

ANESTHETIZING THE PUBLIC CONSCIENCE: LETHAL INJECTION AND ANIMAL EUTHANASIA

*Ty Alper**

INTRODUCTION

In the late 1970s, when Texas was considering whether to adopt Oklahoma's three-drug lethal injection formula for the execution of prisoners, Dr. Ralph Gray, the doctor in charge of medical care in Texas prisons, consulted with a Texas veterinarian named Dr. Gerry Etheredge.¹ Dr. Etheredge told Dr. Gray that veterinarians used an overdose of one drug, an anesthetic called sodium pentobarbital, to euthanize animals and that it was a "very safe, very effective, and very cheap" method of euthanasia.² Dr. Etheredge remembers that Dr. Gray had only one objection to using a similar method to execute human beings. "He said it was a great idea," Dr. Etheredge recalled, "except that people would think we are treating people the same way that we're treating animals. He was afraid of a hue and cry."³ Texas rejected Dr. Etheredge's one-drug, anesthetic-only recommendation and, in 1982, became the first state to actually use lethal injection—via the three-drug formula—as a method of execution.⁴

* Associate Director, Death Penalty Clinic, University of California, Berkeley, School of Law. I could not have written this Article without the creative and persistent research assistance of Joy Haviland and Ryan Davis. I am very grateful to them both, as well as to the editors of the *Fordham Urban Law Journal*, and my colleagues and friends who read and commented on earlier drafts.

1. Adam Liptak, *States Hesitate to Lead Change on Executions*, N.Y. TIMES, Jan. 3, 2008, at A1. The conversations between Dr. Gray and Dr. Etheredge are also reported in Robbie Byrd, *Informal Talks Opened Door to Lethal Injection*, THE HUNTSVILLE ITEM, Oct. 4, 2007, available at http://www.itemonline.com/local/local_story_277004148.html.

2. Liptak, *supra* note 1.

3. *Id.*

4. See Bob Ray Sanders, *The First to Die by Injection*, FORT WORTH STAR-TELEGRAM, Dec. 2, 2007, available at http://www.star-telegram.com/news/columnists/bob_ray_sanders//story/335292.html (describing the execution of Charles Brooks, Jr., the first of over 400 Texas inmates put to death by lethal injection). Oklahoma did not execute anyone by lethal injection until 1990. See also Death Penalty Information Center, Searchable Database of Executions, <http://www.deathpenaltyinfo.org/executions.php> (last visited Apr. 3, 2008).

This history is almost hard to believe in light of the fact that three decades later, death row inmates in Texas, as well as in nearly every other death penalty state, are challenging the three-drug formula on the grounds that the method is *less* reliable, and therefore *less* humane, than the method used to euthanize animals.⁵ Rather than objecting to their clients being treated no better than animals, lawyers for the petitioners in *Baze v. Rees*, the lethal injection case pending before the Supreme Court, have essentially asked the Court to require the state of Kentucky to treat them *at least as well* as the state requires shelter workers to treat animals during the euthanasia process.⁶ Veterinarians have testified on behalf of death row inmates in several states,⁷ and groups of veterinary experts have filed amicus briefs on behalf of petitioners in the two most recent Supreme Court lethal injection cases, *Baze*⁸ and *Hill v. McDonough*.⁹

The three-drug formula that states use to execute people is often misleadingly referred to as a “cocktail.”¹⁰ The three drugs are not mixed together like a cocktail; instead, they are administered serially, usually with a saline flush in between each drug, to clear the intravenous (“IV”) line.¹¹ The drugs are, in the following order, thiopental, pancuronium bromide, and potassium chloride.¹² The first drug is intended to anesthetize the in-

5. See, e.g., Maura Dolan & Henry Weinstein, *The Nation; Concerns About Pain Put Lethal Injection on Trial*, L.A. TIMES, Apr. 24, 2006, at A1 (noting that challenges to the use of lethal injection have been filed in California, Florida, Maryland, Missouri, Kentucky, Louisiana, Texas, Tennessee, North Carolina, Indiana, Ohio, and Oklahoma).

6. See Reply Brief for Petitioners at 19, *Baze v. Rees*, No. 07-5439, 2007 WL 4618321 (U.S. petition for cert. filed Dec. 28, 2007) [hereinafter *Baze* Petitioners’ Reply Brief] (“Veterinarians routinely perform euthanasia by barbiturate and have concluded that it is the method ‘preferred’ over all others because it is reliably humane and causes ‘cardiac arrest within a matter of minutes.’”).

7. See, e.g., Testimony of Dr. Kevin Concannon at 250-51, *Morales v. Tilton*, 465 F. Supp. 2d 972 (N.D. Cal. Sept. 26, 2006) (No. C06-0219-JF) [hereinafter Testimony of Dr. Kevin Concannon]; Testimony of Dr. Glenn Pettifer at 83-139, *Evans v. Saar*, 412 F. Supp. 2d 519 (D. Md. 2006) (No. 06-149).

8. See generally Brief of Dr. Kevin Concannon et al. as Amici Curiae in Support of Petitioners, *Baze v. Rees*, No. 07-5439, 2007 WL 3440946 (U.S. petition for cert. filed Nov. 12, 2007) [hereinafter *Baze* Veterinarian Brief].

9. See generally Brief of Dr. Kevin Concannon et al. as Amici Curiae in Support of Petitioner, *Hill v. McDonough*, 547 U.S. 573 (2006) (No. 05-8794) [hereinafter *Hill* Veterinarian Brief].

10. See, e.g., Ty Alper, *Lethal Incompetence: Lethal Injection Litigation is Exposing More than Torturous Executions*, THE CHAMPION, Sept.-Oct. 2006, at 41-42.

11. See Deborah W. Denno, *When Legislatures Delegate Death: The Troubling Paradox Behind State Uses of Electrocution and Lethal Injection and What It Says About Us*, 63 OHIO ST. L.J. 63, 98 (2002) [hereinafter Denno, *Legislatures Delegate Death*].

12. See *id.* at 97-98.

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mate so he does not experience the effects of the second and third drugs.¹³ The second drug paralyzes him, and the third drug stops his heart, killing him.¹⁴

The use of pancuronium, the second drug, presents a problem that is fundamental to the controversy over the lethal injection procedure. Because pancuronium paralyzes the inmate during the execution process, the inmate may experience excruciating pain and suffering but be unable to cry out or even blink an eyelid to let anyone know if the anesthesia has failed.¹⁵ Because pancuronium masks the ability of a lay observer to discern whether the anesthetic drug has been properly delivered, it is very difficult or impossible, in most cases, to know whether the lethal injection execution has been “botched.”¹⁶ Pancuronium virtually ensures that the execution looks “peaceful”¹⁷ when it may have been anything but.

The pain and suffering that an inmate would experience if not properly anesthetized is extreme. Because pancuronium is a paralytic that restricts the ability of the respiratory muscles to contract, it causes asphyxiation.¹⁸ The third drug, potassium chloride, causes excruciating pain that has been likened to the feeling of having one’s veins set on fire.¹⁹ Experts who have testified in lethal injection cases have unanimously agreed that it would be unconscionable to inject either drug into a person who was not anesthe-

13. *See id.*

14. *See id.* at 98.

15. *See, e.g.,* David Waisel, *Physician Participation in Capital Punishment*, 82 MAYO CLINIC PROC. 1073, 1074 (2007) (“If the inmate was not anesthetized before the administration of pancuronium bromide and potassium chloride, the inmate may have the sensation of paralysis without anesthesia (known as awareness) and may feel the burning of the highly concentrated potassium chloride.”).

16. *See id.* at 1075.

17. Witnesses to lethal injection executions routinely describe them as “peaceful.” *See, e.g.,* Alan Johnson, *Murderer Dies Amid Lethal-Injection Debate*, THE COLUMBUS DISPATCH, Apr. 25, 2007, at B4 (describing the execution as a “seemingly peaceful death”); Carri Geer Thevenot, *The Execution of Timothy McVeigh*, LAS VEGAS REV.-J., June 12, 2001, at A1 (quoting one execution witness as saying, “I saw him swallow once, and that was it I thought: what a peaceful way for a mass murderer to die”); Gwen Floria, *Convicted Murderer Asks Again To Be Allowed to Die*, GREAT FALLS TRIB. (Mont.), July 19, 2006, at M1 (quoting a witness as saying that the execution “appeared peaceful”). During oral argument in *Baze v. Rees*, counsel for Kentucky also conceded that pancuronium has no therapeutic benefit: “The purpose it serves is the purpose of dignifying the process for the benefit of the inmate and for the benefit of the witnesses.” Transcript of Oral Argument, *Baze v. Rees*, No. 07-5439, 2008 WL 63222, at *43 (U.S. Jan. 7, 2008) [hereinafter *Baze* Oral Argument].

18. *See, e.g.,* Elizabeth Weil, *The Needle and the Damage Done*, N.Y. TIMES, Feb. 11, 2007, (Magazine), at 46.

19. *See id.*

tized.²⁰ At issue in recent challenges to the administration of this procedure is whether, and to what extent, the public can be sure that prison officials are properly administering the first drug, the anesthetic, and monitoring its continued effect, such that the inmate does not experience the suffocation the second drug causes or the excruciating pain that the third drug inflicts.²¹ A state's lethal injection procedures violate the Eighth Amendment if they subject the inmate to an intolerable risk of excruciating pain.²²

Litigation on behalf of death row inmates has exposed problems at every step of the process, including the mixing of the drugs; the setting of the IV lines; the administration of the drugs; and the monitoring of their effectiveness. At each step, discovery has revealed untrained and unreliable personnel working with inadequate equipment under poorly designed conditions. In California, for example, a federal judge found a "pervasive lack of professionalism"²³ in the entire execution process, most notably in the improper mixing and preparation of the anesthetic; unreliable screening of execution team members; a lack of training and supervision of execution team members; inadequate and poorly designed physical facilities; and inconsistent and unreliable recordkeeping.²⁴ In Missouri, litigation revealed that the doctor who had presided over the past fifty-four executions in that state and who was responsible for mixing the drugs in their precise amounts, was dyslexic, admitted transposing numbers, and had been adjusting the dosages of the anesthetic drug on a whim, without telling anyone.²⁵

20. See, e.g., *Harbison v. Little*, 511 F. Supp. 2d 872, 883-84 (M.D. Tenn. 2007) (referring to testimony of Dr. Michael S. Higgins, an impartial expert appointed by the court, who "testified that administering pancuronium bromide to an individual with consciousness 'would be nothing short of terror, as I think most of us can easily imagine with suffocation' and also that '[t]he administration of potassium [chloride] in that large a dose, large concentration through a peripheral IV would be painful,'" and also discussing the uncontradicted testimony of Dr. Bruce Levy, the medical examiner for the State of Tennessee and a defense witness, who testified that, "without sufficient anesthesia, pancuronium bromide would cause pain because 'a conscious person who is paralyzed would be unable to breathe. And suffocating to death would be a most violent form of death'").

21. See, e.g., Weil, *supra* note 18, at 46.

22. Pending before the Supreme Court in *Baze* is the issue of what exactly the Eighth Amendment standard should be in these types of challenges. *Baze* Petitioners' Reply Brief, *supra* note 6, at 29.

23. *Morales v. Tilton*, 465 F. Supp. 2d 972, 980 (N.D. Cal. 2006).

24. *Id.* at 979-80.

25. See *Taylor v. Crawford*, No. 05-4173-CV-C-FJG, 2006 WL 1779035, at *4-6 (W.D. Mo. June 26, 2006). Investigation by the media in Missouri further revealed that this doctor had been sued for malpractice more than twenty times and had been disciplined by the state medical board for concealing those suits from the hospitals in which he practiced. Jeremy Kohler, *Behind the Mask of the Execution Doctor*, ST. LOUIS POST-DISPATCH, July 30, 2006, at A1. In November 2007, the *Los Angeles Times* revealed that the federal government had

Other examples abound.²⁶ In short, there is now ample reason to believe that the systems in place for the administration of the three-drug formula in many states are inadequate to ensure proper and consistent delivery of the anesthetic drug.

Much of the testimony on the part of veterinary experts in lethal injection cases has to do with their concerns about the use of pancuronium, the paralyzing drug. Advocates for death row inmates have routinely cited state animal euthanasia laws and regulations in support of two complimentary arguments: first, that the veterinary community bans the use of paralytics in animal euthanasia for good reason, and second, that the veterinary community has, for many years, been using a safer, readily-available procedure that states have refused to adopt for human lethal injections.²⁷ For the most part, however, the state animal euthanasia laws themselves have been cited only summarily, and without a discussion of what led to their passage.

