higher consideration to the interests of human beings.

Moral equality theories extend equal consideration and moral status to animals by refuting the supposed moral relevance of the aforementioned special properties of human beings. Arguing by analogy, moral equality theories often extend the concept of rights to animals on the grounds that they have similar physiological and mental capacities as infants or disabled human beings. Arguments in this category have been formulated by philosophers such as Peter Singer and Tom Regan [10].

The argument of equal consideration and moral status to animals also finds support in the fact that if we were to rely on the properties such as rationality, autonomy, and self-conscious (largely linked to human beings in first two theories) as the basis of determining moral status, then we would justify a kind of discrimination against certain human beings that is structurally analogous to such practices as racism and sexism.

If there is no arbitrary reason to prioritize the interests of one human animal over another, then there cannot be a justifiable cause to prioritize the interests of one human animal over those of a non-human

animal. Claims that humans are of special moral importance due to their superior intelligence, capacity for symbolic exchange through language, or any of the other myriad reasons given, are all false. Even a mathematical genius has the same basic urge as a person with less intelligence: to escape suffering. Dogs, mice, and fish are not exempt from this rule either. Singer argues that denying this is a moral failing on par with sexism and racism, which he labels speciesism. However, one possible case for using animals instead of humans in scientific studies is the importance of "kinship" and utilitarianism. In contrast to the minimal and transient pain and distress imposed on experimental animals, the positive effects of a successful medical therapy on human beings can be significant and long-lasting. This provides substantial support for a utilitarian justification of animal testing. Peter Singer, who advocates for more laws and increasing attempts to minimize the use of animals, has surprised many by coming to the same conclusion. In other words, the idea of speciesism, probably the most formidable intellectual weapon deployed by anti-animal research protesters, fails to convince even when no references to ideas like kinship are made. It is allowed to use animals in research even if doing so causes them pain or suffering as long as their overall quality of life is improved [11].

### **ETHICAL ANIMAL EXPERIMENTATION – BALANCING RISKS, BURDENS & BENEFITS**

The preceding discussion evinced that the possibility of ethical animal research is not disregarded by any of the main philosophical defenses of animal welfare. Reduced death and suffering from disease and other conditions is a greater moral goal than harming animals in well-regulated research environments. Of course, this is only true if an animal's pain, suffering, and discomfort are kept to a minimum, as is done, for instance, by following animal welfare laws in the UK, India, and the EU. These regulations also mandate the use of the 3Rs, but it is clear that employing a mouse rather than a person for the same goals in an investigation into cancer growth, for instance, will result in less suffering, all other things being equal. So, a utilitarian calculation of maximising future happiness and minimising present suffering is enough for an ethical justification of animal research.

Any discussion of ethical research must be based on the strongest possible adherence to bioethical principles. Scientific research has resulted in significant social advantages and some serious ethical issues, as seen in the National Commission for the Protection of Human Subjects' first deliberations (The Belmont Report, 1979). The Belmont Report provided the guiding criteria for assessing the ethical implications of human subjects research. The ethical standards governing the evaluation of the use of animals in research must also be made clear. The consideration of the ethical issues that arise during animal research, a process that must weigh risks, burdens, and benefits, is to be guided by the principles listed below. It is acknowledged that having an awareness of these principles would not prevent conflicts. These principles are likewise not intended to indicate particular procedures for resolving such conflicts, but rather offer a framework within which challenges might be addressed reasonably [12].

The 3Rs Principles [13] (in animal experimentation) –

The Three Rs principle was launched in the early 1960s by two English biologists, Russel and Burch in their book "The Principle of Humane Experimental Technique". The 3 Rs stand for Replacement, Reduction and Refinement.

*Replacement alternatives* are approaches that prevent or replace the use of animals. This encompasses both absolute replacements (i.e., computer models replacing animals) and relative replacements (i.e., replacing vertebrates with animals with reduced pain perception capacity, such as some invertebrates).

*Reduction alternatives* refers to the strategies that will use fewer animals to collect enough data to answer the research question or maximize the data collected from each animal and thereby potentially limit or prevent the use of additional animals in the future while maintaining high standards for animal welfare.

