

# NOT HUMANE, NOT AVMA APPROVED, AND DEFINITELY NOT EUTHANASIA: WELFARE AND EFFICACY ISSUES OF SWINE DEPOPULATION BY VENTILATION SHUTDOWN

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## ABSTRACT

*The COVID-19 pandemic created supply chain disruptions in the United States pork industry which resulted in depopulation of pigs by ventilation shut down. The pork industry has justified the use of this cruel culling method because*

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*it is an American Veterinary Medical Association (AVMA) approved depopulation method of last resort during a crisis. However, AVMA members are speaking out to challenge the use of VSD+ as an approved method of depopulation. Meager federal protections for farmed animals are not violated when VSD+ is used to kill pigs, but if the method is not implemented according to AVMA guidelines, improper use of VSD+ may contravene state anti-cruelty laws. This article analyzes VSD+ as an AVMA approved depopulation method, AVMA internal opposition to the method, laws which may or may not apply to the method, and argues for rejection of VSD+ as an AVMA approved depopulation method.*

## I. INTRODUCTION

The COVID-19 pandemic created supply chain disruptions in the United States pork industry that resulted in the depopulation of pigs by ventilation shut down (VSD).<sup>1</sup> The pork industry justified the use of this culling method because VSD is an American Veterinary Medical Association (AVMA) approved depopulation method of last resort during a crisis.<sup>2</sup> However, AVMA members are speaking out to challenge the use of VSD as an approved method of depopulation.<sup>3</sup> Federal protections for farmed animals are not violated when VSD is used to kill pigs. However, if VSD is not implemented using AVMA guidelines, improper use of VSD may contravene state livestock and anticruelty laws. This essay analyzes VSD as an AVMA-approved depopulation method, internal AVMA opposition to the method, which laws may or may not apply to use of the method, and argues for rejection of VSD as an AVMA approved depopulation method.

## II. BACKGROUND: COVID-19, SPREAD AMONG SLAUGHTERHOUSE WORKERS, TRIGGERED EVENTS LEADING TO USE OF VSD TO DEPOPULATE PIGS

In 2020, business supply chains that were thought to be logistically sound were significantly disrupted due to COVID-19 related worker shortages. This occurred in many industry areas, but was a big problem for meat production. In the

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1. Matt Johnson, *Opinion: My Arrest and Aborted Prosecution Underlined 3 Lies Iowa is Propagating About Animal Agriculture*, DES MOINES REG. (Feb. 5, 2022, 12:04 PM CST), <https://www.desmoinesregister.com/story/opinion/columnists/iowa-view/2022/01/23/animal-abuse-vsd-iowa-agriculture-state-tried-silence-me/6631339001/> [<https://perma.cc/GD7Q-NLGG>].

2. AM. MED. VETERINARY ASS'N, AVMA GUIDELINES FOR THE DEPOPULATION OF ANIMALS: 2019 EDITION 45 (2019), <https://www.avma.org/sites/default/files/resources/AVMA-Guidelines-for-the-Depopulation-of-Animals.pdf> [<https://perma.cc/RD7M-C9PJ>].

3. See Jim Reynolds et al., *Letters to the Editor*, 259 J. AM. VETERINARY MED. ASS'N 1102, 1102 (2021).

United States —and wherever industrial farming of animals is part of the meat production process — vertically integrated supply chains have been developed to grow animals to consistent sizes, and send them to slaughter, within defined timeframes.<sup>4</sup> This is because consistently-sized animals conform to industry processes designed to grow animals as fast as possible, send them to slaughter at a size that allows animals to fit into the equipment designed to move them through the slaughter plant, and be handled by slaughterhouse workers.<sup>5</sup>

From a financial standpoint, this process is an efficient way to provide American families with affordable sources of protein.<sup>6</sup> However, the pandemic revealed the true fragility of the United States meat supply chain; its processes rely on the exploitation of farm and slaughterhouse workers. Treating slaughterhouse workers as disposable and failing to protect them from COVID-19 directly led to the shutdown of meat packing plants in 2020. For example, at Tyson’s Waterloo, Iowa pork processing plant, management took bets on how many workers would contract COVID-19.<sup>7</sup> Tyson Waterloo kills on average 19,500 pigs daily, “3.9% of the U.S. pork processing capacity,”<sup>8</sup> and under normal conditions, working in a meat packing plant is considered one of the most dangerous jobs in America.<sup>9</sup> Workers suffer cuts, cumulative trauma from repetitive motion, strains, amputations, bone fractures and other injuries.<sup>10</sup>

The Occupational Safety and Health Administration (OSHA) inspects meat packing plants and assess ways to improve health and safety for workers.<sup>11</sup> Experts

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4. Olivia Solon, *Coronavirus Crisis Puts Hog Farmers in Uncharted Territory: Killing Their Healthy Livestock*, NBC NEWS (May 29, 2020, 12:52 PM CDT), <https://www.nbcnews.com/news/us-news/coronavirus-crisis-puts-hog-farmers-uncharted-territory-kill-their-healthy-n1216571> [<https://perma.cc/BQL7-C45C>].

5. *Id.*

6. However affordable is not always synonymous with healthful or humane.

7. Laurel Wamsley, *Tyson Foods Fires 7 Plant Managers Over Betting Ring on Workers Getting Covid-19*, NAT’L PUB. RADIO (Dec. 16, 2020, 5:30 PM), <https://www.npr.org/sections/coronavirus-live-updates/2020/12/16/947275866/tyson-foods-fires-7-plant-managers-over-betting-ring-on-workers-getting-covid-19> [<https://perma.cc/Z5F3-YNFB>].

8. Donnelle Eller, *Tyson Reopening Its Waterloo Processing Plant with Increased Safety Measures for Workers*, DES MOINES REG. (May 6, 2020, 6:29 PM CT), <https://www.desmoinesregister.com/story/money/agriculture/2020/05/06/tyson-reopening-waterloo-pork-processing-meat-packing-plant-limited-production/5176525002/> [<https://perma.cc/PCW3-CX88>].