This Article takes an in depth look at animal euthanasia. Part I examines the paralyzing drugs that veterinarians and animal welfare experts refuse to allow in animal euthanasia. Part II discusses the standards of professional conduct for veterinary and animal shelter professionals. Part III looks at the state laws and regulations governing animal euthanasia. Finally, Part IV analyzes the legislative history that led to the enactment of the various states' animal euthanasia laws and regulations. As this Article reveals, many more states than have previously been recognized either explicitly or implicitly ban the use of pancuronium or similar drugs in animal euthanasia. In fact, virtually all lethal injections in this country have taken place in states that either explicitly or implicitly ban the use of paralyzing drugs in animal euthanasia. Moreover, the concerns about those drugs, which informed and gave rise to the strict animal euthanasia laws and regulations, are identical in many ways to the concerns that lawyers for death row inmates are currently raising about the executions of human beings.

In the end, the fears of Ralph Gray, the Texas doctor, have proven unfounded. Dr. Gray was concerned that people would balk at treating hu-

hired this same doctor to develop execution procedures, place and monitor intravenous lines, monitor levels of consciousness, and make determinations of death. *See* Henry Weinstein, *Doctor Barred By State Helps in U.S. Executions*, L.A. TIMES, Nov. 15, 2007, at A17.

26. *See generally* Brief for Michael Morales et al. as Amici Curiae in Support of Petitioners, *Baze v. Rees*, No. 07-5439, 2007 WL 3407042 (U.S. Nov. 13, 2007) (compiling evidence of incompetent administration of lethal injection in several states).

27. *See, e.g.*, Petition for Writ of Certiorari at 13, *Abdur'Rahman v. Bredesen*, No. 05-1036, (U.S. Feb. 15, 2006); Brief for Petitioners, *Baze v. Rees*, No. 07-5439, 2007 WL 3307732, at *12, *25, *56 (U.S. Nov. 5, 2007) [hereinafter *Baze* Petitioners' Brief]; *Beardslee v. Woodford*, 395 F.3d 1064, 1073 nn.8-9 (9th Cir. 2005).

mans, even if they are death row inmates, “the same way we’re treating animals.”²⁸ Not so. For thirty years now, states have been treating them worse, and killing them using methods that have long since been abandoned by the veterinary and animal welfare communities.

I. THE PROBLEM WITH CURARE

“The drug [curare] is never used as an anesthetic except when it is necessary to anesthetize the public conscience.”

— British physician Edward Berdoe, 1903²⁹

States use pancuronium in the execution process because it paralyzes the inmate before death, thus sparing witnesses to the execution the experience of seeing the twitching and gasping that sometimes accompanies even painless deaths.³⁰ To fully comprehend the dangers of pancuronium, and the reasons why it is shunned in the practice of animal euthanasia, it is instructive first to consider briefly its origins and history.

Pancuronium belongs to a class of drugs called neuromuscular blocking agents.³¹ Many of these drugs are derived from, or are synthetic versions

28. Liptak, *supra* note 1, at A1.

29. EDWARD BERDOE, A CATECHISM OF VIVISECTION: THE WHOLE CONTROVERSY ARGUED IN ALL ITS DETAILS 70 (1903).

30. *See* Brief for Respondents, *Baze v. Rees*, No. 07-5439, 2007 WL 4244686, at *51 (U.S. Dec. 3, 2007) [hereinafter *Baze* Respondents’ Brief] (“The likelihood of involuntary muscle contractions establishes that pancuronium performs a legitimate function in reducing the risk of disruption during an execution, thus leading to a humane death. . . . [P]etitioners’ argument ignores the impact on family members and other witnesses who view the involuntary contractions.”). At times, states have suggested other explanations for the use of pancuronium, such as the need to restrain the inmate so that the catheter does not come dislodged in the event of some kind of a struggle. *See id.* Given that inmates are always fully restrained while lying on the execution gurney, this argument carries little weight. States have also at times suggested that pancuronium serves the purpose of helping kill the inmate. *See id.* at *50 (“The secondary function of pancuronium is to cause cessation of breathing or respiration.”). Again, this argument carries little weight, given that the third drug, potassium chloride, if administered properly, will always cause death. When push comes to shove, the states have admitted that the use of pancuronium is essentially cosmetic. Dr. Mark Dershowitz, an anesthesiologist who regularly testifies for, and consults with, states in their defense of lethal injection practices, testified as follows during litigation in Delaware:

Q. Is there anything beneficial that pancuronium does for the inmate? A. Not the inmate directly. Q. And indirectly? A. It may decrease the misperception of these involuntary movements as consistent with suffering on the part of the witnesses, including the inmate’s family. Q. But for the inmate himself? A. I said no.

Deposition of Dr. Mark Dershowitz, vol. I, at 119-120, *Jackson v. Danberg*, No. 06-CV-300 (D. Del. Sept. 10, 2007).

31. W.C. Bowman, *Neuromuscular Block*, 147 BRITISH J. PHARMACOLOGY S277, S282 (2006).

of, curare, a highly poisonous extract from certain woody vines that grow in South America.³² For that reason, they are often referred to as “curariform” drugs, because they have a curare-like effect.³³ Neuromuscular blocking agents interfere with the transmission of nerve impulses at the receptor sites of all skeletal muscle.³⁴ In lay terms, these drugs paralyze all voluntary muscles in the body, including the diaphragm, which is necessary to breathe. Unless a person under the influence of a neuromuscular blocking agent is assisted by an artificial breathing mechanism (such as a ventilator), he or she will suffocate to death.³⁵

For centuries, indigenous tribes in South America used curare (which is also known as ourara, woorari, wourali, and urali)³⁶ to make poison-tipped hunting arrows.³⁷ They would combine bark scrapings from certain vines with viscous substances such as snake or ant venom, boil the mixture for days, and let it cool into a dark, heavy paste, into which they would dip their arrows.³⁸ Animals struck with these arrows would be paralyzed, and would eventually suffocate from respiratory paralysis.³⁹ Curare was particularly effective when hunting monkeys and other animals that lived high in the trees; once shot with a curare-tipped arrow, the animals would lose their grip and fall to the ground.⁴⁰ Indigenous hunters would assess the strength of their curare based upon how many trees a monkey could jump to after being poisoned.⁴¹ A monkey shot with “one-tree curare” could only leap to one tree before falling; poisoned by a weaker, “three-tree curare,” a monkey could leap to as many as three trees in an effort to escape before collapsing to the ground.⁴²

Although used in hunting for centuries, curare came to the attention of physiologists in the mid-nineteenth century, particularly among those who practiced vivisection, the dissection of a living animal for medical experi-

32. See Albert M. Betcher, *The Civilizing of Curare: A History of Its Development and Introduction into Anesthesiology*, 56(2) *ANESTHESIA & ANALGESIA* 305, 310 (1977).

33. See *STEDMAN'S MEDICAL DICTIONARY* 436 (27th ed. 2000) (defining “curariform” as “[d]enoting a drug having an action like curare”). In this Article, I use the terms “curariform drugs” and “neuromuscular blocking agents” interchangeably.

34. See Testimony of Dr. Mark Heath at 66, Taylor v. Crawford, No. 05-4173 (W.D. Mo. June 12, 2006).

35. Betcher, *supra* note 32, at 310.

36. See Thandla Raghavendra, *Neuromuscular Blocking Drugs: Discovery and Development*, 95 *J. ROYAL SOC'Y MED.* 363, 363 (2002).

37. See Bowman, *supra* note 31, at S277.

38. Betcher, *supra* note 32, at 307, 311.

39. See Bowman, *supra* note 31, at S277.

40. *See id.*

41. *See id.*

42. *See id.*

mentation.⁴³ The use of curare in vivisection was pioneered by the influential French physiologist Claude Bernard, who needed a way to keep the animals still and cooperative—but alive—while experimenting on them.⁴⁴ After discovering its paralyzing properties, Bernard routinely used the drug during vivisection to immobilize his subjects.⁴⁵

It was through the use of curare in vivisection that people began to consider the implications of what curare did *not* do, namely serve any anesthetic function. While curare inhibits all voluntary movement, it does nothing at all to affect consciousness, cognition, or the ability to feel pain.⁴⁶ Although some researchers initially believed that curare had anesthetic properties (and some believed that animals had no awareness of pain generally),⁴⁷ such beliefs may simply have been the product of wishful thinking on the part of vivisectionists who, as a matter of course, routinely cut open and dissected fully conscious animals.⁴⁸ In 1864, Bernard described an animal under the influence of curare as corpse-like, but quite alive:

In this motionless body, behind that glazing eye, and with all the appearance of death, sensitiveness and intelligence persist in their entirety. The corpse before us hears and distinguishes all that is done around it. It suffers when pinched or irritated, in a word, it has still consciousness and volition, but it has lost the instruments which serve to manifest them.⁴⁹

Not surprisingly, the use of curare during animal experimentation was controversial; indeed, its use led to the passage of anti-vivisection laws in Great Britain at the end of the nineteenth century.⁵⁰ Testifying before the Royal Commission of 1875, an investigative body created to examine the

43. See Betcher, *supra* note 32, at 310.

44. See *id.*

45. Because the curare would suffocate the animals, researchers using the drug to experiment with animals had to use artificial ventilation to keep them alive during the experiments. See Raghavendra, *supra* note 36, at 363.

46. See Bowman, *supra* note 31, at S282 (“Neuromuscular blocking drugs, by themselves, have no effect at all on consciousness or pain sensation.”).

47. See STEPHEN WEBSTER, THINKING ABOUT BIOLOGY 119 (2003) (describing the French philosopher Rene Descartes’ view that animals have no awareness of pain).

48. The psychological effect on the surgeons who conducted vivisection experiments was one argument against the practice. A 1908 article in the *New York Times* discusses a meeting to lobby for the passage of anti-vivisection laws in New York, to ban, among other things, “curare, which only paralyzed the muscles and did not deaden the nerves.” *Curb on Vivisection Urged in Meeting*, N.Y. TIMES, Feb. 15, 1908, at 14. With respect to the effect on the vivisectionists themselves, one doctor was quoted as arguing: “I sympathize with this agitation . . . not merely for the sake of the brutes whom it seeks to protect, but more for the sake of a profession I hold in honor, and most of all for myself and my fellow-humans, whom brutalized men are unfit to treat.” *Id.*

49. BERDOE, *supra* note 29, at 63 (quoting Bernard).

50. WEBSTER, *supra* note 47, at 118-21.

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morality of vivisection, one witness, Dr. Hoggan, described the experience of a dog subjected to vivisection while paralyzed by curare.⁵¹ Curare, he testified, was used to

render [the] dog helpless and incapable of any movement, even of breathing, which function was performed by a machine blowing through its windpipe. All this time, however, its intelligence, its sensitiveness, and its will, remained intact In this condition the side of the face, the interior of the belly, and the hip, were dissected out . . . continuously for ten consecutive hours⁵²

In 1868, the Swedish physiologist A. F. Holmgren condemned curare as “the most cruel of all poisons.”⁵³ Its use, he wrote,

changes [one] instantly into a living corpse, which hears and sees and knows everything, but is unable to move a single muscle, and under its influence no creature can give the faintest indication of its hopeless condition. The heart alone continues to beat.⁵⁴

Even Bernard eventually became troubled by the suffering his experiments caused, and urged the Royal Commission to impose tougher restrictions on the use of vivisection.⁵⁵

In the 1940s, surgeons began to utilize curare in surgery as a way of relaxing the muscles and aiding in certain delicate procedures.⁵⁶ Anesthesiologists hailed the advent of curariform drugs in surgery, because their paralytic properties obviated the need for massive, and potentially dangerous, doses of anesthesia to control unwanted movement.⁵⁷ Instead of using

51. *See id.* at 120.

52. *Id.*

53. BERDOE, *supra* note 29, at 63 (quoting Holmgren). Lord Tennyson, using one of the alternative names for the drug, referred to it as “the hellish wourali.” MONA CAIRD, *BEYOND THE PALE: AN APPEAL ON BEHALF OF VICTIMS OF VIVISECTION* 8 (1897).