*Refinement alternatives* relate to changing husbandry or experimental practices to lessen suffering and improve the wellbeing of an animal used in science from the time of birth until its death.

The Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA) [14] in India is mostly credited with introducing the idea of "rehabilitation" as the fourth R, which applies to animals that had previously been used in scientific experiments. Today, the CPCSEA has made it a national policy that professionals who utilize experimental animals have a moral obligation towards these animals after their usage. This responsibility extends beyond the time of the animals' use. The costs of after-care and rehabilitation of animals that have been used in experiments are to be included as part of the research costs. These costs should be scaled up in a positive correlation with the level of sentience possessed by the animals [15].

#### **Other Ethical Principles [16]**

- i. *Justice and Respect*: Respect and justice must always be upheld when using animals in research. Respect acknowledges animals as conscious beings who have lives as both individuals and

members of their groups. Justice demands that animals be treated with respect, not just out of altruism, but also with complete respect based on unalienable and justifiable principles [17]. Justice calls for the fair and equitable treatment of animals. Fairness requires treating each research participant with complete respect and consideration. Equity is "distributing the benefits and burdens of research participation in such a way that no segment of the population is unduly burdened by the harms of research or denied the benefits of the knowledge generated from it" [18].

- ii. *Power Relations, Positionality and Reflexivity*: Researchers cannot act as value-neutral bystanders, not even when they are merely observing an animal. Researchers must accept responsibility for the results of their relationships with animals and acknowledge the significant power imbalances that exist [19]. Researchers have the authority to choose what questions to ask, how to interpret the results, and how to represent animals. The abilities of animals are frequently undervalued in our sociocultural environment, and they run the risk of being misrepresented. Researchers need to be careful not to interact with or represent animals in ways that support power imbalances and marginalization. It is critical to reflect on these issues and take into account how they might affect the way our research is carried out.
- iii. *Non-Maleficence*: The first and foremost premise that ought to govern animal research should be non-maleficence. No animal should ever be hurt in study to benefit people, other animals, or broader taxa, and all reasonable steps should be made to comprehend, prevent, and reduce any potential damages that may result from research. This is known as non-maleficence. The research must be stopped or altered if it turns out that it is causing harm that was previously unanticipated. Anything that has a detrimental impact on the welfare of the participants is considered to be harm, and its nature might range from social to behavioral to psychological to physical to economic [20]. Further, when there is uncertainty about the magnitude or danger of potential effects, researchers should apply the precautionary principle and postpone proposed research until they can understand, prevent, and mitigate potential harms to animal subjects. When applying the principle of non-maleficence, two (non-exhaustive) domains demand consideration: vulnerability and confidentiality.
- iv. *Vulnerability*: Vulnerability is defined as "a diminished ability to fully safeguard one's own interests in the context of a specific research project" by the TCPS2 (2014) [21]. This could be brought on by a lack of ability to make decisions or a lack of access to social goods like rights, opportunities, and authority. It is best to base assumptions about participants' conditions in relation to the research rather than their participation in a group when determining their vulnerability. Johnson (2013) proposes a framework that rejects the problematic vulnerable/not-vulnerable dichotomy and recognizes that every one of us has a "inherent vulnerability" brought on by our physical needs and inescapable dependence on others. This approach is in accord with critical disability theorists. In addition, some people have "situational vulnerabilities," which result from external factors. For instance, some animals may have had a bad relationship with people in the past, which could increase the risk of potential injury resulting from interactions. Others, such as those confined in facilities like shelters or rehabilitation centers, may have little opportunity to demonstrate agency and make decisions. Situational vulnerabilities can vary throughout time and can exist to varying degrees. Researchers should be aware of vulnerabilities and take appropriate action when necessary. For instance, guidelines for measuring assent and dissent in people with mobility issues would ask for researchers to take extra precautions to protect the interests of participants who might not have many opportunities to physically withdraw. When it's feasible, experts should be sought to offer advice on each person's unique needs.
- v. *Confidentiality*: Understanding how information about animal participants may be used if made public and what the potential consequences of this would be requires careful assessments of certain historical, political, and cultural settings. Protecting the privacy of endangered species' locations is standard practice in the biological sciences [22]. When there's a chance of hostile or exploitative human-animal encounters, this should be expanded to include the locations of all home ranges, colonies, den/nest sites, and other places of animal participants. Confidentiality is important even when hostility is not a factor. Fascination, love, and curiosity can lead to "prolonged violence, suffering, and exploitation," as Collard (2014) points out [23]. Confidentiality concerns that aren't strictly geographical should be evaluated individually. It may be preferable not to reveal personally identifying information about animal participants in public settings where they may be well-known. For instance, it would