9. U.S. GOV’T ACCOUNTABILITY OFF., GAO-05-96, WORKPLACE SAFETY AND HEALTH: SAFETY IN THE MEAT AND POULTRY INDUSTRY, WHILE IMPROVING, COULD BE FURTHER STRENGTHENED (2005), <https://www.govinfo.gov/content/pkg/GAOREPORTS-GAO-05-96/html/GAOREPORTS-GAO-05-96.htm> [<https://perma.cc/U8F7-9CB3>].

10. *Id.*

11. *Id.*

believe that a reduction in line speed – the speed at which animals are sent through the plant for killing and cutting into parts – could reduce injury to plant workers.<sup>12</sup> However, COVID-19 prompted government removal of line speed limits, allowing meat packing plants to send as many animals as possible through the plant for killing without any time limitations.<sup>13</sup> This put workers at an even higher risk or injury.<sup>14</sup> It is difficult for workers to oppose their degraded working conditions in slaughterhouses. The spread of COVID-19 throughout packing plants made these jobs even more deadly.

Taking the Waterloo, Iowa pork processing plant as an example, plant workers in the 1980s were typically local community members and had union representation.<sup>15</sup> Over time, the Waterloo processing plant began soliciting workers from outside of the community.<sup>16</sup> In the 1990s, the plant sought workers from homeless shelters, Mexico, Bosnian refugees, and other sources.<sup>17</sup> In the following years, the diversity of pork plant workers continued to increase, including refugees from Myanmar and immigrants from Democratic Republic of Congo.<sup>18</sup> Workers of Marshalllese and Micronesian descent, fleeing their islands due to climate change events sought a “better life” as slaughterhouse workers in the Waterloo plant.<sup>19</sup>

The workers attempting to keep slaughter lines running to feed America are a diverse group of people with diminished legal protections due to their immigration status and lack of unionization.<sup>20</sup> As the pandemic spread in the United States, workers’ plights were exacerbated by a lack of personal protective equipment, accompanied by a simultaneous increase of slaughter line speeds.<sup>21</sup> Since that time, some employers have attempted to change course, providing access to COVID-19

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12. *Id.*

13. Bibi van der Zee et al., ‘No Way Food Safety Not Compromised’: US Regulation Rollbacks During Covid-19 Criticised, THE GUARDIAN (Apr. 20, 2020, 7:43 PM EDT), <https://www.theguardian.com/environment/2020/apr/20/no-way-food-safety-not-compromised-us-regulatory-roll-backs-during-covid-19-criticised> [https://perma.cc/3RV7-DB3W].

14. Matt McConnell, *US Court Rules for Safety in Meatpacking*, HUM. RTS. WATCH (Apr. 1, 2021, 2:17 PM EDT), <https://www.hrw.org/news/2021/04/01/us-court-rules-safety-meatpacking#> [https://perma.cc/NJ22-DPCZ].

15. Bernice Yeung & Michael Grabell, *How the History of Waterloo, Iowa, Explains How Meatpacking Plants Became Hotbeds of COVID-19*, PROPUBLICA (Dec. 21, 2020, 5:01 AM), <https://www.propublica.org/article/how-the-history-of-waterloo-iowa-explains-how-meatpacking-plants-became-hotbeds-of-covid-19> [https://perma.cc/7KL9-6RHS].

16. *Id.*

17. *Id.*

18. *Id.*

19. *Id.*

20. *See id.*

21. *See id.*

testing and enhanced care for workers.<sup>22</sup> Regardless, initial lack of care for workers led to worker illnesses and deaths.<sup>23</sup>

As slaughterhouse workers were disproportionately impacted by COVID-19, kill line speeds could not be maintained, and slaughterhouses began to shut down.<sup>24</sup> For the pork industry, this resulted in growers having nowhere to send their rapidly growing pigs for slaughter.<sup>25</sup> Growers employed various mitigation strategies including decreasing breeding on farrowing farms, selling or killing newborn piglets, selling finished pigs on the open market, culling marginally healthy pigs, increasing stocking density in finishing and nursing barns, using nontraditional housing, donating pigs to charities, and modifying feed in an attempt to slow growth rates.<sup>26</sup> However, these efforts were insufficient to deal with hundreds of thousands of pigs, so in an effort to mitigate their losses, growers looked to the AVMA guidelines for approved methods to “depopulate” large numbers of pigs.<sup>27</sup>

The depopulation method used to cull pigs during the pandemic may have gone unnoticed by the public if not for an insider tip. Lucas Walker, a truck driver for Iowa Select Farms, was concerned about pig welfare at Iowa Select, but his efforts to address these welfare concerns were not acted upon by the company nor by law enforcement.<sup>28</sup> When his concerns went unaddressed, Mr. Walker reached out to Direct Action Everywhere (DxE), a nonviolent grassroots organization with a global presence that seeks social and political change for nonhuman animals:

[Mr. Walker’s] original reason for contacting [DxE] was the routine overstocking of pigs in ways that [may not be in accordance with industry standards], in addition to be[ing] extremely cruel. He had asked management about this and it was brushed off. Then in the course of [DxE] being in contact with [Walker], covid hit, and the slaughterhouse shutdowns that came with it, resulting in the use of VSD.<sup>29</sup>

Based on Mr. Walker’s tip, DxE planted undercover cameras which recorded pig

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22. Eller, *supra* note 8.

23. *See id.*

24. Angela Baysinger et al., *A Case Study of Ventilation Shutdown with the Addition of High Temperature and Humidity for Depopulation of Pigs*, 259 J. AM. VETERINARY MED. ASS’N 415, 416-17 (2021).

25. *Id.*

26. *Id.*

27. *Id.* at 417.