54. BERDOE, *supra* note 29, at 63 (quoting Holmgren).

55. WEBSTER, *supra* note 47, at 120.

56. Betcher, *supra* note 32, at 317.

57. *See* Scientists Group for the Reform of Animal Experimentation, *Statement on the Use of Muscle Relaxants in Experimental Animals* 1 (Feb. 1985) [hereinafter *Scientists Group*] (“Unfortunately, deep anesthesia usually also results in circulatory depression and other deleterious effects which are a serious limitation to its use. These unwanted effects can be avoided by using a muscle relaxant whose action is essentially that of temporary, complete muscle paralysis.”); *see also* Bowman, *supra* note 31, at S281 (“In the early years of anesthesia, a sufficiently high and potentially dangerous dose of anesthetic agent . . . was required in order to paralyze reflex muscle movements.”); Paul M. Wood, L.H. Wright & H. Sidney Newcomer, *Curare in Anesthesia*, 3 N.Y. MED. 17, 17 (1947) (“Before the purified curare preparation . . . became available, a satisfactory state of muscular relaxation could be achieved only by depressing the activity of the central nervous system by a suitable anesthetic agent, and, in the case of a general anesthetic, often by pushing it beyond desirable limits.”).

deep anesthesia to restrict muscle movement, curare-induced paralysis accomplished the same goal without the accompanying danger of general anesthesia.⁵⁸ The drug quickly became a staple in operating rooms, allowing surgeons to work with improved surgical field and without fear of involuntary muscle contraction.⁵⁹

But while paralytic agents have their place in modern surgery, their inherent danger remains. Dr. Harold Griffith, a Canadian doctor who was the first to use curare on human beings to assist with surgery, published his findings in 1942.⁶⁰ While extolling the virtues of curare in the surgical setting, he also warned that it is a “dangerous poison, and should only be used by experienced anesthetists in well-equipped operating rooms.”⁶¹ Any time paralytic drugs are used in surgery, the necessity of adequately maintained anesthesia is that much more important, as the drugs restrict the patient’s ability to verbally communicate sensation, or physically respond to assessments of anesthetic depth.⁶² If the anesthesia wears off during surgery, and the patient is paralyzed, the consequences can be horrific.⁶³ This phenomenon, referred to as anesthesia awareness, is well-known in the annals of surgery and is a major concern of the anesthesiology profession.⁶⁴

For example, in 2004, the Joint Commission,⁶⁵ the accrediting agency for hospitals and health care organizations in the United States, issued an “Alert” about the problem of anesthesia awareness.⁶⁶ According to the Joint Commission, there are 20,000 to 40,000 cases of anesthesia awareness each year in the United States, many of which result in mental distress

58. Betcher, *supra* note 32, at 313-16.

59. *Id.* at 317; *see also* Raghavendra, *supra* note 36, at 366 (“Neuromuscular blocking agents revolutionized the practice of anesthesia.”).

60. Harold R. Griffith & Enid G. Johnson, *The Use of Curare in General Anesthesia*, 3 ANESTHESIOLOGY 418, 418-20 (1942).

61. *Id.* at 420.

62. Brief of American Society of Anesthesiologists as Amici Curiae Supporting Neither Party, *Baze v. Rees*, No. 07-5439, 2007 WL 4102239, at *6-7 (U.S. Nov. 13, 2007) [hereinafter *Baze* ASA Brief].

63. *See, e.g., id.* at *6 (“[I]t is possible that the patient could consciously experience the process of becoming paralyzed and losing the ability to breathe.”).

64. *See* Brief of Anesthesia Awareness Campaign as Amicus Curiae in Support of Neither Party, *Baze v. Rees*, No. 07-5439, 2007 WL 3407044 (U.S. Nov. 13, 2007) [hereinafter *Baze* Brief of AAC]. The phenomenon is referred to variably as “conscious paralysis,” “intraoperative awareness,” or “anesthesia awareness.” *Id.*

65. *See generally* The Joint Commission Web Site, <http://www.jointcommission.org> (last visited Apr. 4, 2008).

66. The Joint Commission, *Preventing, and Managing the Impact of, Anesthesia Awareness*, SENTINEL EVENT ALERT, Oct. 6, 2004, http://www.jointcommission.org/SentinelEvents/SentinelEventAlert/sea_32.htm.

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and post-traumatic stress disorder.⁶⁷ The alert concludes that “[a]nesthesia awareness is under-recognized and under-treated in health care organizations” and notes that it is important to “[a]void muscle paralysis unless absolutely necessary” for fear that the patient will be “unable to communicate with the surgical team” if the anesthesia fails.⁶⁸ The problem of anesthesia awareness has also been one of the preeminent and longstanding concerns of the American Society of Anesthesiologists (“ASA”).⁶⁹ In 2006, the ASA commissioned a task force on the subject, and eventually issued a lengthy practice advisory intended to “reduce the frequency of unintended intraoperative awareness.”⁷⁰ Among other things, the report warned that the “use of neuromuscular blocking drugs [such as pancuronium] may mask purposeful or reflex movements and adds additional importance to the use of monitoring methods that assure the adequate delivery of anesthesia.”⁷¹

As reports of anesthesia awareness increased, patient advocacy groups were formed to expose the issue, tell the stories of people who experienced conscious paralysis, and encourage professional organizations, such as the ASA, to take the problem seriously.⁷² One such organization, called Anesthesia Awareness, Inc., filed an amicus brief in the *Baze* case.⁷³ The brief, filed on behalf of neither party, describes the experiences of people like Kelly Haapala, whose anesthesia wore off during her hip replacement surgery.⁷⁴ She was awake during the surgery, but unable to cry out to let the surgeons know that the anesthesia had failed.⁷⁵ She has described the experience as “the worst terror that I’ve ever experienced.”⁷⁶ The brief

67. *Id.*

68. *Id.*

69. See *Baze* Brief of AAC, *supra* note 64, at *9.

70. Am. Soc’y of Anesthesiologists Task Force on Intraoperative Awareness, *Practice Advisory for Intraoperative Awareness and Brain Function Monitoring*, 104 *ANESTHESIOLOGY* 847, 848 (2006), available at <http://www.asahq.org/publicationsAndServices/AwareAdvisoryFinalOct05.pdf>.

71. *Id.* at 854. The American Association of Nurse Anesthetists has also issued a practice advisory for the prevention and management of anesthesia awareness. See Am. Ass’n of Nurse Anesthetists, *Position Statement 2.12: Unintended Awareness Under General Anesthesia*, <http://www.aana.com> (follow “Practice Documents” hyperlink under “Resources”; then follow “Unintended Awareness Under General Anesthesia” hyperlink) (last visited Apr. 4, 2008).

72. See, e.g., *Baze* Brief of AAC, *supra* note 64, at *1 (“The Anesthesia Awareness Campaign, Inc. (“AAC”) is a non-profit organization founded in 1998 that is dedicated to helping victims, providing education, and working to prevent anesthesia awareness.”).

73. *Id.*

74. *Id.* at *5.

75. *Id.*

76. *Id.*

also quoted Kathleen LaBrie, who was fully awake, but paralyzed, during an operation to open her sinus cavities and to repair a deviated septum.⁷⁷

LaBrie recalled:

I'll never forget what happened. I realized something was very, very wrong when I awoke to the grinding and pushing in my nose. I also could hear conversations. I was awake and unable to let anyone know. . . . If anyone wants to know what HELL is like this is it, what happened to me.⁷⁸

The experience of patients such as these is relevant to the lethal injection debate, because, as in the surgical context, the use of a paralytic agent renders the inmate unable to indicate if the anesthetic drug has not taken effect. As long as enough pancuronium is delivered intravenously, every lethal injection execution will look peaceful.⁷⁹ The reality may be quite different, if, as discussed above, the prison officials tasked with delivering and monitoring the anesthetic do not do their jobs with precision. As a judge in North Carolina recently explained, if the anesthetic drug

is not properly administered, an inmate could be conscious and suffer a very painful death from the other two lethal drugs. If not unconscious but paralysed, an inmate would not be able to move or scream while painfully suffocating or when the deadly, burning potassium chloride is injected into the veins causing more excruciating pain while stopping the heart.⁸⁰

Again reaching back to the nineteenth century, in 1864 Claude Bernard offered another description of such a deceptively peaceful death:

A gentle sleep seems to occupy the transition from life to death. But it is nothing of the sort; the external appearances are deceitful. . . . [I]n fact . . . we discover that this death, which appears to steal on in so gentle a manner and so exempt from pain is, on the contrary, accompanied by the most atrocious sufferings that the imagination of man can conceive.⁸¹

No inmate has ever survived a botched lethal injection, so we do not know what it feels like to lie paralyzed on a gurney, unable even to blink an eye, consciously suffocating, while potassium burns through the veins on its way to the heart, until it finally causes cardiac arrest. But aided by the

77. *See id.* at *4.

78. *Id.*

79. *See supra* note 17.

80. *Conner v. N.C. Council of State*, Nos. 07-GOV-0238, 07-GOV-0264, at 5 (N.C.O.A.H. Aug., 9, 2007), available at <http://www.law.berkeley.edu/clinics/dpclinic/LethalInjection/Public/orders/North%20Carolina/2007.08.09%20administrative%20ruling.pdf>.

81. FRANCES POWER COBBE, ILLUSTRATIONS OF VIVISECTION: EXPERIMENTS ON LIVING ANIMALS FROM THE WORKS OF PHYSIOLOGISTS 19-20 (1908) (quoting Bernard).

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accounts of people who have suffered conscious paralysis on the operating table, one can begin to imagine.

In the cases of anesthesia awareness in the hospital setting, the paralyzing agent had surgical purposes, such as the prevention of muscle movements that would interfere with surgery. Advocates for patients say that the answer to the problem of anesthesia awareness is to require hospitals to use more sophisticated monitoring of consciousness during the surgery, including the use of machines such as one called a “BIS [bispectral index] monitor.”⁸² They claim that, too often, hospitals cut corners, failing to utilize simple measures that would ensure that patients have reached what anesthesiologists call a “surgical plane” of anesthetic depth prior to incision.⁸³

Advocates for death row inmates have pointed to an even more egregious lack of monitoring in the lethal injection context.⁸⁴ Currently, many state lethal injection protocols provide for no monitoring of anesthetic depth once the administration of drugs has begun.⁸⁵ Other states have begun to amend their protocols to include an assessment of consciousness by someone, usually a prison guard, or the warden, who has no formal training or experience in the assessment of anesthetic depth.⁸⁶ Usually these informal attempts to assess consciousness involve the prison official poking the inmate, or brushing his eyelashes, before giving the signal for the execution to proceed.⁸⁷ Such checks ignore the differences between

82. See Anesthesia Awareness, Inc., What Is Anesthesia Awareness, <http://www.anesthesiaawareness.com/what-is-AA.html> (last visited Apr. 3, 2008).

83. A surgical plane of anesthetic depth refers to the level of unconsciousness necessary to conduct surgery. See Declaration of Dr. Mark Heath at 2, 3, 5, Taylor v. Crawford, No. 05-4173-CV-W-FJG (W.D. Mo. July 24, 2006) [hereinafter Declaration of Dr. Mark Heath].

84. See, e.g., Baze Petitioners' Brief, *supra* note 27, at 45-49.

85. Tennessee is one example. See Harbison v. Little, 511 F. Supp. 2d 872, 884 (M.D. Tenn. 2007) (“Perhaps the most glaring omission in the new protocol is the failure to check for consciousness before the pancuronium bromide is administered.”).

86. For example, during Indiana lethal injection litigation, Warden Ed Buss testified that his untrained assessment of consciousness includes the following: “I walk around the offender. I look for any signs of consciousness. I say his name. I touch him. . . . Maybe a gentle shake to see if we can detect any consciousness.” Official Reporter’s Transcript of Preliminary Injunction Hearing at 199, Timberlake v. Buss, Slip Copy, No. 1:06CV1859RLY-WTL, 2007 WL 1280664, slip op. (S.D. Ind. Apr. 26, 2007).

87. In Alabama, for example, a recent addition to the state’s lethal injection protocol calls for a prison guard to check that the inmate is unconscious by calling the inmate by name, brushing his eyelashes with a finger, and pinching his arm. See Stan Diel, *State’s New Execution Procedure Detailed*, BIRMINGHAM NEWS, Oct. 26, 2007, at 1A. During oral argument in *Baze v. Rees*, Justice Scalia commented that Kentucky asserts “all it takes is a slap in the face” to know whether the person is unconscious. *Baze* Oral Argument, *supra* note 17, at 16.

determining mere consciousness (i.e., whether a person is “awake” or not) and determining whether a surgical plane of anesthetic depth has been achieved (i.e., whether a person is sufficiently anesthetized that he will not feel the excruciating effects of the pancuronium and the potassium chloride). They also ignore the fact that, once the pancuronium has taken effect, the inmate could not respond to shaking, poking, yelling, or a slap in the face, even if he were wide awake. Assessing the anesthetic depth of a person who is completely paralyzed requires the kind of skill and training (and physical proximity) that most of the people doing the job during executions do not possess.⁸⁸ As a result, lawyers for death row inmates have argued for real monitoring of anesthetic depth throughout the execution process by trained personnel.⁸⁹

But lawyers for death row inmates have also suggested an even simpler solution: remove pancuronium from the procedure altogether.⁹⁰ Not only would removing pancuronium eliminate the risk that the inmate experiences conscious suffocation, it would remove the primary barrier to discerning whether the anesthetic drug has achieved its desired effect. Stop paralyzing inmates before they are killed, lawyers have suggested, and the necessary monitoring will be simplified, thereby greatly expanding the pool of people who are qualified to do it. The model for this suggested method of execution, of course, is animal euthanasia, which typically involves an overdose of one drug, an anesthetic much like the first drug used in human lethal injections.⁹¹

88. See Declaration of Dr. Mark Heath, *supra* note 83, at 3 (noting that Missouri’s proposed lethal injection protocol does not “require that the [person] who participates in executions have any training or background in the induction of general anesthesia. . . . Thus, the personnel asked to perform the monitoring may have absolutely no understanding of what they are supposed to do or what observations they need to make.”).