be dangerous for the sanctuary and the people it protects if the identities of animals saved by activists from use in research or farming were made public. In cases when research findings could be exploited to stigmatize or otherwise disadvantage a group of people, they should not be made public. Safeguarding participants' well-being is more important than presenting unmediated data, even when non-disclosure affects research outcomes.

## **REGULATION OF ANIMAL RESEARCH**

Animal-based biological and biomedical research has made huge and unique contributions to breakthroughs in human and veterinary medicine and treatments, as well as understanding fundamental, yet complex, processes that underpin welfare in human and other animals. Despite tremendous progress in recent years in reducing the number of animals required in particular experiments and replacing animals with alternatives, there are still areas of study where animal use is still required.

### ***United Kingdom***

The Animals (Scientific Procedures) Act, 1986 (ASPA), as amended in 2012, and any guidelines and codes of practice issued under the Act must be followed when conducting research in the United Kingdom (UK) involving scientific procedures that could cause living vertebrates (other than humans) and cephalopods like *Octopus vulgaris* pain, suffering, distress, or lasting harm [24].

The Act regulates the use of animals in research in the UK and these controls are widely regarded as some of the strictest in the world. The ASPA also regulates the breeding of animals for use of their organs or tissues in procedures. Further, it is also an offence for any person to cause unnecessary suffering to any captive vertebrate animal under the Animal Welfare Act, 2006 [25].

The ASPA only permits research to be undertaken when all three of the below licenses have been granted by the Home Office [26]:

- Research can only take place in research institutes or companies which have appropriate animal accommodation and veterinary support, and have been granted an establishment licence.
- Research can only be conducted as part of an approved study program that has been authorized in a project licence that outlines the justification for the work, the species and number of animals to be used, and the precautions taken to minimize animal damage. An assessment of the projected benefits of potential animal hazards is a vital aspect of the authorization procedure. It must demonstrate how the applicant addressed replacement, refinement, and reduction (the 3Rs) in establishing the program of work, including detailing how alternative, non-animal approaches were examined and why the use of animals is required. Each project licensing application must be examined by an Animal Welfare and Ethical Review Body (AWERB), which is housed at the host institute. The Animals in Scientific Research Unit at the Home Office conducts a harm/benefit analysis and can give work authorization.
- Each person who undertakes work under the Act must hold a personal license.

The funding bodies, on the other hand, are committed to adopting and implementing standards that reflect modern good practice, even when these exceed the basic requirements of legislation and codes of practice, for all animal research, not just that governed by the ASPA. Thus, a document titled 'Responsibility in the use of animals in bioscience research: Expectations of the major research council and charitable funding bodies' has been produced by the National Centre for the Replacement, Refinement and Reduction of Animals in Research (NC3Rs) in collaboration with Biotechnology and Biological Sciences Research Council, Association of Medical Research Charities, Department for Environment, Food & Rural Affairs, EPSRC, Medical Research Council, National Environment Research Council and Wellcome Trust [27]. This document is intended to provide general guidance to researchers and associated veterinary and animal care staff who use vertebrates and cephalopods (live animals or animal products) in bioscience research. It also outlines the funding bodies' expectations for the use of such animals in research, making it useful to ethical committees, referees, boards, and committee members involved in reviewing research proposals.

