

## **References:**

- AVMA (American Veterinary Medical Association), 2020. AVMA guidelines for the euthanasia of animals, 2020 edition. AVMA, Schaumburg, Illinois. 28 pp. Available online: <https://www.avma.org/KB/Policies/Documents/euthanasia.pdf>
- Balzer, K., 2017: Tierschutzgerechte Betäubung und Tötung von nicht überlebenschfähigen Ferkeln mit einem Stickstoff-angereicherten Schaum im Erzeugerbetrieb. Dissertation, Tierärztliche Hochschule Hannover, DVG Service GmbH, 2017.
- Cantieni J 1977. Ein Beitrag zur CO<sub>2</sub>-Betäubung von Schlachtschweinen. Schweiz. Arch. Tierheilk. 119, 355-375.
- European Food Safety Authority (EFSA) 2004. Opinion of the Scientific Panel on Animal Health and Welfare on a request from the Commission related to welfare aspects of the main systems of stunning and killing the main commercial species of animals (Question N° EFSA -Q-2003-093). The EFSA Journal 45, 1-29. Available online: <https://efsa.onlinelibrary.wiley.com/doi/epdf/10.2903/j.efsa.2004.45>
- EFSA AHAW Panel (EFSA Panel on Animal Health and Welfare), 2013. Scientific Opinion on monitoring procedures at slaughterhouses for pigs. EFSA Journal 2013;11(12):3523, 62 pp. Available online: <https://efsa.onlinelibrary.wiley.com/doi/pdf/10.2903/j.efsa.2013.3523>
- EFSA AHAW Panel (EFSA Panel on Animal Health and Welfare), Nielsen SS, Alvarez J, Bicout DJ, Calistri P, Depner K, Drewe JA, Garin-Bastuji B, Gonzales Rojas JL, Gortazar Schmidt C, Michel V, Miranda Chueca MA, Roberts HC, Sihvonen LH, Spoolder H, Stahl K, Viltrop A, Winckler C, Candiani D, Fabris C, Van der Stede Y and Velarde A, 2020. Scientific Opinion on the welfare of pigs during killing for purposes other than slaughter. EFSA Journal 2020; 18(7):6195, 72 pp. Abbreviated as EFSA (2020a). Available online: <https://doi.org/10.2903/j.efsa.2020.6195>
- EFSA AHAW Panel (EFSA Panel on Animal Health and Welfare), Nielsen SS, Alvarez J, Bicout DJ, Calistri P, Depner K, Drewe JA, Garin-Bastuji B, Gonzales Rojas JL, Gortázar Schmidt C, Michel V, Miranda Chueca MÁ, Roberts HC, Sihvonen LH, Spoolder H, Stahl K, Viltrop A, Winckler C, Candiani D, Fabris C, Van der Stede Y and Velarde A, 2020. Scientific Opinion on the welfare of pigs at slaughter. EFSA Journal 2020; 18(6):6148, 113 pp. Abbreviated as EFSA (2020b). Available online: <https://doi.org/10.2903/j.efsa.2020.6148>
- Eisele JH, Eger I and Muallem M 1967. Narcotic Properties of Carbon Dioxide in the Dog. Anesthesiology 28, 856-860.
- Gerritzen MA, Lourens S, Reimert HGM, Gunnink H, von Holleben K, von Wenzlawowicz M, Verhoeven M and Eser E, 2012. Wageningen UR report 314. Emergency killing of pigs in a Carbon dioxide - Nitrogen mixture. Available online: [https://www.researchgate.net/profile/Marien\\_Gerritzen/publication/277670187\\_Emergency\\_killing\\_of\\_pigs\\_in\\_a\\_Carbon\\_dioxide\\_-\\_Nitrogen\\_mixture/links/55703bce08aec226830acda1/Emergency-killing-of-pigs-in-a-Carbon-dioxide-Nitrogen-mixture.pdf](https://www.researchgate.net/profile/Marien_Gerritzen/publication/277670187_Emergency_killing_of_pigs_in_a_Carbon_dioxide_-_Nitrogen_mixture/links/55703bce08aec226830acda1/Emergency-killing-of-pigs-in-a-Carbon-dioxide-Nitrogen-mixture.pdf)
- Gregory, NG, Raj ABM, Audsley ARS and Daly CC 1990. Effects of carbon dioxide on man. Fleischwirtschaft 70, 1173-1174.
- Grist A, Murrell J, McKinstry JL, Knowles TG and Wotton SB, 2017. Humane Euthanasia of Neonates I: validation of the effectiveness of the Zephyr EXL non-penetrating captive bolt system for euthanasia of new-born and weaned piglets up to 10Kg. Animal Welfare, 26, 111–120.