89. For example, lawyers in Missouri have argued that “[a]ssessing anesthetic depth is imperative, because the substandard practices of catheterization and drug administration used for executions create a significant and unnecessary likelihood that the intended dose of anesthetic will not in fact reach the inmate’s circulatory system.” Plaintiff’s Opposition to Defendant’s Proposed Protocol at 2, *Taylor v. Crawford*, No. 05-4173-CV-W-FJG (W.D. Mo. July 24, 2006).

90. See, e.g., *id.* at *51 (“By omitting pancuronium and potassium and relying instead on a lethal dose of an anesthetic, the [Department of Corrections] would virtually eliminate the risk of pain.”); *Baze* Petitioners’ Reply Brief, *supra* note 6, at *17-18 (Dec. 28, 2007) (arguing that “alternative procedures,” such as a barbiturate-only protocol, “would be less dangerous than Kentucky’s current procedures”).

91. See *infra* Part II. Importantly, lawyers for death row inmates have also decried the use of potassium chloride, an excruciatingly painful drug that ultimately causes cardiac arrest. Use of potassium chloride would be unnecessary in the anesthetic-only procedure described below, and the danger of pancuronium—that it masks the ability of lay observers to detect pain if the anesthesia fails—would be somewhat (though not completely) eliminated if the most painful of the three drugs were removed from the procedure.

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Some people have accused lawyers for death row inmates of disingenuously proposing a “better” method of execution, when their goal is to eliminate executions altogether.⁹² The suggestion is that these lawyers know that any change to the protocol will simply engender years more litigation about the new procedure. It is difficult to see the merit in this argument, however, since a protocol that employs only an overdose of anesthesia does not involve the possibility of any pain, which is the crux of the Eighth Amendment challenge. Given that an anesthetic-only protocol could not result in any pain, even if inadequately delivered, one wonders whether states looking to avoid litigation actually might do well to consider such a procedure.⁹³ In any event, it is not only lawyers for death row inmates who have suggested the one-drug procedure. An executive commission in Tennessee recommended it,⁹⁴ as have federal judges in several states.⁹⁵ Nonetheless, no state has sought to change the procedure.⁹⁶

92. For example, Tennessee Governor Phil Bredesen, who supports the death penalty, was recently quoted as saying,

Just remember that among the strongest proponents of the one-drug protocol are people who are adamantly opposed to the death penalty The answer is obvious, that when you change protocols to something new you’re going to have 10 years of litigation We’re not going to execute anybody for 10 years in this country while all this new uncharted territory of what a one-drug protocol is and what problems it may or may not have get adjudicated.

Greg Giuffrida, *Bredesen; 1-Drug Injection is No Quick Fix, Would Delay Executions*, ASSOCIATED PRESS, Jan. 21, 2008.

93. Some have also suggested that the one-drug procedure might take too long. *See, e.g., Baze Respondents’ Brief, supra* note 30, at *23 (“[T]he proposed one-drug protocol raises new problems because it will generally take much longer for the condemned to die under the one-drug protocol”). Experts, though, have noted that animal euthanasia rarely takes longer than a few minutes, and there is no reason to think it would be any different with humans. *See* Testimony of Dr. Kevin Concannon, *supra* note 7, at 287 (“When I do the euthanasia procedure, it’s usually a matter of a couple of minutes.”); *see also* AMERICAN VETERINARY MEDICAL ASSOCIATION GUIDELINES ON EUTHANASIA 11 (2007), *available at* http://www.avma.org/issues/animal_welfare/euthanasia.pdf [hereinafter AVMA GUIDELINES] (“A primary advantage of barbiturates is speed of action.”). Even if an execution did take a long time, however, it is difficult to see where the Eighth Amendment challenge would lie. I am not aware of any successful Eighth Amendment challenge to a lengthy, but painless, execution procedure.

94. *See Harbison v. Little*, 511 F. Supp. 2d 872, 875-79 (M.D. Tenn. 2007). After consultation with medical experts, an executive commission appointed by Governor Bredesen recommended that the state use a one-drug method similar to that used in animal euthanasia, in order to reduce the risk of conscious suffering during lethal injections. The Commissioner of the Department of Corrections ultimately rejected the recommendation because he did not want “Tennessee to be at the forefront of making the change from the three-drug protocol to the one-drug protocol” and that he thought adoption of a one-drug protocol could lead to “political ramifications.” *Id.*

95. *See, e.g., Morales v. Tilton*, 465 F. Supp. 2d 972, 983 (N.D. Cal. 2006) (“[R]emoval of [pancuronium and potassium chloride] from the lethal-injection protocol, with the execu-

The purported justifications for the use of pancuronium are thin at best. During oral argument in *Baze*, Justice Stevens pressed counsel for the State of Kentucky on the justification for using the paralytic agent.⁹⁷ Counsel's response was that the paralyzing agent "does bring about a more dignified death, dignified for the inmate, dignified for the witnesses."⁹⁸ In other words, by eliminating the unpleasant twitching and gasping that might accompany even the most painless of deaths, witnesses are spared such a spectacle and the dying inmate is spared whatever indignity such a spectacle might engender.

The explicit insistence on the "dignity" of the execution—even at the expense of knowing whether the execution is actually humane—is quite a concession from the State, as it confirms the suspicion that the use of pancuronium is designed to maintain appearances at all costs. As such, it brings to mind the words of the British physician Edward Berdoe, a vocal opponent of vivisection at the turn of the century, who argued that curare anesthetizes only "the public conscience."⁹⁹

Certainly the animal welfare community is aware of the dangers of curare and curariform drugs; concerns about those drugs are reflected in both the professional standards of those who perform animal euthanasia, and in the laws and regulations governing animal euthanasia. This Article now turns to a study of the manner in which animals are euthanized in this country.

tion accomplished solely by an anesthetic, such as sodium pentobarbital, would eliminate any constitutional concerns, subject only to the implementation of adequate, verifiable procedures to ensure that the inmate actually receives a fatal dose of the anesthetic."); *Harbison*, 511 F. Supp. 2d at 895 ("[I]f the Department of Corrections had adopted the Committee's recommendation [to adopt a one-drug protocol], it would have greatly mitigated the plaintiff's risk of pain.").

96. See Liptak, *supra* note 1, at A1 (wondering about "the more practical question of why all 36 states that use lethal injections to execute condemned inmates are wedded to a cumbersome combination of three chemicals").

97. *Baze* Oral Argument, *supra* note 17, at 33-34.

98. *Id.*

99. BERDOE, *supra* note 29, at 70.

II. THE ANESTHETIC-ONLY PROCEDURE FOR ANIMAL EUTHANASIA

Your pet is handled gently and with respect. The injection itself is an anesthetic drug called pentobarbital. It is injected into a vein on the front leg. Because it is an anesthetic agent, your pet will painlessly lose consciousness first, similar to being anesthetized for a surgical procedure. Then, while your pet is peacefully unaware, the drug goes on to cause cardiac and respiratory arrest. The whole process takes only a few seconds.

— “When It’s Time to Say Goodbye,” a publication of the Fairmont Animal Hospital, Syracuse, New York¹⁰⁰

One response to the States’ “dignity” justification for the use of pancuronium is incredulity at the notion that any person would rather suffer an excruciatingly painful and torturous—but peaceful-looking—death than a painless one that might be accompanied by involuntary twitching and sighing. Another response, however, is that the premise of the argument is simply false, namely that a death without pancuronium cannot be dignified. In fact, what animal euthanasia practices reveal is that a dignified—and much safer—death can be achieved without a paralyzing agent.

It is well-established that lethal injection execution procedures are not the product of any kind of scientific or medical review.¹⁰¹ Neither is there any ongoing review or testing to ensure that the process works as it should.¹⁰² As a result, lawyers and judges have looked to the veterinary field, where methods of euthanasia are subjected to constant re-evaluation in order to ensure that the procedures are humane.¹⁰³ As the American

100. Fairmont Animal Hospital, *When It’s Time to Say Goodbye*, <http://www.fairmountanimal.com/WHEN%20IT.htm> (last visited Apr. 4, 2008).

101. See, e.g., Deborah W. Denno, *The Lethal Injection Quandary: How Medicine Has Dismantled the Death Penalty*, 76 FORDHAM L. REV. 49, 70 (2007) [hereinafter Denno, *Lethal Injection Quandary*] (“[A]t no point was the [lethal injection] procedure medically or scientifically studied on human beings.”); Ellen Kreitzberg & David Richter, *But Can It Be Fixed? A Look at Constitutional Challenges to Lethal Injection Executions*, 47 SANTA CLARA L. REV. 445, 459 (2007) (“Over the years there has never been any critical re-evaluation of the [lethal injection] procedure to assess whether modern medical or scientific knowledge could improve the existing protocol.”).

102. See Denno, *Lethal Injection Quandary*, supra note 101, at 70.

103. See, e.g., *Ex parte Hopkins*, 160 S.W.3d 9, 10 n.6 (Tex. Crim. App. 2004) (Price, J., dissenting from denial of stay of execution) (“Especially poignant is our own legislature’s action in banning [pancuronium]. Clearly, the State of Texas has acted to eliminate the cruel and inhumane euthanasia of animals by limiting the procedures and chemicals that can be used to euthanize.”); *Abdur’Rahman v. Bredesen*, No. M2003-01767-COA-R3-CV, 2004 WL 2246227, at *6 (Tenn. Ct. App. Oct. 6, 2004) (death row inmate alleging that the inclusion of paralyzing agent in the Tennessee lethal injection protocol violates the Tennessee Nonlivestock Animal Humane Death Act); *Beardslee v. Woodford*, 395 F.3d 1064, 1073 n.9 (9th Cir. 2005) (stating that “it is somewhat significant” that “states have enacted laws that either mandate the exclusive use of a sedative or expressly prohibit the use of a neuromus-

Veterinary Medical Association (“AVMA”) points out in its published guidelines on euthanasia, the term “is derived from the Greek terms *eu* meaning good and *thanatos* meaning death. A ‘good death’ would be one that occurs with minimal pain and distress.”¹⁰⁴ The AVMA updates its guidelines at least once every ten years by “review[ing] all literature that scientifically evaluates methods and potential methods” of euthanasia and revising those guidelines accordingly, based on a “thorough evaluation of the available science.”¹⁰⁵

Decades of review and study have led to a consensus in the veterinary and animal welfare communities with respect to the safest and most humane method of animal euthanasia. That method is an anesthetic-only procedure involving an overdose of the barbiturate sodium pentobarbital. Tens of thousands of animals are euthanized every day by means of this procedure,¹⁰⁶ which has been used in the United States for more than sixty years.¹⁰⁷ According to the AVMA’s guidelines, an overdose of pentobarbital is the “preferred method” of euthanizing dogs, cats, and large animals such as horses.¹⁰⁸ In addition to the AVMA, every major American animal rights organization strongly recommends—or requires—the use of pentobarbital in animal euthanasia.¹⁰⁹

cular blocking agent in the euthanasia of animals”); *Baze* Oral Argument, *supra* note 17, at 34-36 (Justices Stevens and Souter asking counsel questions about veterinary standards).

104. AVMA GUIDELINES, *supra* note 93, at 1.

105. *Id.*

106. According to the American Humane Society, 9.6 million animals are euthanized annually in the United States. See American Humane Society, Animal Shelter Euthanasia, http://www.americanhumane.org/site/PageServer?pagename=nr_fact_sheets_animal_euthanasia (last visited Apr. 4, 2008) [hereinafter American Humane Society].

107. See, e.g., HUMANE SOC’Y OF THE U.S., WHY THE HSUS IS OPPOSED TO THE USE OF THE HIGH ALTITUDE DECOMPRESSION CHAMBER FOR ANIMAL EUTHANASIA (1978) [hereinafter 1978 HUMANE SOC’Y STATEMENT]. “The method of animal euthanasia which we have used exclusively for more than 30 years is the injection of sodium pentobarbital or its derivatives.” *Id.* at 7 (quoting testimony of Walter E. Kilroy, Vice President, Massachusetts Society for the Prevention of Cruelty to Animals, before the City Council of Fort Wayne, Indiana, on May 12, 1977).

108. AVMA GUIDELINES, *supra* note 93, at 11; see also Declaration of Dr. Michael Loomis at 5, *Morales v. Tilton*, No. 06-219 (N.D. Cal. Nov. 9, 2006) (describing the use of sodium pentobarbital in the euthanasia of large primates, specifically gorillas).