Similarly, additional guidance for researchers titled as ARRIVE (Animal Research: Reporting of In Vivo Experiments) Guidelines are also produced to improve standards of reporting and ensure that the data from animal experiments can be fully evaluated and utilised [28]. There is a further document titled 'The use of animals in research and experimental design' that complements the ARRIVE guidelines for reporting animal research and was developed in collaboration with an expert working group of in vivo scientists and statisticians from academia and industry, and a team of software designers specialised in innovative software for the life sciences [29].

## India

The central line ethic emphasizing the existence of the life-principle or soul in all forms binds all of existence and demands peaceful, respectful coexistence between humans, animals, and other elements of nature, as stated in Bhagavata Purana (7.14.9), which states that one should consider deer, camel, donkey, monkey, rats, creeping animals, birds, and flies - one's own children, and not differentiate between one's children and these creatures. Humans are simply one species in this amazing web of life, and other creatures also have intrinsic values; this is central to Indian philosophical thought, which emphasizes avoiding hierarchical dualism amongst the creatures of mother nature. Ahimsa, the principle of nonviolence, has been emphasized by religious leaders from the Hindu, Buddhist, and Jain traditions for over 2,500 years. Bad karma can be avoided if practitioners refrain from participating in violent pursuits, eat only vegetarian meals, and speak out against the institutionalized raising and killing of animals, birds, and fish for human food [30].

Having an ethical foundation for our treatment of animals is essential, but the legislative and regulatory framework has also helped expand our knowledge of how to lessen animals' suffering during experiments. The Prevention of Cruelty to Animals Act, 1960 was the first piece of legislation to address animal welfare issues, with goals including the creation of an animal welfare board and the definition of what constitutes cruelty to animals. The legislation has not made animal experimentation illegal, but it has sought to regulate it so that animals are not put through needless pain and suffering before, during, or after the studies are conducted.

Section 14 of the Act deals with experimenting on animals which provides that *"Nothing in this Act shall affect the experimentation (including operations) on animals for the purpose of advancement through the new discovery of physiological knowledge; or knowledge which will be useful for decreasing the mortality rate; or suffering alleviation; or for combating any disease; whether human beings, animals, or plants."*

Further, Section 15 of the Act deals with the establishment of committee for controlling and supervising experiments on animals which states that, *"The Central Government may constitute a Committee, on the advice of the Board (Animal Welfare Board), if it opines at any time that it is essential for the purpose of controlling and supervising the experiments on animals, by notifying in the Official Gazette."*

That is why, the Committee for the Purpose of Control and Supervision of Experiments on Animals (CPCSEA) was established under Section 15(1) in 1964 and was revived in 1998 under the committed chairpersonship of Maneka Gandhi. The Ministry of Fisheries, Animal Husbandry and Dairying have changed the name of the committee that controls and monitors the experiments on animals from the "Committee for the Purpose of Control and Supervision of Experiments on Animals" (CPCSEA), to the "Committee for Control and Supervision of Experiments on Animals (CCSEA)" through its order dated January 06, 2023. The change in name is done to simplify the previous complicate expression, while the functions and powers of the committee will remain the same. The change in name has already been implemented in various official documents and websites [31].

The Committee for Control and Supervision of Experiments on Animals (CCSEA) is a statutory Committee of the *Department of Animal Husbandry and Dairying (DAHD), Ministry of Fisheries, Animal Husbandry and Dairying (MoFAH&D)* constituted under the *Prevention of Cruelty to Animals (PCA) Act, 1960*. CCSEA is duty-bound to take all such measures as may be necessary to ensure that animals are not subjected to unnecessary pain or suffering before, during or after the performance of experiments on them. For this purpose, the Committee formulated the *Breeding of and Experiments on Animals (Control & Supervision) Rules, 1998* (amended in 2001 & 2006) to regulate animal experimentation. Under the provisions of the above rules, establishments that are engaged in Bio-medical research, breeding and trading of laboratory animals are required to get themselves registered with CPCSEA [32]. The CPCSEA introduced a 4<sup>th</sup> 'R' in 2004, i.e., the concept of Rehabilitation [33].