28. Johnson, *supra* note 1.

29. Text message from Matt Johnson, Press Coordinator, Direct Action Everywhere, to author (Mar. 21, 2022) (on file with author).

depopulation by ventilation shutdown at Iowa Select Farms.<sup>30</sup> The audio and video recordings captured by DxE revealed a depopulation process that shocks the conscience.<sup>31</sup>

### III. VENTILATION SHUTDOWN: WHAT IT IS, WHAT IT DOES, AND HOW IT WAS USED DURING THE PANDEMIC

#### A. AVMA Depopulation Guidelines and VSD

The AVMA publishes guidelines for depopulation of farmed, companion, laboratory, and aquatic animals as well as captive and free-ranging wildlife.<sup>32</sup> These guidelines influence veterinarians, the industrial animal agriculture industry, and even state rulemaking.<sup>33</sup> AVMA guidelines for depopulation of swine are prefaced with notice that “[n]ot all methods will induce death in a manner that is consistent with euthanasia.”<sup>34</sup> In other words, some of the methods described under the depopulation guidelines do not limit distress or pain to the individual pig when administered.<sup>35</sup> Guidelines for pig depopulation are broken into three main categories: 4.5.1) Preferred methods, 4.5.2) Permitted in constrained circumstances, and 4.5.3) Not recommended.<sup>36</sup> AVMA preferred killing methods for pigs include gunshot, captive bolt, electrocution, manual blunt force trauma, movement to slaughter, carbon dioxide, and anesthetic overdose.<sup>37</sup> Two killing methods are permitted in constrained circumstances: ventilation shutdown plus, and sodium nitrite intoxication.<sup>38</sup> Under section 4.5.3, guidelines that are “[n]ot recommended” for pig depopulation, no methods are listed.<sup>39</sup> After COVID-19 disrupted supply chains in 2020, undercover footage by DxE revealed that ventilation shutdown, a

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30. Johnson, *supra* note 1.

31. *Id.*

32. AVMA GUIDELINES FOR THE DEPOPULATION OF ANIMALS, *supra* note 2, at 3.

33. See 113 Ind. Reg. 345 (May 1, 2020), <http://iac.iga.in.gov/iac/20200506-IR-345200247NRA.xml.html> [<https://perma.cc/M4MT-P72Y>].

34. AVMA GUIDELINES FOR THE DEPOPULATION OF ANIMALS, *supra* note 2, at 43.

35. *Id.* at 6. Under AVMA euthanization guidelines, a veterinarian’s prima facie duty “in carrying out euthanasia includes, but is not limited to, (1) their humane disposition to induce death in a manner that is in accord with an animal’s interest and/or because it is a matter of welfare, and (2) the use of humane techniques to induce the most rapid and painless and distress-free death possible.”; AM. MED. VETERINARY ASS’N, AVMA GUIDELINES FOR THE EUTHANASIA OF ANIMALS: 2020 EDITION 6 (2020), <https://www.avma.org/sites/default/files/2020-02/Guidelines-on-Euthanasia-2020.pdf> [<https://perma.cc/RP4K-WJC6>].

36. *Id.* at 43-45.

37. *Id.*

38. *Id.* at 45.

39. *Id.*

depopulation method permitted in constrained circumstances, was being used to kill healthy pigs because slaughterhouses could not take them.<sup>40</sup>

The AVMA's *purpose* for use of VSD under constrained circumstances should be recognized. The AVMA guidelines clearly indicate that the purpose of using VSD is to avoid an even longer period of suffering for pigs.<sup>41</sup> This prolonged period of suffering is suggested to occur under circumstances where a pig has contracted a contagious and painful disease, and if not euthanized humanely, that individual pig would endure more suffering from prolonged disease than they would from death by VSD, enclosed in a barn with hundreds<sup>42</sup> of conspecifics.<sup>43</sup> However, during the COVID-19 pandemic, the purpose of VSD was to cull pigs not due to disease, but because consolidation in the pork industry has created a supply chain where even minor disruptions can break the entire system. Under these circumstances, healthy pigs subjected to VSD suffered an inhumane death, contrary to the purpose outlined under the guidelines.

#### *B. How Ventilation Shutdown is Implemented*

There are multiple types of ventilation shutdown.<sup>44</sup> In the most basic sense, ventilation shutdown involves closing the doors of a barn, turning off the exhaust fans, and allowing the barn temperature to rise due to the pigs' combined body heat until the pigs inside of the barn suffer death by hyperthermia.<sup>45</sup> AVMA guidelines for VSD specify that the pigs will die from suffocation due to lack of oxygen and increased carbon dioxide, excessive temperature inside the barn, gases from the manure under the barn, or a combination of these factors.<sup>46</sup>

VSD+ pairs ventilation shutdown with adding carbon dioxide to the barn interior, or using machines to increase the barn temperature, or a combination of

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40. Johnson, *supra* note 1.

41. AVMA GUIDELINES FOR THE DEPOPULATION OF ANIMALS, *supra* note 2, at 45.

42. Baysinger et al., *supra* note 24, at 416-20. It is unclear from this report exactly how many pigs were killed in each VSD+TH cycle. The report defines a cycle as "a single group of pigs in a single barn that underwent the depopulation process." *Id.* at 420. The report states that 59,478 nursery pigs were killed in 16 cycles which is an average of 3,717 per nursery pig killing cycle. *Id.* Additionally, 183,538 finishing pigs were killed over 122 cycles, averaging 1,504 finishing pigs per cycle. *Id.* Depending on whether a VSD cycle was killing nursery or finishing pigs, an individual was crowded into the killing barn for death with thousands or hundreds of her conspecifics. *See id.*

43. *See* AVMA GUIDELINES FOR THE DEPOPULATION OF ANIMALS, *supra* note 2, at 45.