109. See The Humane Society of the United States, General Statement Regarding Euthanasia Methods for Dogs and Cats, http://files.hsus.org/webfiles/HSI/E_Library_PDFs/eng_euth_statement.pdf (last visited Apr. 4, 2008) (stating that euthanasia by injection of sodium pentobarbital “has been found to be the most humane, safest, least stressful, and most professional” method); National Animal Control Association, National Animal Control Association Policy Statement: Dispositions of Animals—Euthanasia, <http://www.nacanet.org/poleuth.html> (last visited Apr. 4, 2008) (“NACA considers lethal injection of sodium pentobarbital, administered by competent, trained personnel, to be the method of choice utilized for humane euthanasia of animal shelter dogs and

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Anyone who has witnessed a family pet being euthanized knows that euthanasia by pentobarbital is a quick, effective, and dignified process. Pentobarbital is injected into a vein, usually in the foreleg.¹¹⁰ When injected into a vein, pentobarbital affects the cerebral cortex of the brain first, rendering the animal immediately unconscious and unable to feel pain.¹¹¹ The drug then depresses the rest of the central nervous system, including the respiratory center, which causes all breathing to stop, usually “within an average of five to ten seconds” after the drug is injected.¹¹² Cardiac arrest soon follows, and the animal dies, usually within a minute.¹¹³ Occasionally, the animal sighs and the nerves twitch briefly.¹¹⁴

The first drug in the three-drug lethal injection procedure, thiopental, is a barbiturate, like pentobarbital.¹¹⁵ Experts on both sides of the lethal injection controversy agree that a barbiturate, given in the dosage used in most states’ lethal injection protocols, would reliably cause death—just as it does in animal euthanasia.¹¹⁶ The crucial difference between the three-drug procedure used in lethal injections in humans and the anesthetic-only proce-

cats.”); American Society for the Prevention of Cruelty to Animals, Position Statement on Euthanasia, http://www.aspc.org/site/PageServer?pagename=pp_euthanasia (last visited Apr. 4, 2008) (“The ASPCA recommends the injection of sodium pentobarbital as the preferred agent for euthanasia of shelter animals.”); American Humane Society, Animal Welfare Position Statements: Euthanasia, at 10 (2006), http://www.americanhumane.org/site/DocServer/animal_statement2006.pdf?docID=3741 (“American Humane considers euthanasia by injection (EBI) of sodium pentobarbital to be the only acceptable method of euthanizing cats and dogs in animal shelters.”); People for the Ethical Treatment of Animals, Euthanasia: The Compassionate Option, http://www.peta.org/MC/factsheet_display.asp?ID=39 (last visited Apr. 4, 2008) (“[A]n intravenous injection of sodium pentobarbital administered by a trained professional is the kindest, most compassionate method of euthanizing animals.”).

110. REBECCA H. RHOADES, *THE HUMANE SOCIETY OF THE UNITED STATES, EUTHANASIA TRAINING MANUAL* 43 (2002).

111. *See id.* at 12.

112. *See id.*

113. *See id.* at 13.

114. H. ELLEN WHITELY, *UNDERSTANDING AND TRAINING YOUR DOG OR PUPPY* 255 (2006) (“Occasionally, a dying animal will gasp, vocalize, eliminate, or twitch. This is the body’s natural response; it does not mean that the animal is experiencing pain.”).

115. *See Denno, Legislatures Delegate Death, supra* note 11, at 97-98.

116. Although a longer-acting barbiturate such as the one used in animal euthanasia would be more appropriate for use in lethal injection than thiopental, which is an ultra-short acting barbiturate, testimony in *Baze* confirmed that even thiopental in the dosage given in Kentucky would be sufficient to cause death. Dr. Mark Heath, expert for petitioner, testified that thiopental will be lethal by itself at three grams, the amount called for in Kentucky’s protocol. *See* Joint Appendix at 541, vol. II, *Baze v. Rees*, No. 07-5439 (U.S. Nov. 5, 2007). It would also be virtually lethal in every case at two grams. *See id.* at 493-94. Dr. Dershwitz, the state’s expert, also testified that the amount of thiopental used in Kentucky’s procedures would be sufficient to cause death. *See id.* at 547.

cedure used in animal euthanasia is the absence of the second and third drugs in the latter procedure. These are the two drugs that cause the pain and suffering if the first drug does not take. On the contrary, if the injection of the anesthetic fails to achieve its desired effect during an animal euthanasia, the animal feels no pain; the solution is to simply administer a second dose of the anesthetic.¹¹⁷

The ease with which the anesthetic-only procedure can be administered is an important consideration. The vast majority of animal euthanasia takes place not in the offices of veterinarians but in animal shelters, where millions of dogs and cats are euthanized each year.¹¹⁸ Euthanasia in shelters is performed by shelter workers who are not formally trained in veterinary medicine.¹¹⁹ By developing a procedure with no risk of pain, and a wide margin for error, the veterinary community has accounted for the difficulty posed by relatively untrained personnel administering the lethal procedure.¹²⁰ For example, the Euthanasia Training Manual of the Humane Society of the United States is purposefully written in lay terms in recognition of the need for a “more instructive and less technical guide for shelter euthanasia technicians” than the AVMA guidelines, which are written by and for veterinarians.¹²¹ With that purpose in mind, the Humane Society Manual states that pentobarbital is the “best possible method of euthanasia currently available.”¹²²

Not only does the Humane Society agree with the AVMA that the anesthetic-only procedure is the preferred method for animal euthanasia, but it expressly condemns the use of curariform drugs like the one used in human lethal injections. The foreword to the Euthanasia Training Manual states that “[i]t is our moral and ethical duty to ensure that we work to end these practices: drowning, poisoning, shooting, gassing, or injecting animals

117. See RHOADES, *supra* note 110, at 107; see also *Harbison v. Little*, 511 F. Supp. 2d 872, 895 (M.D. Tenn. 2007) (“Even if the sodium thiopental were improperly administered, the only result would be that that the plaintiff would be given more thiopental.”).

118. See American Humane Society, *supra* note 106.

119. See Charlie L. Reeve et al., *The Caring-Killing Paradox: Euthanasia Related Strain Among Animal-Shelter Workers*, 35 J. APPLIED SOC. PSYCHOL. 119, 120 (2005) (“Most typically, the job of performing euthanasia on unwanted animals falls in the hands of animal-shelter workers.”).

120. See, e.g., 1978 HUMANE SOC’Y STATEMENT, *supra* note 107, at 11-12 (quoting California veterinarian Dr. John W. Oliver: “I have trained numerous people (for sodium pentobarbital injection). The people I trained were not specially hired to participate in the program, but were the regular kennel people on the premises. The program was very simple . . . We know that lay people can handle the job . . .”).

121. RHOADES, *supra* note 110, at xiv.

122. *Id.* at 1.

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with curare-based or paralytic substances.”¹²³ The Manual later deems “inhumane” the use of “any combination of sodium pentobarbital with a neuromuscular blocking agent.”¹²⁴ The Humane Society also condemns the use of T-61, a euthanasia solution that combines an anesthetic with a neuromuscular blocking agent, because it “can cause animals intense pain after administration and a curare-like paralysis of respiration (suffocation) before the animal loses consciousness.”¹²⁵

Curariform drugs are mentioned only briefly in the AVMA guidelines, and almost always with disapproval. For example, the use of neuromuscular blocking agents alone to achieve death is “unacceptable” and “absolutely condemned.”¹²⁶ The history of this provision in the guidelines suggests that veterinary experts were concerned with curare’s long association with conscious paralysis and suffocation.¹²⁷ In short, no AVMA-approved method of euthanasia includes a paralytic, and nowhere in the AVMA guidelines is a three-drug formula like the one used in human lethal injection even contemplated, let alone approved.¹²⁸

The testimony of veterinarians shows that the actual day-to-day euthanasia practices conform to the guidelines established by the Humane Society and the AVMA, and that neuromuscular blocking agents have no place in

123. *Id.* at xiv.

124. *Id.* at 133.

125. *Id.*

126. AVMA GUIDELINES, *supra* note 93, at 12.

127. For example, the initial guidelines, published by the AVMA in 1963, noted that “[h]uman beings given these drugs have described periods of full consciousness accompanied by complete muscular immobility and intense anxiety.” AVMA Council on Research, *Report of the AVMA Panel on Euthanasia*, J.A.V.M.A., Jan. 15, 1963, at 166.

128. The AVMA allows paralytic to be used only when needed to restrain “extremely fractious large animal” or reptiles in “zoos and clinical settings.” AVMA Guidelines, *supra* note __, at 19, 20. The cover page to the current AVMA Guidelines explicitly refers to the lethal injection controversy, stating that “[t]he application of a barbiturate, paralyzing agent, and potassium chloride delivered in separate syringes or stages (the common method used for human lethal injection) is not cited in the report.” *See* AVMA Guidelines, *supra* note 93. The current AVMA guidelines do state that “[a] combination of pentobarbital with a neuromuscular blocking agent is not an acceptable euthanasia agent.” *Id.* at 11. However, the AVMA has since attempted to clarify this statement, and now maintains that the reference is to the mixing of the two drugs in the same syringe. *See* Jennifer Fiala, *AVMA Clarifies Report’s Context on Lethal Injection*, DVM NEWSMAG., Mar. 1, 2006, available at <http://www.dvmnews.com/dvm/News/AVMA-clarifies-reports-context-on-lethal-injection/ArticleStandard/Article/detail/310072>. Essentially, the AVMA has said that the lethal injection debate is a fight in which it has no dog, and in which it therefore does not want to be involved. *See* R. Scott Nolen, *Lethal Injection Opponents Use AVMA Euthanasia Guidelines to Make Their Case*, JAVMA NEWS, Dec. 15, 2007, <http://www.avma.org/onlnews/javma/dec07/071215a.asp> (describing the AVMA’s efforts to distance itself and its guidelines from the lethal injection debate).

animal euthanasia.¹²⁹ A review of lethal injection litigation throughout the country did not yield a single instance of a veterinarian testifying that the use of such a drug is an accepted component of any animal euthanasia procedure. In fact, the group of veterinarians who filed an amicus brief in the *Baze* case stated that they are “unaware of any veterinarian or veterinary group that advocates the use of neuromuscular blocking agents during the euthanasia procedure.”¹³⁰

Even more striking than the fact that veterinary professionals condemn the use of curariform drugs in the euthanasia process is that, as discussed in Part III, the use of such drugs in animal euthanasia is actually *illegal* in many states that nevertheless continue to use them in human lethal injections. This Article now turns to those laws, and the concerns about the effects of curare that have led so many states to ban curariform drugs in the practice of animal euthanasia.

III. STATE EUTHANASIA LAWS: A CONSENSUS AGAINST CURARE

The executioner will remove from the stand on the worktop the syringe labeled number four (4), which contains fifty milligrams (50mg) of pancuronium bromide, place the blunt cannula into the open port of the IV extension set connected to the primary line, and push the entire contents of that syringe into the IV port

— Excerpt from Florida’s recently-revised execution protocol¹³¹

[C]urare, curariform mixtures, [or] any substance which acts as a neuromuscular blocking agent . . . may not be used on a dog or cat for any purpose.

— Florida law governing animal euthanasia¹³²

The relevance of state euthanasia laws on the lethal injection debate has not been lost on judges or lawyers. Justice Stevens specifically asked about euthanasia practices during the *Hill* oral argument,¹³³ and Chief Justice Roberts and Justices Souter and Stevens asked about it during the *Baze* ar-

129. See, e.g., Testimony of Dr. Kevin Concannon, *supra* note 7, at 263 (“[N]euromuscular blockers . . . don’t play a role in euthanasia procedures.”).

130. *Baze* Veterinarian Brief, *supra* note 8, at 7.

131. FLA. DEP’T OF CORRECTIONS, EXECUTION BY LETHAL INJECTION PROCEDURES 11 (2007) (on file with author).

132. FLA. STAT. ANN. § 828.058(3) (2007).

133. See Transcript of Oral Argument at 36-37, *Hill v. McDonough*, 547 U.S. 573 (2006) (No. 05-8794), *available* at http://www.supremecourtus.gov/oral_arguments/argument_transcripts/05-8794.pdf.

gument.¹³⁴ A Texas state judge noted in his dissent from a denial of a stay of execution in *Ex Parte Hopkins* that “a national trend that recognizes that pancuronium bromide is inhumane for use in animals can also be said to be a national trend that recognizes that pancuronium bromide is inhumane for use in human beings.”¹³⁵ In *Beardslee*, the Ninth Circuit noted that “it is somewhat significant” that numerous states had banned the use of curari-form drugs during animal euthanasia,¹³⁶ and lawyers have counted, and listed, state statutes in various pleadings on behalf of death row inmates.¹³⁷

As it turns out, there is some discrepancy in the various counts of states that ban the use of curariform drugs,¹³⁸ a discrepancy that most likely reflects the nuances of the various laws rather than any real disagreement about their substance. Nevertheless, a thorough study of the laws and regulations governing animal euthanasia in several states suggests that the number of states either explicitly or implicitly banning neuromuscular blocking agents has been significantly under-counted, even by advocates for death row inmates. There has also been little analysis or discussion as to why states have adopted their animal euthanasia laws, why so many of them expressly ban the use of drugs like the ones used in human lethal injections, and why the overwhelming majority of states mandate the use of pentobarbital. Parts III and IV of the Article seek to provide that analysis.