Grist A, Knowles TG and Wotton SB, 2018a. Humane euthanasia of neonates II: field study of the effectiveness of the Zephyr EXL non-penetrating captive-bolt system for euthanasia of newborn piglets. *Animal Welfare*, 27, 319–326. Available online: <https://doi.org/10.7120/09627286.27.4.319>

Grist A, Lines JA, Knowles TG, Mason CW and Wotton Stephen B, 2018b. The use of a non-penetrating captive bolt for the euthanasia of neonate piglets. *Animals*, 8, 48. Available online: <https://doi.org/10.3390/ani8040048>

Holmes R, Gerritzen MA, Herskin MS, Schwarzlose I, Ruis M.A.W., 2020. Review on arrival and lairage management at pig slaughterhouses. EURCAW-Pigs – June 2020 – version 1.0. Available online: <https://edepot.wur.nl/526511>

HSA (Humane Slaughter Association), 2013. Captive-bolt stunning of livestock. Available online: <https://www.hsa.org.uk/downloads/publications/captiveboltstunningdownload.pdf>

HSA (Humane Slaughter Association), 2016. Humane Killing of Livestock Using Firearms. Available online: <https://www.hsa.org.uk/downloads/publications/humane-killing-using-firearms-updated-with-2016-logo.pdf>

Husheer, J. (2017): Untersuchung der elektrischen Hirn-Herz-Durchströmung als tierschutzgerechtes Verfahren zur Euthanasie von nicht überlebenden Saugferkeln. Dissertation, Tierärztliche Hochschule Hannover, 2017. Available online: [https://elib.tiho-hannover.de/servlets/MCRFileNodeServlet/etd\\_derivate\\_00000136/husheerj\\_ws17.pdf](https://elib.tiho-hannover.de/servlets/MCRFileNodeServlet/etd_derivate_00000136/husheerj_ws17.pdf)

Kreislandvolkverband-Verband Cloppenburg e.V., Kreisstelle der Tierärzte im Landkreis Cloppenburg, Landkreis Cloppenburg, Landwirtschaftskammer Niedersachsen, in Abstimmung mit der Landwirtschaftskammer Nordrhein-Westfalen (2018): Leitfaden zur Durchführung der Nottötung von Schweinen in landwirtschaftlichen Betrieben, Ausgabe 2, Stand: 26.03.2018. Abbreviated as LWK Nds. et al. (2018) and available online: <https://www.lwk-niedersachsen.de/download.cfm/file/29559.html>

Lambooy E and van Voorst N, 1986. Electrocutation of pigs infected with notifiable diseases. *Veterinary Quarterly*, 8, 80–82. Available online: <https://doi.org/10.1080/01652176.1986.9694023>

Lambooy E and Algers B, 2016. Mechanical stunning and killing methods. In: Velarde A and Raj M eds. *Animal Welfare at Slaughter*. 5M Publishing. Sheffield, UK, 91–110.