44. Baysinger et al., *supra* note 24, at 415.

45. AVMA GUIDELINES FOR THE DEPOPULATION OF ANIMALS, *supra* note 2, at 45 (hyperthermia means to overheat).

46. *Id.*

these.<sup>47</sup> VSD+TH is another variant of depopulation where high temperature along with humidity are both added to ventilation shutdown.<sup>48</sup> AVMA depopulation guidelines note that addition of carbon dioxide and an increase in barn temperature may be necessary to increase the effectiveness of VSD.<sup>49</sup> Variables such as the size of the pigs, how many pigs are in the barn during the procedure, and the ability to make the barn air tight will contribute to achieving the appropriate temperature within the timeframe set by the AVMA.<sup>50</sup>

Regardless of the combination of factors, the AVMA guidelines language specifies “that VSD only be used in facilities with the capability to adequately increase air temperature to a level that causes the generation of latent heat that results in a >95% death rate in < 1 hour.”<sup>51</sup> If a 100% mortality rate is not achieved within a swine depopulation cycle, the AVMA considers this result “unacceptable.”<sup>52</sup> As written, the guideline language is subject to interpretation that the entire cycle may take more than one hour, with barn heating time being calculated separately.<sup>53</sup>

### C. Physiology and Impacts of Ventilation Shutdown on a Pig

Regardless of the type of VSD used, the goal is the same: to increase a pig’s internal body temperature until the pig dies of hyperthermia. The lay term for hyperthermia is heatstroke.<sup>54</sup> AVMA depopulation guidelines permit VSD in constrained circumstances, where VSD would bring quicker death with less suffering than a pig would endure if they were to contract a disease—such as African swine fever—and suffer prolonged illness and death.<sup>55</sup> Pigs are susceptible to heatstroke because they have limited methods to regulate their own body temperature.<sup>56</sup> They only sweat through their snout, and do not lose heat through their skin.<sup>57</sup> In order to cool their internal body temperature, pigs may pant, or wallow to wet their skin which allows vaporization of the water to cool them like sweating does in

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47. Baysinger et al., *supra* note 24, at 415.

48. *Id.*

49. AVMA GUIDELINES FOR THE DEPOPULATION OF ANIMALS, *supra* note 2, at 45.

50. *Id.*

51. *Id.*

52. *Id.*

53. *Id.*

54. Mark White, *Disease A-Z Pigs: Sunburn and Heatstroke/Heatstress*, NADIS ANIMAL HEALTH SKILLS (May 20, 2022, 5:29 AM), <https://www.nadis.org.uk/disease-a-z/pigs/sunburn-and-heatstrokeheatstress/> [<https://perma.cc/GM4L-S4RB>].

55. AVMA GUIDELINES FOR THE DEPOPULATION OF ANIMALS, *supra* note 2, at 45.

56. White, *supra* note 54.

57. *Id.*



humans.<sup>58</sup> Pigs can also move into shady or breezy areas, or drink cool water to reduce internal body temperature.<sup>59</sup> When humidity is high, wetting themselves will not cool pigs because any water on their skin will not evaporate.<sup>60</sup>

Optimal temperature ranges for swine vary based on age and size.<sup>61</sup> The thermoneutral comfort zone for nursery pigs weighing from 30-50 lbs. is 70-80°F.<sup>62</sup> For nursery pigs from 50-75 lbs., the optimal temperature range is 60-70°F.<sup>63</sup> Growing or finishing pigs have a thermoneutral comfort zone of 50-70°F.<sup>64</sup> When these temperature ranges are exceeded, and when a pig has no way to cool themselves, heatstroke will occur because “[e]xcessive heat denatures proteins, destabilizes phospholipids and lipoproteins, and liquefies membrane lipids, leading to cardiovascular collapse, multiorgan failure, and, ultimately, death.”<sup>65</sup> These physiological reactions occur in pigs during VSD, killing them by heatstroke.

*D. How VSD Was Used During the COVID-19 Pandemic: The Baysinger Report Detailing a Case Study of VSD Did Not Adhere to AVMA Guidelines for Swine Depopulation*

A 2020 case study (the “Basinger report” or the “Report”) documented the depopulation of 243,016 pigs using VSD+, claiming to follow AVMA guidelines.<sup>66</sup> The pigs depopulated included 59,478 nursery pigs and 183,538 finishing pigs.<sup>67</sup> Prior to this, a test using the VSD+TH depopulation methodology killed 1,470 pigs, but their ages were not reported.<sup>68</sup> A site with four barns was selected, and pigs were transported to the site because while “[t]he farm had growing pig barns throughout the Midwest . . . engineering all of these barns across multiple states to ensure a consistent, efficacious process was not deemed possible.”<sup>69</sup> The Basinger report provided no explanation for why more barns in locations closer to

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58. *Id.*

59. *Id.*

60. *Id.*

61. KARA STEWART & FRANCISCO CABEZÓN, HEAT STRESS PHYSIOLOGY IN SWINE tbl.1 (Purdue Ext. Ani. Sci. Sept. 2016), <https://www.extension.purdue.edu/extmedia/AS/AS-362-W.pdf> [<https://perma.cc/YBW8-ET6E>].

62. *Id.*

63. *Id.*

64. *Id.*

65. Reynolds et al., *supra* note 3, at 1103 (quoting Robert S. Helman, *Heatstroke*, MEDSCAPE (Oct. 21, 2021), <https://emedicine.medscape.com/article/166320-overview#a5> [<https://perma.cc/D53C-LN XR>]).

66. Baysinger et al., *supra* note 24, at 419.

67. *Id.*

68. *Id.*

69. *Id.* at 418.

where pigs were located could not be outfitted for depopulation.<sup>70</sup> Doing so would lessen transport time for pigs, thereby reducing stress. However, “[t]he heat and humidity required for VSD+ has the potential to impact the structural integrity of the building.”<sup>71</sup> Following the study, the four barns used for depopulation were destroyed because they “could never be used for growing pigs again.”<sup>72</sup> While the report insists that costs were not a consideration, retrofitting and engineering costs were \$12,500 per barn, with an additional \$900,000 in supplies required.<sup>73</sup>

To implement VSD+TH, the four barns used in this case were sealed, the manure pits were filled, two “[c]ommercial-grade mobile steam generators typically used in the railroad industry to heat railcars” were added to each sealed barn with tubing to disperse the steam from the ceiling level.<sup>74</sup> Veterinarians employed by the farm, and some from private practice were in charge of each depopulation cycle, and were responsible for collecting data from each depopulation, “documenting all procedures, and verifying that each animal was dead.”<sup>75</sup> While the Basinger report claimed to follow AVMA guidelines, these claims are misleading.<sup>76</sup>

Again, AVMA guidelines for VSD clearly state “that VSD only be used in facilities with the capability to adequately increase air temperature to a level that causes the generation of latent heat that results in a > 95% death rate in < 1 hour.”<sup>77</sup> This language implies that the process, including the heating of the barn, should last no longer than one hour. Prior to the Baysinger report, studies found that “relative humidity and air temperature increase rapidly within a short period of VSD.”<sup>78</sup> In addition to the AVMA guidelines, the American Association of Swine

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70. *See id.* at 415.