In an attempt to clarify the status of state law on the issue, a review of the animal euthanasia laws and regulations in all fifty states was undertaken, first to determine whether any state explicitly allows the use of neuromuscular blocking agents such as pancuronium in animal euthanasia (short answer: no); second, to determine how many states explicitly or implicitly banned the use of neuromuscular blocking agents (short answer: the vast majority); and finally, to determine whether the states that do ban neuromuscular blocking agents do so for reasons that are relevant to the lethal injection controversy (short answer: yes). While some state statutes are less than crystal clear, the inescapable conclusion from this study is that the field of animal euthanasia has reached a unanimous consensus that neu-

134. See *Baze* Oral Argument, *supra* note 17, at *34-35.

135. *Ex Parte Hopkins*, 160 S.W.3d 9, 10 (Tex. Crim. App. 2004) (Price, J., dissenting).

136. *Beardslee v. Woodford*, 395 F. 3d 1064, 1073 (9th Cir. 2005).

137. See, e.g., *Hill* Veterinarian Brief, *supra* note 9, at 15 n.3; *Baze* Veterinarian Brief, *supra* note 8, at 18 n.5.

138. See, e.g., *Hill* Veterinarian Brief, *supra* note 9, at 15 n.3; *Baze* Veterinarian Brief, *supra* note 8, at 18 n.5; *Beardslee*, 395 F. 3d at 1073 nn.8-9.

romuscular blocking agents like pancuronium have no legitimate place in the execution process.¹³⁹

Every state has some law or regulation governing some aspect of animal euthanasia,¹⁴⁰ but not a single one explicitly sanctions the use of a paralyzing agent in the administration of animal euthanasia.¹⁴¹

Nine states explicitly ban the use of neuromuscular blocking agents in animal euthanasia, regardless of whether they are used in conjunction with anesthesia.¹⁴² Several of these states regularly execute inmates using neuromuscular blocking agents. One example is Florida, whose statute is quoted above. Georgia's law is almost identical to Florida's, and mandates that "curare, curariform mixtures, or any substance which acts as a neuromuscular blocking agent may not be used on a dog or cat" for euthanasia purposes.¹⁴³ Another example is Oklahoma, where the relevant statute expresses a preference for pentobarbital as the method of euthanizing cats and dogs, but allows other methods approved by the state's Department of Agriculture "with the exception of curariform derivative drugs."¹⁴⁴ In other words, this law, which was originally passed in 1981, allows any method of euthanasia that the relevant state agency approves, but singles out one class of drug as unacceptable under any circumstances: the precise kind of drug mandated for use by the state of Oklahoma in human lethal injections.¹⁴⁵

Tennessee is another example of a state that explicitly bans the use of curare, curariform mixtures, "or any substance that acts as a neuromuscular blocking agent" for the purpose of animal euthanasia.¹⁴⁶ Tennessee added

139. Some of the statutes have nuances that would be distracting to detail in this Article. For example, many statutes refer to euthanasia methods for "dogs and cats" without specifying methods to be used on other animals; other statutes govern only certain euthanasia contexts, such as in pet shops. The concern of this Article is with an expression by a state legislature or administrative agency about the danger of curariform drugs or the preference for sodium pentobarbital. As such, the relevance of these nuances in the state statutes is minimal.

140. *See infra* Appendix II.

141. The closest any state comes to sanctioning the use of a curariform drug in any manner is Arizona's allowance of T-61 as an acceptable euthanasia method. *See* ARIZ. REV. STAT. ANN. § 11-1021 (2007). However, the inclusion of T-61 appears to be a relic of the past. The Humane Society expressly condemns its use. RHOADES, *supra* note 110, at 133. The AVMA notes that it is not even available for purchase in the United States. *See* AVMA GUIDELINES, *supra* note 93, at 12. As a practical matter, therefore, it cannot be used, even in Arizona.

142. *See infra* Appendix I.

143. GA. CODE ANN. §. 4-11-5.1(b)(2) (2007).

144. OKLA. STAT. tit. 4, § 501(A)(3)(c) (2007).

145. *See* OKLA. STAT. tit. 22, § 1014 (2007).

146. TENN. CODE ANN. § 44-17-303(c) (2007).

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this provision to its law just seven years ago,¹⁴⁷ which is notable given that the Governor of that state has recently proclaimed that he will not follow the recommendation of his own executive commission, which recommended removing pancuronium from the procedure for human lethal injections.¹⁴⁸

In addition to the nine states that explicitly ban neuromuscular blocking agents, another twenty-eight states ban the use of such drugs by implication.¹⁴⁹ For the most part, these states mandate the use of a particular method of euthanasia, usually sodium pentobarbital. Texas, which requires the use of either pentobarbital or “commercially compressed carbon monoxide” in animal euthanasia, is one example.¹⁵⁰ Other examples are California¹⁵¹ and Kentucky,¹⁵² both of which require the use of pentobarbital.¹⁵³ Of these twenty-eight states, fourteen refer to the AVMA, allowing any euthanasia method that the AVMA allows.¹⁵⁴ Typical of these states is Missouri, which defines a “humane killing” as one that is accomplished “by a method approved by the American Veterinary Medical Association’s Panel on Euthanasia.”¹⁵⁵ Because, as discussed above, pentobarbital is the AVMA’s “preferred” method of euthanasia for the animals that most closely resemble humans in physiology and size, and because neuromuscu-

147. In a challenge to Tennessee’s lethal injection protocol, the Tennessee Court of Appeals noted that “the Act was amended in 2001 for two reasons—to respond to the death of a Chattanooga animal shelter worker who died in a gas chamber accident and to revise and modernize the former statute in light of the acceptance of sodium pentobarbital to euthanize animals.” *Abdur’Rahman v. Bredesen*, No. M2003-01767-COA-R3-CV, 2004 WL 2246227, at *8 (Tenn. Ct. App. Oct. 6, 2004).

148. *See* Giuffrida, *supra* note 92.

149. *See infra* Appendix I.

150. TEX. HEALTH & SAFETY CODE ANN. § 821.052(a) (Vernon 2007).

151. CAL. BUS & PROF. CODE § 4827 (West 2007).

152. 201 KY. ADMIN. REGS. 16:090, § 5(1) (2007).

153. Some states in this category implicitly ban neuromuscular blocking agents by limiting the drugs that animal control agencies can use in euthanasia. For example, Wyoming defines “euthanizing drugs” as “any pentobarbital-based drug labeled by the manufacturer for the purpose of euthanizing animals.” WYO. STAT. ANN. § 33-30-216(a)(v) (2007). Arkansas is included in this category, because it defines “euthanasia” as “the humane killing of an animal accomplished by a method that utilizes anesthesia produced by an agent that causes painless loss of consciousness and subsequent death.” A.C.A. § 4-97-103 (2007). Neuromuscular blocking agents, of course, do not cause a “painless loss of consciousness,” and statutes such as Arkansas’ use of the singular term “agent” appear to contemplate a single, painless euthanasia agent. Given that pentobarbital does meet that definition, it is a reasonable assumption that that is the method contemplated by the legislature. In any event, it is clear that the use of a curare derivative or a neuromuscular blocking agent would violate the statute.

154. *See infra* Appendix I.

155. MO. REV. STAT. § 578.005(7) (2007).

lar blocking agents are not on the AVMA's list of acceptable euthanasia methods, these states are counted as among those that also implicitly ban the use of a procedure like the one used in human lethal injections.

Some states have not traditionally been counted as implicitly banning curariform drugs because their statutes or published regulations do not provide a list of specifically approved drugs. Nevertheless, further study of these states reveals that several of them do specify acceptable euthanasia drugs through regulations that are not readily accessible to the public. Virginia is an example. Virginia's administrative code states simply that "[e]uthanasia shall be performed in compliance with methods approved or prescribed by the State Veterinarian."¹⁵⁶ The state has never appeared on a list of states that implicitly bans curariform drugs in animal euthanasia.¹⁵⁷ The Virginia State Veterinarian, however, has issued regulations listing the only acceptable euthanasia methods in the state: pentobarbital, carbon monoxide, and any method approved by the AVMA.¹⁵⁸ Thus, curariform drugs are banned in Virginia, just as they are in the states mentioned above that list approved euthanasia agents in a statute or published regulation. Idaho is another state in which the law does not reference specific drugs but the governing administrative body prescribes certain acceptable euthanasia agents, none of which are curariform drugs.¹⁵⁹

156. See 2 VA. ADMIN. CODE § 5-110-80 (2007).

157. See, e.g., *Hill Veterinarian Brief*, *supra* note 9, at 15 n.3; *Baze Veterinarian Brief*, *supra* note 8, at 18 n.5; *Beardslee v. Woodford*, 395 F. 3d 1064, 1073 nn.8-9 (9th Cir. 2005).

158. See VA. OFFICE OF VETERINARY SERVS., METHODS PRESCRIBED OR APPROVED FOR ANIMAL EUTHANASIA 1-2 (2004) (on file with author).

159. See IDAHO ADMIN CODE 46.01.01.201(a) (2007) ("A list of approved euthanasia drugs is on file at the board office."); Approved Euthanasia and Restraint Drugs, Idaho State Board of Pharmacy (Mar. 14, 2000) (listing approved drugs for euthanasia) (on file with author). Another example is New Hampshire, whose statute states only that animals should be put to death "humanely," using a method approved by the relevant state agency. N.H. REV. STAT. ANN. § 437:22 (2007). The State Veterinarian, however, has, since 1994, mandated that such animals be euthanized only by means of a federally licensed euthanasia solution or a gas chamber. See Clifford W. McGinnis, New Hampshire State Veterinarian, Euthanasia under RSA 437:22 II (Aug. 25, 1994) (on file with author). Alaska, Oregon, and Ohio also have statutes that refer to administrative agencies that, in theory, could have approved the use of paralytic agents in animal euthanasia. In fact, none of these agencies have done so. See Telephone Interview by Ryan Davis, Research Assistant, U.C. Berkeley School of Law, with Brenda Donohue, Licensing Examiner, Alaska Board of Veterinary Examiners (April 11, 2008) (confirming that Alaska does not allow any drugs other than sodium pentobarbital or sodium pentobarbital with lidocaine to be used in animal euthanasia); E-mail from Theresa Stir, Executive Director, Ohio Veterinary Medical Licensing Board, to Ryan Davis, Research Assistant, U.C. Berkeley School of Law (April 7, 2008) (on file with author) (confirming that the Board has not approved the use of any euthanasia agents in Ohio other than those specified in the governing statute); Telephone Interview by Ryan Davis, Research As-

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The statutes of another five states either express a strong preference for the use of sodium pentobarbital, or do not contemplate any method other than sodium pentobarbital.¹⁶⁰ These states do not explicitly mandate the use of pentobarbital, but a reasonable reading of the statute leads to the conclusion that no other method of euthanasia is tolerated. To be conservative, this Article does not include these states with the twenty-eight that implicitly prohibit the use of a paralytic by mandating the use of pentobarbital.

In sum, there are only eight states whose euthanasia laws would even arguably allow the use of a procedure like the one used in human lethal injections.¹⁶¹ These states are essentially silent on the method to be used. Typical is Indiana, which mandates simply that the method shall be “reasonably humane.”¹⁶² Thus, while eight states are silent on the issue, forty-two states have enacted statutes and/or regulations that either implicitly or explicitly ban the use of neuromuscular blocking agents, such as pancuronium, in animal euthanasia. Stated another way, virtually all (97.6 %) lethal injections in this country have taken place in states that have either implicitly or explicitly banned, for use in animal euthanasia, the same drugs that are used in those states during human executions.¹⁶³

Part IV examines the legislative history of these animal euthanasia laws, revealing decades-old arguments against the use of paralyzing drugs that echo the arguments made in lethal injection challenges today.

sistant, U.C. Berkeley School of Law, with Gayle Shriver, Licensing Specialist, Oregon State Veterinary Medical Examining Board (April 8, 2008) (confirming that only sodium pentobarbital is approved for use in animal euthanasia in Oregon).

160. *See infra* Appendix I.

161. Those states are Hawaii, Indiana, Minnesota, New Mexico, North Dakota, South Dakota, Utah, and Vermont. *See infra* Appendix I. Four of these states—Hawaii, Minnesota, North Dakota, and Vermont—do not have the death penalty. Death Penalty Information Center, Facts About the Death Penalty (Apr. 1, 2008), <http://www.deathpenaltyinfo.org/FactSheet.pdf>.

162. 345 IND. ADMIN. CODE 1-7-10(a) (2007).

163. Of the 929 executions by lethal injection that have taken place since executions resumed in 1977, only twenty-two of those occurred in states that do not explicitly or implicitly ban a paralyzing agent in animal euthanasia. Those states are Indiana, New Mexico, South Dakota, and Utah. *See* Death Penalty Information Center, Searchable Database of Executions, <http://www.deathpenaltyinfo.org/executions.php> (last visited Apr. 4, 2008).