The main functions of CCSEA are [34]:

- Registration of establishments conducting animal experimentation or breeding of animals for this purpose.
- Selection and assignment of nominees for the Institutional Animal Ethics Committees of the registered establishments.
- Approval of Animal House Facilities on the basis of reports of inspections conducted by CCSEA.
- Permission for conducting experiments involving the use of animals.
- Action against establishments in case of established violation of any legal norm/stipulation.
- Conduct Training Programmes for the Nominees of CCSEA.
- Conduct / Support of Conference/workshop on Animal Ethics.

As per the "Breeding of and Experiments on Animals (Control and Supervision) Rules, 1998" Rajiv Gandhi Centre for Biotechnology [35] has formed an Institutional Animal Ethics Committee (IAEC) for control

and supervision of experiments on animals performed in the Institute. The IAEC is registered with the CPCSEA [36] and its primary duty is to review and approve all types of research proposals involving small animal experimentation before the start of the study. The Committee also monitors research throughout the study and after completion of the study through periodic reports besides regular visits to the research faculty animal house and laboratories where the experiments are conducted. It also ensures compliance with all regulatory requirements, rules, guidelines and laws related to animal experiments. IAEC includes eight members of whom three are nominated by CPCSEA and remaining five members by the institute. The chairperson and member secretary of the committee are nominated by the institute from the existing members. The term of appointment of the committee is for a period of 3 years. The committee meets at regular intervals to review new proposals, requests and existing policies. The committee also regularly monitors the procedures and practices related to animal experiments to ensure that animal welfare and ethics are strictly followed at every point of research.

Under Rule 17(d) of the PCA Act which states the animal testing should be avoided where it is possible to do so for example in medical colleges, hospitals etc, many establishments have come up with stern guidelines which is binding on all the institutions involving animals viz., University Grants Commission, Medical Council of India and Pharmacy Council of India [37].

## CONCLUSION

The discussion that has come before it clearly shows that the majority of animal research is based on socio-ideological tenets that view animals as disposable and freely available for human gain. Religious philosophies and other perspectives on the moral status of animals, however, try to counteract these tendencies by developing relationships that are characterized by respect for otherness, focused toward ensuring the well-being of animals, and dedicated to a non-violent ethic. Animal welfare includes, if not exclusively, consideration for animal sentience. As a result of the recognition of this fact, there has been a recent shift in favor of including sentience in animal welfare legislation, which has had an impact on animal care and welfare. For example, attitudes toward animals have changed, their care has been improved, and the justification needed for their use has been strengthened. By adopting a biocentric perspective, legal systems would be functioning in harmony with nature's law, generating an approach that is morally sound. Having moral respect for both people and animals would lead to legal and political consideration for all creatures, which is one of the key practical adjustments biocentrism would make to the law. As a result, animals would no longer be valued based on their utility, which is typically determined by their market value. Animals would instead have intrinsic worth, which values animals in and of them. New directions for further study will be explored as this change continues. One of these paths rests in the ongoing development of our knowledge of which animals exhibit sentience and to what extent they may do so. If different animals have varying capacity for pain, this will have an impact on the laws governing their use and force scientists to create methods of evaluating subjective animal welfare as a consciously experienced condition, which will be extremely difficult. Therefore, the realization of animal sentience will bring about a fundamental and much-needed change in the way we see their moral standing and care for their welfare. It will also have a significant impact on how we treat and employ animals in research, which is a long-awaited and extremely positive development.

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25. An animal is protected under this Act if: (a) it is of a kind which is commonly domesticated in the British islands; (b) it is under the control of man, whether on a permanent or a temporary basis; or (c) it is not living in a wild state. Nothing in this Act applies to anything lawfully done under the ASPA. Additional protection is afforded to animals used for farming purposes under regulations made under this Act. The welfare of animals which are not "protected animals" for the purposes of the Act is covered by other legislation such as the Wildlife and Countryside Act, 1981 and the Wild Mammals (Protection) Act, 1996.
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