71. RECOMMENDATIONS FOR THE DEPOPULATION OF SWINE, AM. ASS’N SWINE VETERINARIANS 23 (Sept. 30, 2021), [https://www.aasv.org/Resources/welfare/depopulation\\_recommendations.pdf](https://www.aasv.org/Resources/welfare/depopulation_recommendations.pdf) [<https://perma.cc/NWZ9-PMU8>].

72. Baysinger et al., *supra* note 24, at 422.

73. *Id.* at 421 (Other costs mentioned but not quantified include lost market value of the pigs, labor, transportation, costs of mitigation strategies, and the “emotional impact on the people involved.” The report cites direct depopulation costs totaling \$10,490,480.).

74. *Id.* at 419.

75. *Id.* at 419-20.

76. *See id.* at 417.

77. AVMA GUIDELINES FOR THE DEPOPULATION OF ANIMALS, *supra* note 2, at 45.

78. Andréia G. Arruda et al., *A Systematic Literature Review on Depopulation Methods for Swine*, 10 ANIMALS 1, 9 (2020) (citing *Ventilation Failure Alarm: 2 Case Studies*, DICAM TECH. LTD., (Sept. 9, 2000), [http://www.dicam.co.uk/wp-content/uploads/filebase/research/Case\\_Study\\_2\\_ventilation\\_failure\\_incidents.pdf](http://www.dicam.co.uk/wp-content/uploads/filebase/research/Case_Study_2_ventilation_failure_incidents.pdf) [<https://perma.cc/Z4LP-W7Q2>]).

Veterinarians (AASV) provides guidance on swine depopulation methods.<sup>79</sup> Like the AVMA guidelines, AASV specifies that VSD+ be used under conditions where temperature and humidity levels kill >95% of pigs in less than an hour.<sup>80</sup>

Possible misinterpretation of AVMA and AASV guidelines stems from how long the entire VSD+ process will take to achieve >95% death. AVMA clearly states the process should take less than an hour. Literature review mentions that when implementing VSD, the required temperature and humidity levels are achieved rapidly.<sup>81</sup> AASV specifies that “[a] temperature of 130°F should be reached within 30 minutes . . . ” and reaching this temperature constitutes “time zero for the [depopulation] process . . . ”<sup>82</sup> Obviously, if total AVMA depopulation time is >1 hour as compared to a second possible scenario taking 30 minutes to heat the barn, plus another full hour for depopulation, the 90+ minute timeframe scenario would lead to increased suffering. The AASV guidelines do not provide a specific time allowed for VSD+ depopulation, but clearly reiterates the AVMA guideline that the goal is >95% death in <1hour.<sup>83</sup>

The Baysinger report states that each depopulation cycle was measured from the time the pigs entered the barn and the doors were sealed behind them, until the time the doors were reopened.<sup>84</sup> The report cites to both the AVMA guidelines and the AASV recommendations while acknowledging that no established protocols for depopulating swine by VSD+ exist, and that the AVMA recommends that VSD should only be used where >95% efficacy can be achieved within <1hour.<sup>85</sup>

Statistics in the report indicate that “time to 0,” the time in minutes from turning on the heaters until the temperature in the barn reached 130°F, ranged anywhere from a minimum of 15 minutes to a maximum of 94 minutes.<sup>86</sup> Steam was added at time 0, to create humidity up to 90%.<sup>87</sup> Under these parameters, nursery pigs who depending on weight have a thermoneutral comfort zone ranging from 60-80°F were locked in the scorching hot barn for a minimum of 70 minutes, to a maximum of 110 minutes, nearly two hours.<sup>88</sup> The finishing pigs who have a

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79. See generally RECOMMENDATIONS FOR THE DEPOPULATION OF SWINE, *supra* note 71, at 23 (providing that VSD is permitted in constrained circumstances).

80. *Id.*

81. *See id.*

82. *Id.*

83. *Id.*

84. Baysinger et al., *supra* note 24, at 420.

85. *Id.* at 417.

86. *Id.* at 420 tbl.1.

87. *Id.* at 420.

88. *Id.* at 420 tbl.1.

thermoneutral comfort zone ranging from 50-70°F were locked in the barn for times ranging between 66 minutes to 2.5 hours.<sup>89</sup> The depopulation cycle ended when “time to silent” was reached.<sup>90</sup> Time to silent “was defined as time from time 0 to the time when no sounds could be heard within the barn and no motion was seen.”<sup>91</sup> For the nursery pigs, time to silent for 14 of 16 cycles was recorded.<sup>92</sup> For finishing pigs, time to silent for 120 of 122 cycles was documented.<sup>93</sup> It is unknown whether the undocumented cycles were outliers. Furthermore, 722 finishing pigs and 4 nursery pigs survived their ordeal and were “manually euthanized” by captive bolt gun.<sup>94</sup>

The Baysinger report claimed that their procedures met the AVMA VSD depopulation guidelines to establish a quicker and more humane death by killing >95% of pigs in <1 hour: this is incorrect. The report states that their “VSD+TH procedure was extremely effective under the conditions on the farm and exceeded the expectations for mass depopulation of swine describe in the AVMA depopulation guidelines.”<sup>95</sup> However, their recorded depopulation cycles indicate a minimum total time of 66 minutes which is greater than the AVMA requirement of <1 hour.<sup>96</sup> Furthermore, pigs survived VSD+TH and had to be killed with a captive bolt gun.<sup>97</sup> This conflicts with the AVMA declaration that “[f]ailure to achieve 100% mortality in depopulation is unacceptable.”<sup>98</sup> Accordingly, the Baysinger report claims that AVMA depopulation guidelines were exceeded are patently false because: 1) the AVMA timeframe for VSD depopulation was not met, and 2) 100% mortality was not achieved through VSD.