IV. LEGISLATIVE HISTORY: FAMILIAR ARGUMENTS

Normally, in both animals and man, an instinctual panic reaction is triggered when the respiratory system fails to operate (as in drowning or suffocation). This panic reaction cannot be seen when a curare-like drug is given because the skeletal muscles are paralyzed. Thus to an observer, the absence of this overt panic reaction would make it seem that the animal succumbs peacefully to the administration of the [curare-like drug]. Since, however, the pharmacological effects on the body are identical for man and animal, one may subjectively identify with the animal since it will have some of the same emotional experiences and physiological reactions as a human being: panic, helplessness, acute fear, asphyxiation and even more gradual unconsciousness.

—Comments submitted by the Humane Society of the United States in Support of House Bill 559 Banning the Use of Curariform Drugs in Maryland, 1979.¹⁶⁴

The legislative history of the statutes banning the use of curariform drugs in animal euthanasia is striking, both for what it reveals, and for what it does not reveal. In some states, these laws were the product of intense lobbying by animal rights groups, who argued for the ban in terms quite similar to the arguments of death row inmates challenging the use of neuromuscular blocking agents in lethal injection procedures. In other states, pentobarbital was mandated because it was widely recognized to be the safest and most humane method of euthanasia. In still other states, the legislative or regulatory move either to ban neuromuscular blocking agents or mandate pentobarbital was utterly uncontroversial, as it reflected the virtually unanimous consensus of the veterinary and animal welfare communities.

In 1979, Delegate Elizabeth S. Smith introduced House Bill 599 in the Maryland Legislature. The bill, which eventually became law, explicitly banned the use of “curariform drugs” in the euthanasia of dogs and cats.¹⁶⁵ Delegate Smith’s testimony before the House Environmental Matters Committee explained why such drugs should play no role in the euthanasia of animals: “These drugs cause a reduced pressure of oxygen to the blood and paralysis of respiratory muscles. Unconsciousness develops slowly, preceded by anxiety and fear. The animal can experience pain even though

164. Michael W. Fox, Inst. for the Study of Animal Problems, Humane Soc’y of the U.S., Succinylcholine Chloride (SUCOSTRIN, U-Tha-Sol) Not For Euthanasia 2 (undated) (on file with author).

165. MD. CODE ANN., CRIM. LAW § 10-611(a)(3) (West 2007).

no body movements occur.”¹⁶⁶ The comments of the Humane Society in support of the bill echoed Smith’s concerns, in even stronger terms: “Let me stress here that as I have stated above, the ONLY acceptable use of neuromuscular blocking agents is for surgical assistance.”¹⁶⁷ The bill passed, and has been on the books ever since.

In 1987, both houses of the New York Legislature overwhelmingly passed a bill to ban the use of “T-61, curare, any curariform drug, any neuromuscular blocking agent or any other paralyzing drug” in animal euthanasia, and allow animal shelters access to sodium pentobarbital.¹⁶⁸ Once the bill was passed, then-Governor Mario Cuomo received an outpouring of letters and memoranda from doctors and animal rights activists, urging him to sign the bill into law, which he eventually did.¹⁶⁹ Much of the debate focused on the use of the drug T-61, which is a combination of anesthetic and paralytic.¹⁷⁰ T-61 is no longer available in the United States and is strongly condemned by the Humane Society of the United States because, “if improperly administered, T-61 can cause animals intense pain after administration and a curare-like paralysis of respiration (suffocation) before the animal loses consciousness.”¹⁷¹ At the time, however, shelters had to use T-61 because they were not able to procure sodium pentobarbital which, like thiopental used in human lethal injections, is a controlled substance.¹⁷² New York’s law, like similar laws of other states, gave shelters access to sodium pentobarbital.¹⁷³ In any event, the concerns about T-61 and other curariform drugs, reflected in New York’s legislative history, are echoed in the concerns with pancuronium today.¹⁷⁴

166. Testimony of Delegate Elizabeth S. Smith before the House Environmental Matters Committee (Feb. 1, 1979) (on file with author).

167. Fox, *supra* note 164, at 2.

168. Assembly Bill 5067-A, Senate Bill 3410-A. The bill passed 55 to 1 in the Senate and 129 to 16 in the Assembly. See Letter from State Senator Joseph L. Bruno to Evan A. Davis, Counsel to the Governor (July 21, 1987) (on file with author).

169. N.Y. AGRIC. & MKTS. LAW § 374 (2-b) (McKinney 2007).

170. See Andrew N. Rowan, *T-61 Use in the Euthanasia of Domestic Animals: A Survey*, ADVANCES IN ANIMAL WELFARE SCI., at 79 (1985).

171. See RHOADES, *supra* note 110, at 133.

172. See Memorandum by Senator Joseph Bruno in Support of SB 3410-A and AB 5067-A (N.Y. 1987) (on file with author) (“[S]ince [sodium pentobarbital] is not readily available to them, shelters have been destroying dogs and cats with T-61, a curariform paralyzing drug which causes fear, pain and suffering during slow asphyxiation.”).

173. See *id.*

174. As discussed below, it was concerns very similar to the concerns about pancuronium in lethal injections that led to T-61 falling out of favor with the animal welfare community. See Rowan, *supra* note 170, at 79 (“[T]he presence of a paralytic agent in the T-61 mixture, continuing anecdotal reports of bad reactions when using T-61, and the relatively complicated protocol recommended for its administration have resulted in repeated questions being

For example, a group of doctors, including anesthesiologists, wrote to Governor Cuomo to describe what could happen if an animal euthanized using a combination of an anesthetic and a paralytic did not receive an adequate dose of the anesthetic:

In the case of a paralyzed, awake animal who did not volunteer and does not know what is happening, the experience is undoubtedly terrifying, even in the absence of pain. If pain is present, it can be even more terrifying and more painful than would ordinarily be assumed, since pain and fear can be synergistic.¹⁷⁵

Others wrote to the governor, noting that the New York State Department of Health banned the use of curariform drugs or agents with curariform activity in the destruction of animals in laboratory settings.¹⁷⁶ Dozens of local animal welfare organizations weighed in as well, one noting that “we favor this law since it would also prohibit the use of . . . drugs containing paralytic agents, which can cause acute suffering before an animal dies.”¹⁷⁷ Another letter pleaded that “[a]nimal organizations have put their hearts and souls into securing a bill which would mean that animal shelters could obtain sodium pentobarbital to be used only to humanely euthanize dogs and cats.”¹⁷⁸

The legislative testimony in support of the bill by Representative Arthur Kremer is particularly on point:

MR. KREMER: The objections that have been raised to the use of this drug [T-61] are based upon adequate scientific research that has shown the use of this particular drug causes animals to die in what is considered a torturous manner, and sodium pentobarbital is a more humane manner in which the animal could be euthanized. . . .

MR. DAVIDSEN: You mentioned the word “torturous”?

raised about the appropriateness of T-61 as a euthanasia agent.”). Nevertheless, at the time the New York law was being debated, T-61 had its defenders, among them veterinarians who did not believe that shelter workers should have access to pentobarbital, a controlled substance, and who also believed that veterinarians were able to administer T-61 without causing pain or suffering. *See, e.g.*, Memorandum of Opposition to SB 3410-A and AB 5067-A (N.Y. 1987) on Behalf of the New York State Veterinary Medical Society (on file with author) (noting that the veterinary society would only support the bill if its provisions were clearly limited to shelter workers, and did not bind veterinarians).

175. Scientists Group, *supra* note 57, at 2.

176. Letter from Arthur J. Kremer, Assembly Member, 20th District, to Evan A. Davis, Counselor to the Governor (July 27, 1987) (on file with author).

177. Letter from Grace Grantner, Legislative Chairperson, League for Animal Protection, to Governor Mario Cuomo (July 16, 1987) (on file with author).

178. Letter from Muriel Resh, Legislative Chairman, Animal Welfare League of Westchester County, Inc., to Governor Mario Cuomo (July 14, 1987) (on file with author).

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MR. KREMER: When an animal is paralyzed prior to dying, I think you put that animal, if you will, through a much more difficult death than you would with sodium pentobarbital.¹⁷⁹

The legislative history of the Connecticut statute also reflects concerns that the use of curariform drugs in animal euthanasia increases the potential for a torturous death. In that state, the original version of a proposed bill would only permit a licensed veterinarian to administer euthanasia by a “lethal injection.”¹⁸⁰ Although the legislative history reflects an overwhelming support for the bill, several animal welfare advocates urged the legislators to include a list of drugs to be used in lethal injections, for fear that some individuals might use curariform drugs instead of sodium pentobarbital.¹⁸¹ One of the advocates, the president of the Northeastern Connecticut Animal Rescue, Inc., warned that pet shops may be tempted to use succinylcholine chloride, a neuromuscular blocking agent, and that animals would be paralyzed and “die[] of suffocation while fully conscious.”¹⁸² She continued: “Please do not assume that the phrase ‘lethal injection’ is adequate to prevent the animal’s suffering. Drugs other than sodium pentobarbital are NOT humane alternatives.”¹⁸³ The legislature concurred and amended the bill, so that the language signed into law permits euthanasia only “by lethal injection of sodium pentobarbital.”¹⁸⁴

The legislative history in other states similarly reflects the strong preference for pentobarbital among veterinarians and animal rights experts. For example, in a 1978 letter to the California senator sponsoring legislation to mandate the use of pentobarbital, the Executive Director of the Nevada Humane Society wrote that “you should know that the track record of sodium pentobarbital use[d] by Humane Societies throughout the U.S. is excellent and stands as unquestionable evidence that its use is most humane and safe. There is no excuse for any animal shelter to be forced to use any-

179. ASSEMBLY DEBATE TRANSCRIPTS, ch. 619, at 40-41 (N.Y. Legislative Service, Inc. 1987).

180. Proposed Bill No. 6059, Connecticut General Assembly (1987) (on file with author).

181. *See, e.g.*, Mildred G. Lucas, President, The Foundation for Animal Protection, Inc., Talking Points for the Testimony Before the Connecticut General Assembly Environment Committee on March 6, 1987 (“[I]nstead of the words ‘lethal injection,’ ‘sodium pentobarbital’ should be substituted, before some pet shop used Succinylcholine Chloride, which paralyzes and thus suffocates conscious animals and should itself be outlawed from use in Connecticut!”) (on file with author).

182. Letter from Linda E. Wenner, President, Northeastern Connecticut Animal Rescue, Inc., to Members of the Connecticut Assembly Environment Committee (Mar. 16, 1987) (on file with author).

183. *Id.*

184. CONN. GEN. STAT. § 22-344a(a) (2007).

thing less.”¹⁸⁵ When California decided to outlaw the use of carbon monoxide as a method of euthanasia in 1998, the Senate Judiciary Committee prepared a Bill Analysis stating that “there is a general consensus that a lethal injection of sodium pentobarbital is the most humane way to euthanize unwanted dogs and cats.”¹⁸⁶

In many states, a review of the legislative and administrative history reveals that state legislators simply deferred to veterinary experts, who long ago banned paralyzing agents in their euthanasia procedures and settled on an anesthetic-only procedure.

Kentucky is a prime example of a state whose creation of euthanasia standards mandating the exclusive use of pentobarbital proved uncontroversial. Kentucky’s statute does not mandate a particular method of euthanasia, so long as veterinarians are performing the task.¹⁸⁷ But with respect to “certified animal euthanasia specialists,” who work in animal shelters and do not have the same level of training and expertise as veterinarians, Kentucky regulations mandate the anesthetic-only euthanasia procedure, which is both safer and easier to administer.¹⁸⁸ A review of the regulatory history reveals that nobody requested a public hearing on these regulations, and the scheduled hearing was cancelled as a result.¹⁸⁹ In other states, such as Tennessee, a review of the legislative history reveals debate over certain aspects of the euthanasia laws, such as whether they apply to hunters, but no debate with respect to the strict requirements on drugs that could be used.¹⁹⁰

185. Letter from Thomas A. Little, Executive Director, Nev. Humane Soc’y, Inc., to Cal. State Senator Alfred H. Song (Aug. 15, 1978) (on file with author).

186. JOHN L. BARTON, S. JUDICIARY COMM., SB 1659 SENATE BILL ANALYSIS, 1997-98 Reg. Sess. (Cal. 1998) (on file with author).

187. KY. REV. STAT. ANN. § 321.207 (West 2008).

188. See 201 KY. ADMIN. REGS. 16:090, § 5(1) (2007). Similarly, in Alaska, legislation was passed in 2002 that allowed for shelter workers to have access to sodium pentobarbital, so that they did not have to rely on veterinarians (who had access to the controlled substance). ALASKA STAT. § 08.02.050 (2007). During debate on the bill, several animal control agency directors testified about the need for shelter workers to have access to the “most humane method” of euthanizing animals. Testimony of Marianne Clark, Soldotna Animal Shelter, Apr. 2, 2002 (on file with author); see also Testimony of Laura Hood, Manager, Fairbanks North Star Borough, Division of Animal Control, Apr. 2, 2002 (“This bill allows animal shelter workers to legally purchase, maintain, and use the drug which is accepted as the best euthanasia method that we have available to us.”) (on file with author).