LAVES (Technische Sachverständige des Niedersächsischen Landesamts für Verbraucherschutz und Lebensmittelsicherheit), 2015. Merkblatt zur Überprüfung von penetrierenden Bolzenschussapparaten. Available online: [https://www.laves.niedersachsen.de/download/95709/Merkblatt\\_zur\\_Ueberpruefung\\_von\\_penetrierenden\\_Bolzenschussapparaten.pdf](https://www.laves.niedersachsen.de/download/95709/Merkblatt_zur_Ueberpruefung_von_penetrierenden_Bolzenschussapparaten.pdf)

Meier, C, 2020: Untersuchung der Wirksamkeit des penetrierenden Bolzenschusses als kombinierte Betäubungs- und Tötungsmethode bei Saugferkeln und Ferkeln bis 30 kg Körpergewicht und Entwicklung einer geeigneten Fixierung. Dissertation, Veterinärmedizinische Fakultät der Universität Leipzig, 2020. Available online: <https://ul.qucosa.de/api/qucosa%3A70860/attachment/ATT-0/>

Nattie E 1999. CO<sub>2</sub>, brainstem chemoreceptors and breathing. *Progress in Neurobiology* 59, 299-331.

Raj, ABM and Gregory NG 1995. Welfare implications of the gas stunning of pigs 1. Determination of aversion to the initial inhalation of carbon dioxide or argon. *Animal Welfare* 4, 273-280.

Troeger K 2008. Pig slaughtering in accordance with animal welfare: deficits and solutions. Tierärztliche Praxis 36 (Suppl. 1), S34-S38.

TVT (2014): Stellungnahme zur Nottötung von Saugferkeln (bis 5kg KGW) durch den Tierhalter. Arbeitskreis 3 (Betäubung und Schlachtung) der Tierärztlichen Vereinigung für Tierschutz e.V. Available online: [https://www.tierschutz-tvt.de/alle-merkblaetter-und-stellungnahmen/?no\\_cache=1&download=TVT-Stellungn. Nott%C3%B6tung Saugferkel Jan. 2014 .pdf&did=155](https://www.tierschutz-tvt.de/alle-merkblaetter-und-stellungnahmen/?no_cache=1&download=TVT-Stellungn._Nott%C3%B6tung_Saugferkel_Jan._2014_.pdf&did=155)

Wallenbeck, A., Sindhöj, E., Brattlund Hellgren, R., Berg, C., Lindahl, C., 2020. Improved pig welfare at slaughter – pig`s responses to air- or nitrogen foam. International Society for Applied Ethology, Nordic Region Winter Meeting, 28.-30. Januar 2020, Estonian University of Life Sciences, Tartu, Estonia. Available online: [https://www.researchgate.net/profile/Anna\\_Wallenbeck/publication/338886693\\_Improved\\_pig\\_welfare\\_at\\_slaughter\\_-\\_pigs'\\_responses\\_to\\_air-or\\_nitrogen\\_foam/links/5e3169e3a6fdccd96573747d/Improved-pig-welfare-at-slaughter-pigs-responses-to-air-or-nitrogen-foam.pdf](https://www.researchgate.net/profile/Anna_Wallenbeck/publication/338886693_Improved_pig_welfare_at_slaughter_-_pigs'_responses_to_air-or_nitrogen_foam/links/5e3169e3a6fdccd96573747d/Improved-pig-welfare-at-slaughter-pigs-responses-to-air-or-nitrogen-foam.pdf)

Woodbury DM and Karler R 1960. The role of carbon dioxide in the central nervous system. Anesthesiology 21, 686-703.

Woods, J, 2012. Analysis of the use of the "CASH" Dispatch Kit captive bolt gun as a single stage euthanasia process for pigs. Graduate Theses and Dissertations. 12706. Available online: <https://lib.dr.iastate.edu/etd/12706>

Woods, J, and Shearer, JK, 2015. Recommended On-Farm Euthanasia Practices. In: Grandin T ed. Improving animal welfare: a practical approach 2015 No.Ed. 2 pp.194-221. CAB International, 2015.