#### IV. VSD AND THE LAW: ARE PIGS SENT FOR DEPOPULATION PROTECTED?

##### *A. Federal Law and VSD+TH*

Inducing hyperthermia in pigs by VSD+TH, essentially cooking them alive, is legal under federal law. Currently there are no federal laws to protect farmed

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89. *Id.*

90. *Id.* at 420.

91. *Id.*

92. *Id.* at 420 tbl.1.

93. *Id.* at 421.

94. *Id.*

95. *Id.* at 422.

96. *Id.* at 420 tbl.1.

97. *Id.* at 420.

98. AVMA GUIDELINES FOR THE DEPOPULATION OF ANIMALS, *supra* note 2, at 45.

animals while they are being raised.<sup>99</sup> Generally, there are very few federal laws purported to protect farmed animals. The Animal Welfare Act (AWA) provides minimum welfare standards for some animals but explicitly excludes farmed animals under its definition of animal.<sup>100</sup> The Twenty-Eight Hour Law, however, regulates transportation of most farmed animal species.<sup>101</sup> This law applies while pigs are being transported to the VSD+TH site. Once pigs are delivered, protection ends.<sup>102</sup> Nevertheless, the Twenty-Eight Hour Law is rarely enforced.<sup>103</sup> The Humane Methods of Slaughter Act dictates methods of animal slaughter, but for purposes of VSD+TH, pigs are not being killed at a slaughter facility for human consumption; instead, they are being depopulated inside of barns.<sup>104</sup> Therefore, pigs facing VSD+TH are not covered by the Humane Methods of Slaughter Act. Accordingly, these federal laws offer no protection for growing pigs once they arrive onsite and are subjected to depopulation methods.

### *B. State Law and VSD+TH*

Nevertheless, there is potential for pigs facing VSD+TH to be protected under state law. All 50 states have their own version of criminal anti-cruelty laws. However, many of these laws exempt farmed animals under “customary farming practices” provisions within the state’s anti-cruelty law.<sup>105</sup> Furthermore, violations of state criminal anti-cruelty statutes are typically brought against concentrated animal feeding operations (CAFOs) by state prosecutors, not by individuals or organizations.<sup>106</sup> As such, it may be difficult to prosecute those depopulating pigs through VSD+TH, if VSD+TH falls under the category of customary farming practices.

However, mass swine depopulation—and VSD+TH in particular—are not customary industry practices. For an agricultural practice to be a customary, it must be commonly used, which under state anti-cruelty statutes would make the practice

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99. David J. Wolfson & Mariann Sullivan, *Foxes in the Henhouse, Animals, Agribusiness, and the Law: A Modern American Fable*, in *ANIMAL RIGHTS: CURRENT DEBATES AND NEW DIMENSIONS* 207 (Cass R. Sunstein & Martha C Nussbaum eds., 2004).

100. Animal Welfare Act, 7 U.S.C. §§ 2131-2159 (2008).

101. 49 U.S.C. § 80502. Poultry transport is excluded under the Twenty-Eight Hour Law.

102. *Id.* § 80502.

103. See Animal Welfare Institute Farm Animal Program, *Animals in Transport Languish as Twenty-Eight Hour Law Goes Off the Rails*, 25 *ANIMAL L. REV.* 1, 2 (2018).

104. See Humane Slaughter Act, 7 U.S.C. §§ 1901-1906.

105. Wolfson & Sullivan, *supra* note 99, at 217-19.

106. *Id.*

legal.<sup>107</sup> Although state agencies urge emergency preparedness for pig depopulation, it is clear they are unprepared for mass depopulation.<sup>108</sup> In fact, the Baysinger report noted the need to document pig depopulation because “until 2020, US swine producers have not needed to implement depopulation on a large scale and have been able to manage disease outbreaks . . . with on-farm [AVMA approved] euthanasia techniques.”<sup>109</sup> The report documents that there are “no established or documented protocols for VSD+.”<sup>110</sup> If there are no established or documented protocols for this depopulation method, this indicates that VSD+TH is not customary, and therefore cannot be covered under state anti-cruelty laws by attempting to categorize VSD+ as a customary agricultural practice. If VSD+ is not a customary agricultural practice, then it is not legal and runs afoul of state-anti-cruelty statutes.

## V. IT IS TIME TO REEVALUATE ALL FORMS OF VSD

### A. Depopulation by VSD Is Controversial Amongst Veterinarians

Under current AVMA guidelines, the use of VSD+ is not a recommended depopulation method, but is permitted in *constrained circumstances*.<sup>111</sup> Following the AVMA journal publication of the Baysinger report in August 2021,

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107. *Customary Cruelty in the Farm Industry: When Animal Abuse is Legal*, ANIMAL L. DEF. FUND (Apr. 3, 2015), <https://aldf.org/article/customary-cruelty-in-the-farm-industry-when-animal-abuse-is-legal/> [<https://perma.cc/3K3P-U4HD>].

108. Amy Mayer, *Simulation Exercise Tests Preparedness For Deadly Pig Disease Outbreak*, IOWA PUB. RADIO (Sept. 26, 2019, 4:12 PM), <https://www.iowapublicradio.org/agriculture/2019-09-26/simulation-exercise-tests-preparedness-for-deadly-pig-disease-outbreak> [<https://perma.cc/F4LD-JCP4>] (In September 2019, fourteen states and the USDA held a four-day seminar and tabletop exercise to test state preparedness for an outbreak of African Swine Fever. The exercises included “complications related to euthanizing infected animals and disposing of them.” Prior to this four-day exercise led by the USDA, state officials participated in “nearly a year of smaller emergency preparedness exercises.” Despite this, Iowa Secretary of Agriculture Mike Naig said “[w]e are absolutely finding things that need to be addressed, both here in our planning but also at the national level as well . . .” It is clear that states were not adequately prepared for mass swine depopulation. Following the exercises, an African Swine Fever response plan was drafted for Iowa.); *See generally* IOWA DEP’T AGRIC. LAND STEWARDSHIP, IOWA AFRICAN SWINE FEVER STATE RESPONSE PLAN (Nov. 11, 2019), [https://iowaagriculture.gov/sites/default/files/animal-industry/pdf/2020/IA%20ASF%20Plan%20\(11.11.19\).pdf](https://iowaagriculture.gov/sites/default/files/animal-industry/pdf/2020/IA%20ASF%20Plan%20(11.11.19).pdf) [<https://perma.cc/ZC9P-BF3B>] (draft plan providing that VSD may be used if AVMA preferred methods do not bring about desired results).