189. See Letter from James J. Grawe, Assistant Attorney General, to Susan C. Wunderlich, Regulations Compiler (Apr. 15, 1999) (on file with author).

190. Legislative history in Tennessee, as with many other states, is not transcribed. However, audio tapes are available from the Tennessee State Library and Archives. See Audio tape: 102nd General Assembly, H. Agric. Comm. (Mar. 20, 2001) (on file with author); Audio tape: 102nd General Assembly, H. Calendar and Rules Comm. (Mar. 29,

In short, the heated controversy over proper procedures for use in human lethal injections is contrasted by a relative lack of such controversy in statehouses across the country when the issue is animal euthanasia. Legislatures appear to have deferred to the long-standing and carefully reviewed practices of the veterinary and animal welfare communities. When those experts have requested that states ban paralyzing agents in the destruction of animals, legislatures have been happy to oblige.

CONCLUSION

One remarkable aspect of the recent challenges to lethal injection is that lawyers for death row inmates have consistently argued that there are humane ways to execute prisoners. In fact, they have routinely presented expert testimony in support of this proposition. For example, in a 2006 lethal injection challenge in Maryland, lawyers for death row inmate Vernon Evans presented the testimony of expert anesthesiologist Mark Heath, and asked him point blank whether, in his opinion, “lethal injection can be performed humanely.”¹⁹¹ Dr. Heath responded, “I’m very confident of that, yes. I believe it’s performed on household pets, on dogs and cats, thousands of times a day in the United States or more, and it’s done in a reliable and humane fashion.”¹⁹² President Ronald Reagan made the same analogy more than thirty years ago, defending the advent of lethal injection when he was Governor of California. Referring to the euthanasia of an injured horse, he said:

[Y]ou call the veterinarian and the vet gives it a shot and the horse goes to sleep—that’s it. I myself have wondered if maybe this isn’t part of our problem [with capital punishment], and maybe we should review and see if there aren’t even more humane methods [of execution] now—the simple shot or the tranquilizer.¹⁹³

The comparison is, in theory, an apt one, as the relevant drugs (barbiturates, paralytics, and potassium) all have the same effects on animals such

2001) (on file with author); Audio tape: 102nd General Assembly, H. Sess. (Apr. 2, 2001) (on file with author); Audio tape: 102nd General Assembly, S. Judiciary Comm. (Feb. 13, 2001) (on file with author); Audio tape: 102nd General Assembly, S. Judiciary Comm. (Feb. 27, 2001) (on file with author); Audio tape: 102nd General Assembly, S. Sess. (Mar. 5, 2001) (on file with author); Audio tape: 102nd General Assembly, S. Sess. (Apr. 5, 2001) (on file with author).

191. Testimony of Dr. Mark Heath at 12, *Evans v. Saar*, 412 F. Supp. 2d 519 (D. Md. Sept. 19, 2006) (No. 06-149).

192. *Id.*

193. Colman McCarthy, Op-Ed, *Killing With Kindness*, WASH. POST, June 11, 1983, at A23.

as cats, dogs, and horses as they do on humans.¹⁹⁴ And, of course, as a scientific matter, we extrapolate from animals all the time; such extrapolation is the foundational underpinning of the use of animals in any medical experimentation.¹⁹⁵

But while President Reagan's comparison may be apt in theory, it breaks down in practice. After all, the fact remains: people are not executed the same way that animals are euthanized. People are never executed using the anesthetic-only procedure that veterinarians and shelter workers use on animals. And animals are never euthanized by the three-drug formula prison officials use on human beings. As detailed in this Article, the veterinary and animal welfare communities widely condemn the use of neuromuscular blocking agents such as pancuronium.¹⁹⁶ Particularly given the popular assumption that execution of humans by lethal injection is no different than "putting an animal to sleep," the condemnation of the use of curariform drugs in the euthanasia context should give courts pause when assessing the risks of the three-drug formula under the Eighth Amendment.

Interestingly, the Humane Society of the United States finds itself in the middle of a controversy every bit as heated as the debate over the death penalty, namely whether animal shelters should euthanize stray cats and dogs.¹⁹⁷ The Humane Society, taking the position that the euthanasia of millions of animals a year is an absolute necessity, has noted that the public's confidence in a program that involves the euthanasia of animals depends on the credibility of the program's administration:

In order for an animal control or humane society program to be successful, it must be accepted and supported by the people it serves. When a shelter has a professional euthanasia program that meets or exceeds national standards, some of the worst fears and misconceptions of the public are alleviated. The implementation of euthanasia by injection of sodium pentobarbital and compassionate animal handling is an essential step for any shelter in gaining the public's trust.¹⁹⁸

In other words, the Humane Society has decided that the best way to establish the credibility and sustainability of a program that involves the de-

194. See Expert Report of Dr. Kevin Concannon at 4, 6, *Morales v. Tilton*, 465 F. Supp. 2d 972 (N.D. Cal. Aug. 15, 2006) (No. C06-0219).

195. See Deposition of Dr. Kevin Concannon at 33, *Morales*, 465 F. Supp. 2d at 972 (noting that some medical studies extrapolate information from animals to people).

196. See *supra* Part II.

197. See, e.g., Jesse Katz, *What's a Dog Worth? Los Angeles Kills More Animals in its Shelters Than Any Other Metropolitan Area in the United States. For that to Change, We Will Have to Figure out What to Do with the Pets None of Us Wants*, L.A. MAG., May 1, 2006, at 116; Kathleen Fifield, *Idealism: The Fight to Save Fluffy*, PHILA. MAG., Feb. 2006.

198. RHOADES, *supra* note 110, at 2.

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struction of living beings is to use the most humane, compassionate methods possible.

The comparison between this approach and that of the states in their aggressive defense of the death penalty, is striking. The Humane Society mandates a method of euthanasia the primary benefit of which is that it is *actually* humane. At a time when the public's trust in the administration of capital punishment in this country appears to be eroding,¹⁹⁹ the states, on the other hand, have clung to a method whose primary benefit is that it *looks* humane—but which in reality risks the unnecessary infliction of excruciating pain and suffering.

199. See RICHARD C. DIETER, DEATH PENALTY INFORMATION CTR., A CRISIS OF CONFIDENCE: AMERICANS' DOUBTS ABOUT THE DEATH PENALTY 1 (2007), available at <http://www.deathpenaltyinfo.org/CoC.pdf> (stating that, based on a national public opinion poll conducted in 2007, “[p]eople are deeply concerned about the risk of executing the innocent, about the fairness of the process, and about the inability of capital punishment to accomplish its basic purposes”).

**APPENDIX I: STATE ANIMAL EUTHANASIA LAWS AND REGULATIONS
LISTED BY CATEGORY**

A. States that Explicitly Ban Paralyzing Agents

Florida	Georgia	Maine
Maryland	Massachusetts	New Jersey
New York	Oklahoma	Tennessee

B. States that Implicitly Ban the Use of Paralyzing Agents

Alabama*	Alaska	Arizona	Arkansas
California	Colorado*	Connecticut	Delaware
Idaho	Illinois*	Iowa*	Kansas*
Kentucky*	Louisiana*	Mississippi*	Missouri*
Montana	New Hampshire	North Carolina*	Ohio
Oregon	Rhode Island*	South Carolina	Texas
Virginia*	West Virginia*	Wisconsin*	Wyoming

*The statutes and/or regulations of these states define euthanasia with a reference to a version of the AVMA guidelines.

**C. States that Express a Strong Preference for
Pentobarbital-based Drugs**

Michigan	Nebraska	Nevada
Pennsylvania	Washington	

**D. States with Laws that Are Silent With Respect to Approved Animal
Euthanasia Methods**

Hawaii	Indiana	Minnesota	New Mexico
North Dakota	South Dakota	Utah	Vermont

APPENDIX II: CITATIONS TO STATE ANIMAL EUTHANASIA LAWS AND REGULATIONS

State	Statutes and Regulations
Alabama	ALA. CODE § 34-29-131 (2007) ALA. ADMIN. CODE r. 930-x-1-.35 ALA. ADMIN. CODE r. 930-x-1-.36
Alaska	ALASKA STAT. § 08.02.050 (2007)
Arizona	ARIZ. REV. STAT. ANN. § 11-1021 (2007)
Arkansas	ARK. CODE ANN. § 4-97-103 (2007)
California	CAL. BUS. & PROF. CODE § 4827 (West 2007)
Colorado	COLO. REV. STAT. § 18-9-201 (2007) COLO. REV. STAT. § 35-80-102 (2007)
Connecticut	CONN. GEN. STAT. § 22-344a (2007)
Delaware	DEL. CODE ANN. tit. 3, § 8001 (2007)
Florida	FLA. STAT. § 828.058 (2007) FLA. STAT. § 828.065 (2007)

Georgia	GA. CODE ANN. § 4-11-5.1 (2007) GA. COMP. R. & REGS. r. 40-13-13-.08 (2007)
Hawaii	HAWAII REV. STAT. § 143-13 (2007)
Idaho	IDAHO ADMIN. CODE r. 46.01.01.201 (2007)
Illinois	510 ILL. COMP. STAT. 70/2.09 (2007)
Indiana	345 IND. ADMIN. CODE 1-7-10 (2007)
Iowa	IOWA CODE § 162.2 (2007) IOWA ADMIN. CODE r. 21-67.9 (2007)
Kansas	KAN. STAT. ANN. § 47-1718 (2007) KAN. ADMIN. REGS. § 9-26-1 (2007)
Kentucky	KY. REV. STAT. ANN. § 321.207 (2007) KY. REV. STAT. ANN. § 258.095 (2007) 201 KY. ADMIN. REGS. 16:090 (2007)
Louisiana	LA. REV. STAT. ANN. § 3:2465 (2007)
Maine	ME. REV. STAT. ANN. tit. 17, § 1044 (2007) ME. REV. STAT. ANN. tit. 17, § 1042 (2007)
Maryland	MD. CODE ANN., CRIM. LAW § 10-611 (2007)
Massachusetts	MASS. GEN. LAWS ch. 140, § 151A (2007)

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Michigan	MICH. COMP. LAWS § 333.7333 (2007) MICH. ADMIN. CODE r. 285.151.1 (2007)
Minnesota	MINN. STAT. § 343.235 MINN. STAT. § 343.37 MINN. R. § 1720.1542 (2007)
Mississippi	127 MISS. GOV'T REG. 50-026-001 (Weil Feb. 2008)
Missouri	MO. REV. STAT. § 578.005 (2007) MO. CODE REGS. ANN. tit. 2, § 30-9.020 (2007)
Montana	MONT. ADMIN. R. 8.64.901 (2007) MONT. ADMIN. R. 8.64.908 (2007)
Nebraska	NEB. REV. STAT. § 54-2503 (2007)
Nevada	NEV. REV. STAT. § 638.005 (2007)
New Hampshire	N.H. REV. STAT. § 437:22 N.H. CODE ADMIN. R. ANN. Pari. 809.05 (2007)
New Jersey	N.J. STAT. ANN. § 4:22-19.3 (2007) N.J. ADMIN. CODE § 8:23A-1.11 (2007)
New Mexico	N.M. STAT. § 77-1B-2 (2007)
New York	N.Y. AGRIC. & MKTS. LAW § 374 (2007) N.Y. COMP. CODES R. & REGS. tit. 10, § 80.134 (2007)
North Carolina	N.C. GEN. STAT. § 19A-23 (2007) N.C. GEN. STAT. § 19A-24 (2007)

North Dakota	N.D. CENT. CODE § 36-05-10.1 (2007)
Ohio	OHIO REV. CODE ANN. § 4729.532 (West 2007)
Oklahoma	OKLA. STAT. tit. 4, § 501 (2007)
Oregon	OR. REV. STAT. § 609.405 (2007)
Pennsylvania	3 PA. STAT. § 328.6 (2007)
Rhode Island	R.I. GEN LAWS § 4-19-2 (2007) R.I. GEN LAWS § 4-1-34 (2007)
South Carolina	S.C. CODE ANN. § 47-3-420 (2007)
South Dakota	S.D. ADMIN. R. 12:68:20:03 (2007)
Tennessee	TENN. CODE ANN. § 44-17-303 (2007)
Texas	TEX. HEALTH & SAFETY § 821.052 (Vernon 2007)
Utah	UTAH CODE ANN. § 58-17b-102 (2007)
Vermont	VT. STAT. ANN. tit. 20, § 3901 (2007)
Virginia	VA. CODE ANN. § 3.1-796.66 (2007)

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Washington	WASH. REV. CODE § 16.52.011 (2007) WASH. REV. CODE § 69.50.310 (2007) WASH. ADMIN. CODE § 246-886-020 (2007)
West Virginia	W. VA. CODE § 7-10-4 (2007) W. VA. CODE § 30-10A-8 (2007)
Wisconsin	WIS. ADMIN. CODE NR 19.71 (2007)
Wyoming	WYO. STAT. ANN. § 33-30-216 (2007)