

Annex to: EFSA’s BIOHAZ Panel Scientific opinion “Public health aspects of *Vibrio* spp. related to the consumption of seafood in the EU”. doi:10.2903/j.efsa.2024.8896

© European Food Safety Authority, 2024

## Annex H – Overview of the prevention and control measures along the seafood chain for *Vibrio* spp.

**Table H.1:** Prevention and control measures along the seafood chain for *Vibrio* spp. covered in recent reviews and risk assessments undertaken by MSs and international bodies.

Measure	FAO and WHO (2020)	FAO and WHO (2021)	BfR (2022)	ANSES (2012)	AESAN (2024)	Kontominas et al. (2021)	Ekonomou and Boziaris et al. (2021)	Ronholm et al. (2016)	Ndraha et al. (2020)	Spaur et al. (2020)
Refrigeration storage/maintaining cold chain	X		X	X	X				X	X
Icing				X	X				X	X
Mild heat treatment	X	X							X	
Temperature Controls		X								
Low temperature “pasteurisation”			X							
Thermal shock									X	X
(Deep) freezing	X	X	X	X	X				X	
Cryogenic individual quick freezing (IQF) with extended storage		X								
Treatment with sodium metabisulphite (E223)					X					
High pressure processing (HPP)	X	X	X	X	X	X	X	X	X	X
Irradiation			X	X	X	X		X	X	X
Low dose gamma radiation		X								
Cooking			X	X	X					
Depuration <sup>a</sup>	X		X	X	X				X	
Relaying <sup>a</sup>		X							X	
Re-submersion <sup>a</sup>		X								
Deep water suspension <sup>a</sup>		X								
Transplanting <sup>a</sup>									X	
Harvesting curfews		X								
Harvesting cessation		X								
Natural preservatives						X		X <sup>b</sup>	X <sup>c</sup>	
Ozonation						X				
Pulse light technology						X				
Ultrasound							X			
Pulsed Electric Fields							X			
Electrolysed Water							X		X	
Non-Thermal Atmospheric Plasma							X			
Retort pouch processing						X				
Phage treatment					X			X		
Acid										X

<sup>a</sup>Only applicable to live bivalve molluscs.

<sup>b</sup>plant derived products.

<sup>c</sup>natural antimicrobial agent.

## References

- AESAN (Spanish Agency for Food Safety and Nutrition). (2024). *Report of the Scientific Committee of the Spanish Agency for Food Safety and Nutrition (AESAN) on the microbiological criteria for Vibrio cholerae, as additional control measures at border control posts, applicable to imported frozen prawns and other fishery products*. Food Risk Assess Europe, AESAN-2024-001. 32 pp. <https://doi.org/10.2903/fr.efsa.2024.FR-0027>
- ANSES (Agence nationale de sécurité sanitaire de l'alimentation, de l'environnement et du travail). (2012). *Évaluation du risque lié à Vibrio parahaemolyticus lors de la consommation de coquillages vivants*. Avis de l'Anses. Saisine n° 2010-SA-0301. <https://www.anses.fr/fr/system/files/BIORISK2010sa0301Ra.pdf>
- BfR (German Federal Institute for Risk Assessment). (2022). *Bacterial foodborne Vibrio infections: Health risk assessment of the occurrence of Vibrio spp. (non-cholera vibrios) in food*. BfR Opinion No 011/2022 of 2013 April 2022, 37 pp. In: BfR-Stellungnahmen. Bundesinst. für Risikobewertung. <http://www.bfr.bund.de/cm/2349/bacterial-foodborne-vibrio-infections-health-risk-assessment-of-the-occurrence-of-vibrio-spp-in-food.pdf>
- Ekonomou, S. I., & Boziaris, I. S. (2021). Non-thermal methods for ensuring the microbiological quality and safety of seafood. *Applied Sciences*, 11(2), 833. <https://doi.org/10.3390/app11020833>
- FAO and WHO (Food and Agriculture Organization of the United Nations & World Health Organization), 2020. Risk assessment tools for *Vibrio parahaemolyticus* and *Vibrio vulnificus* associated with seafood. Microbiological risk assessment series 20. ISBN: 9789240000186, 71 pp. <https://apps.who.int/iris/handle/10665/330867>
- FAO and WHO (Food and Agriculture Organization of the United Nations & World Health Organization), 2021. Advances in science and risk assessment tools for *Vibrio parahaemolyticus* and *V. vulnificus* associated with seafood. Microbiological risk assessment series 35. ISBN: 1726-5274, 73 pp. <https://www.who.int/publications/i/item/9789240024878>
- Kontominas, M. G., Badeka, A. V., Kosma, I. S., & Nathanailides, C. I. (2021). Innovative seafood preservation technologies: Recent developments. *Animals*, 11(1), 92. <https://doi.org/10.3390/ani11010092>
- Ndraha, N., Wong, H. C., & Hsiao, H. I. (2020). Managing the risk of *Vibrio parahaemolyticus* infections associated with oyster consumption: A review. *Comprehensive Reviews in Food Science and Food Safety*, 19(3), 1187–1217. <https://doi.org/10.1111/1541-4337.12557>
- Ronholm, J., Lau, F., & Banerjee, S. K. (2016). Emerging seafood preservation techniques to extend freshness and minimize vibrio contamination. *Frontiers in Microbiology*, 7, 350. <https://doi.org/10.3389/fmicb.2016.00350>
- Spaur, M., Davis, B. J. K., Kivitz, S., DePaola, A., Bowers, J. C., Curriero, F. C., & Nachman, K. E. (2020). A systematic review of post-harvest interventions for *Vibrio parahaemolyticus* in raw oysters. *Science of the Total Environment*, 745(140), 795. <https://doi.org/10.1016/j.scitotenv.2020.140795>