109. Baysinger et al., *supra* note 24, at 422.

110. *Id.* at 416.

111. AVMA GUIDELINES FOR THE DEPOPULATION OF ANIMALS, *supra* note 2, at 45 (emphasis added).

compassionate veterinarians spoke out against the use of VSD.<sup>112</sup> A group of veterinarians who oppose VSD use have formed an organization to oppose all use of VSD, even under constrained circumstances.<sup>113</sup> Veterinarians Against Ventilation Shutdown's goal is to change AVMA Depopulation Guidelines so that all forms of VSD are reclassified from section 4.5.2 "Permitted in Constrained Circumstances" to fall under section 4.5.3 "Not Recommended."<sup>114</sup>

Dr. Crystal Heath, DVM, is the founder of Our Honor, "an organized network of professionals who are able to formally challenge unethical institutionalized systems."<sup>115</sup> and is on the founding committee of Veterinarians Against Ventilation Shutdown. Dr. Heath says that reclassification is necessary:

[b]ecause there is a lack of clarity about what 'constrained circumstances' actually means, [and] it has now been shown how producers will resort to [VSD] as an economic option, and not feel pressure to invest in methods that are not so horrifying. Reclassifying this method as "not recommended" will mean they can still do it, but they can't use veterinarians and the AVMA to lend legitimacy to these brutal practices.<sup>116</sup>

So even if the AVMA depopulation guidelines are revised and all forms of VSD are reclassified as "not recommended," this will not prevent CAFOs from depopulating by this method. However, it will prevent pork producers from calling VSD an AVMA approved depopulation method, conflating VSD with humane euthanasia. Dr. Heath notes that members of the pork industry have:

told the media they were using veterinarian approved methods, citing the AVMA guidelines, and they told their employees and local police the same . . . They also repeatedly referred to depopulation as "euthanasia" a term that should be used for humanely ending the life of one who is suffering from a terminal or incurable disease . . .<sup>117</sup>

Reclassification of VSD to "not recommended" will hinder producers' ability to humanely wash their message in this way. Industry members who continue to

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112. See Reynolds et al., *supra* note 3, at 1102.

113. See *About Us*, VETERINARIANS AGAINST VENTILATION SHUTDOWN (May 20, 2022, 5:21 AM), <https://www.vavsd.org/aboutus> [<https://perma.cc/6SMR-UTT2>].

114. See *id.*; see also AVMA GUIDELINES FOR THE DEPOPULATION OF ANIMALS, *supra* note 2, at 45.

115. *Our Mission*, OUR HONOR (May 20, 2022, 5:54 AM), <https://www.ourhonor.org/our-mission> [<https://perma.cc/P8EA-TLQ4>].

116. Text message from Dr. Crystal Heath, DVM, Founder, Our Honor, Committee Member, Veterinarians Against Ventilation Shutdown, to author (March 13, 2022) (on file with author) [hereinafter Heath Text Correspondence].

117. *Id.*

claim any form of VSD is humane euthanasia following a reclassification would be making false claims about their depopulation practices.

*B. The Industry Created Its Own Need for Depopulation and Taxpayers Should Not Be Responsible for Paying VSD Costs*

The World Organization for Animal Health (OIE) standards provide guidance for killing of animals for purposes of disease control.<sup>118</sup> OIE standards do not permit the use of VSD or like methods past the neonatal stage of life.<sup>119</sup> Under Art. 7.6.2, OIE standards emphasize animal welfare and humane euthanasia.<sup>120</sup> Additionally, “[l]ocal level plans should be based on national plans and be informed by local knowledge.”<sup>121</sup> COVID-19’s impact on slaughterhouse shutdown highlights the need to better prepare for another pandemic related shutdown or a disease outbreak:

... first, we need to prevent the need for depopulation, and that means addressing the lack of adaptive capacity that exists in intensive, large scale animal agriculture. Stocking densities must be reduced which would not only increase welfare outcomes, but the extra space would allow some time to pass before a crisis point is reached. The Baysinger report cited a failure to plan and stockpile the needed equipment to depopulate using approved methods. We knew the need to depopulate large numbers of animals was inevitable, and we know that the need to depopulate will happen again.<sup>122</sup>

Congress should enact legislation to ban all use of VSD and direct the USDA to mandate emergency preparedness metrics for producers who seek government funding to mitigate financial loss due to pandemics, disease outbreak, natural disaster, or other hazards. Particularly, industry access to government funds for reimbursement should be dependent both on preparedness and on percentage of animals saved during emergencies. Preparedness must be defined based on animal welfare considerations, particularly a requirement for humane depopulation such as use of mobile electrocution trailers instead of VSD. Funding available through programs such as the Livestock Indemnity Program (LIP) should be terminated for producers who do not mitigate loss by lowering stocking density and stockpiling the supplies necessary for humane depopulation. A special Pandemic Livestock Indemnity

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118. See World Org. for Animal Health [OIE], *Terrestrial Animal Health Code: Killing of Animals for Disease Control Purposes*, at 1 Doc. ch. 7.6 (July 19, 2021), [https://www.oie.int/fileadmin/Home/eng/Health\\_standards/tahc/current/chapitre\\_aw\\_killing.pdf](https://www.oie.int/fileadmin/Home/eng/Health_standards/tahc/current/chapitre_aw_killing.pdf) [<https://perma.cc/ABD9-DEHD>].

119. *Id.* at 1-2 (neonatal means newborn pigs).

120. *Id.*

121. *Id.*

122. Heath Text Correspondence, *supra* note 116.



Program (PLIP) was created for producers:

to apply for financial assistance under PLIP and receive financial relief for the losses and costs associated with depopulating their livestock and poultry. Under the program, eligible producers receive payments for 80 percent of both the loss of eligible livestock or poultry, and for the cost of depopulating and disposing of the animals based on a single payment rate per head. USDA has designed a table . . . [of] payment rates per head for each category of eligible livestock and poultry.<sup>123</sup>

Additionally, when pig depopulation was required due to the 2020 supply chain collapse, the National Pork Producers Council requested federal assistance totaling \$1.678 billion.<sup>124</sup> Of the total amount requested, \$250 million would have been allocated “for USDA [Animal and Plant Health Inspection Service] to pay euthanasia/depopulation expenses.”<sup>125</sup> To use taxpayer funds to reimburse the losses of an industry which created its own supply chain fragility, then failed to prepare for a foreseeable emergency is unconscionable. Furthermore, American taxpayers should not be made to fund such inhumane methods of culling animals. Concerned persons should also become involved in the initiative by demanding that the AVMA condemn the use of all forms of VSD. This can be done by directly reaching out to the AVMA or supporting those organizations that are pressuring the AVMA to reconsider VSD in any form. Combined efforts will increase pressure for the AVMA to change its stance on the use of ventilation shutdown. Even members of the public who are unconcerned about animal welfare must recognize problems relating to depopulation capacity and ability. Large groups of confined animals, including pigs are a mixing agent for coronavirus variants as well as other zoonotic diseases.<sup>126</sup> In order to safeguard public health, industry depopulation methods should not be experimental.

*C. Depopulating Large Numbers of Animals is Difficult, But Some Methods are More “Humane” Than Others*

The United States needs a cohesive plan for emergency depopulation of large

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123. *Pandemic Payments: Aid Under Pandemic Livestock Indemnity Program*, NAT’L AGRIC. L. CTR. (Aug. 17, 2021), <https://nationalaglawcenter.org/pandemic-payments-aid-under-pandemic-livestock-indemnity-program/> [<https://perma.cc/S339-BGJX>].

124. NAT’L PORK PRODUCERS COUNCIL, *THE TRAGIC IMPACT OF COVID-19 ON U.S HOG FARMERS, THE NEED TO EUTHANIZE* (May 8, 2020), <https://nppc.org/wp-content/uploads/2020/05/euthanasia-fact-sheet-FINAL-5-8-20.pdf> [<https://perma.cc/JPV6-PWV5>].

125. *Id.*

126. Institutional Animal Care & Use Comm., *Zoonoses Associated with Swine*, WASH. ST. UNIV. (May 20, 2022, 5:47 AM), <https://iacuc.wsu.edu/zoonoses-associated-with-swine/> [<https://perma.cc/RC8B-938V>].

numbers of animals. Unfortunately, the potential for requiring future depopulation of pigs is the current state of our national food systems.

We are so focused on solving the problem before us instead of asking whether this problem should even exist in the first place. Veterinary students, with their bright-eyed enthusiasm, should be focused on asking how to scale down animal agriculture and move away from using animals in our food system, instead of devising macabre workarounds for the most abusive and destructive industry on the planet.<sup>127</sup>

While there is no way to both quickly and humanely depopulate large numbers of animals, industry can do much better than using VSD. The AVMA depopulation manual indicates several depopulation practices that when done as specified will reduce suffering for pigs including gunshot, captive bolt, electrocution, manual blunt force trauma, movement to slaughter, carbon dioxide, and anesthetic overdose.<sup>128</sup> Although “[t]here is no great option for depopulating large numbers of animals . . . mobile electrocution trailers seem to be the best option available.”<sup>129</sup> Use of a portable electrocution trailer offers a low stress “economical and humane method for mass euthanasia for pigs on the farm.”<sup>130</sup> Mobile electrocution trailers offer “hands-free single step electrical euthanasia in a mobile unit on pigs ranging in size from 125 pound to [600] pounds” based on tests performed in 2020.<sup>131</sup> As long as Americans continue to eat pigs and the pork industry does not take steps to reduce stocking density, it will be necessary to plan for the possibility of depopulating large numbers of animals. Mobile electrocution trailers can be purchased by individual growers, industry titans, or industry organizations and kept at the ready for the next outbreak. This will ensure an efficient and more humane method of pig depopulation when the need arises, as it surely will.

## VI. CONCLUSION

It is time to start filling in the blank under AVMA depopulation guideline section 4.5.3, the empty placeholder for guidelines “not recommended” for killing pigs. Ventilation shutdown should be reclassified under the guidelines, and never

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127. Heath Text Correspondence, *supra* note 116.

128. AVMA GUIDELINES FOR THE DEPOPULATION OF ANIMALS, *supra* note 2, at 45.

129. Heath Text Correspondence, *supra* note 116.

130. Temple Grandin, *Methods to Prevent Future Severe Animal Welfare Problems Caused by COVID-19 in the Pork Industry*, 11 ANIMALS 830, Mar. 2021, at 3.

131. BERRY MOTE, VALIDATION OF A MOBILE ELECTROCUTION SYSTEM FOR HUMANE MASS DEPOPULATION OF SWINE 8 (Nat’l Pork Bd. Dec. 31, 2020), <https://pork-checkoff.org/wp-content/uploads/2021/02/20-123-MOTE-final-rpt.pdf> [<https://perma.cc/Y8LN-E6ZA>].

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be recommended or permitted, even in constrained circumstances. While AVMA reclassification cannot stop industry use of VSD, reclassification will make it difficult for CAFOs to humane wash this depopulation method by claiming AVMA guidelines were used to kill pigs by AVMA approved euthanasia. To stop the use of VSD, legislative action is needed. LIP can be modified to prohibit payments to CAFOs who depopulate by this method. Additionally, USDA APHIS must change its stance on VSD for use in killing pigs as well as poultry. Furthermore, the use of electrocution can be used for more humane culling of pigs in the future. A combined effort is needed by Congress, veterinarians, and the public to ban the use of VSD and make certain that more humane methods are used when future depopulation needs arise.