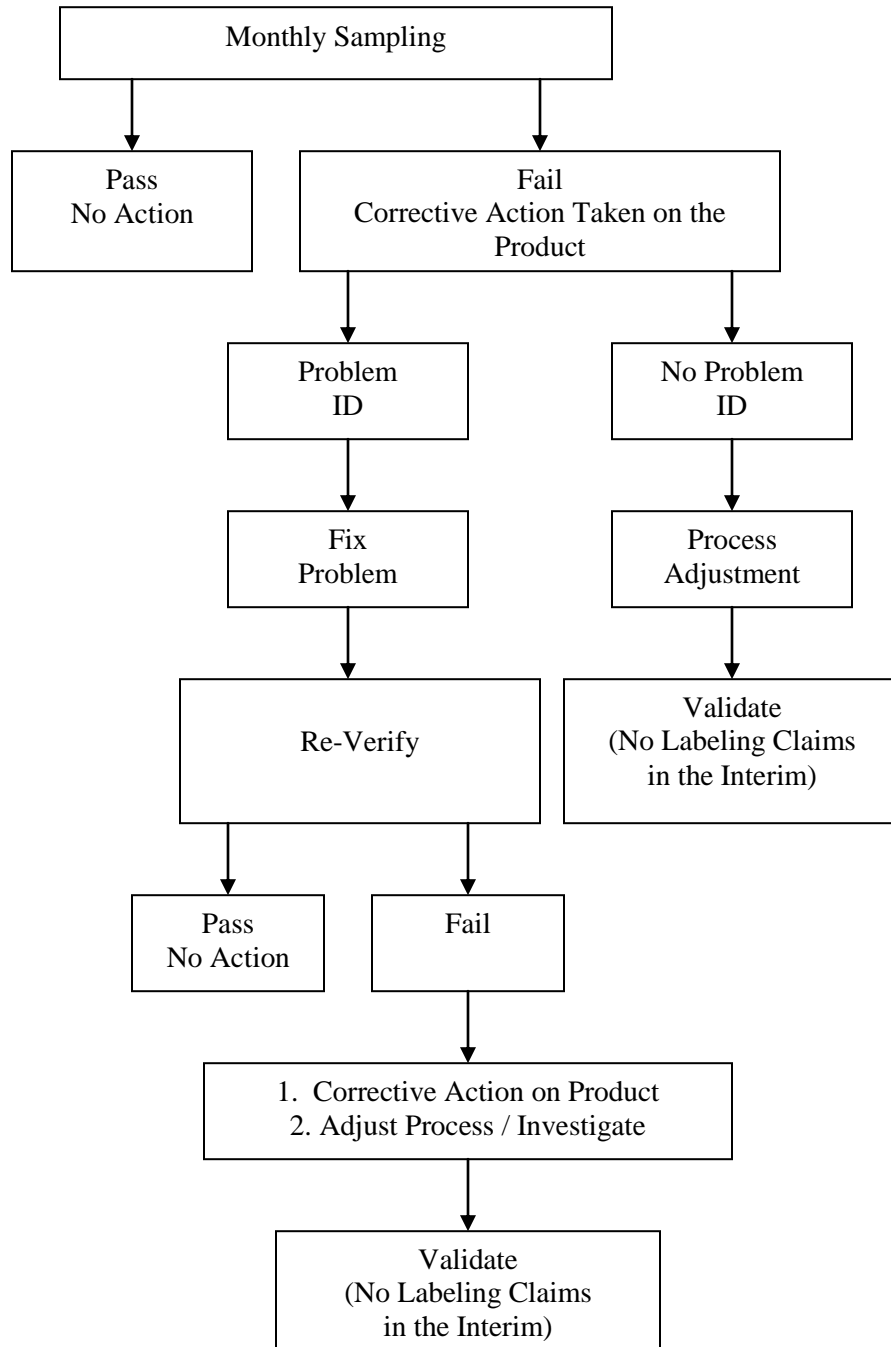


**National Shellfish Sanitation Program (NSSP) Guide for the Control of Molluscan Shellfish:  
2013 Revision**

**Verification Sampling Protocol Decision Tree**



# National Shellfish Sanitation Program (NSSP) Guide for the Control of Molluscan Shellfish: 2013 Revision

Note: When a monthly verification fails, the verification must be reported within one week of failure

## References for *Vibrio parahaemolyticus* Methods

1. Cook, D.W., A. DePaola, and S.A. McCarthy. 2000. Direct plating procedure for the enumeration of total and pathogenic *Vibrio parahaemolyticus* in oyster meats. FDA, Office of Seafood, Gulf Coast Seafood Laboratory, Dauphin Island, AL. 8 pp.
2. Gooch, J.A., A. DePaola, C.A. Kaysner, and D.L. Marshall. 2001. Evaluation of two direct plating methods using nonradioactive probes for enumeration of *Vibrio parahaemolyticus* in oysters. *Appl. Environ. Microbiol.* 67(2):721-724.
3. Kaysner, C.A. and A. DePaola, Jr. 2001. Chapter 40, *Vibrio*, p. 405-420. In Downes, F.P. and K. Ito (eds.), *APHA Compendium of Methods for the Microbiological Examination of Foods*, 4<sup>th</sup> Edition, 2001, American Public Health Association, Washington, D.C.
4. McCarthy, S.A., A. DePaola, C.A. Kaysner, W.E. Hill, and D.W. Cook. 2000. Evaluation of nonisotopic DNA hybridization methods for detection of the *tdh* gene of *Vibrio parahaemolyticus*. *J. Food Protect.* 63(12):1660-1664.
5. McCarthy, S.A., A. DePaola, D.W. Cook, C.A. Kaysner, and W.E. Hill. 1999. Evaluation of alkaline phosphatase- and digoxigenin-labeled probes for detection of the thermolabile hemolysin (*tlh*) gene of *Vibrio parahaemolyticus*. *Letters in Applied Microbiology* 28(1):66-70.
6. McCarthy, S.A., A. DePaola, C.A. Kaysner, W.E. Hill, and D.W. Cook. 1999. P1. Comparison of PCR and DNA hybridization methods for detection of the *tdh* gene of *Vibrio parahaemolyticus*, p. 512. In American Society for Microbiology (ed), *Abstracts of the 99<sup>th</sup> General Meeting of the American Society for Microbiology*. American Society for Microbiology, Washington, D.C.

## References

1. Bachman, B. *et al.* 1983. Marine Noncholera *Vibrio* Infections in Florida. *So. Med. Jour.* 76:296-303.
2. Baross, J. and J. Liston. 1970. Occurrence of *Vibrio parahaemolyticus* and Related Hemolytic Vibrios in Marina Environments of Washington State. *Appl. Microbiol.* 20:179-186.
3. Blake, P.A. *et al.* 1979. Disease Caused by a Marine *Vibrio*, Clinical Characteristics and Epidemiology. *N. Eng. J. Med.* 300: 1-5.
4. Blake, P.A. *et al.* 1980. Disease of Humans (Other Than Cholera Caused by Vibrios). *Ann. Rev. Microbiol.* 34:341-367.
5. Blake, P.A. 1983. Vibrios on The Half Shell: What the Walrus and the Carpenter Didn't Know. *Ann. of Int. Med.* 99:558-559.
6. Blake, P.A. 1984. Prevention of Food-Borne Disease Caused by *Vibrio* Species. In: Colwell, R.R., *et al.*, eds. *Vibrios in the Environment*. John Wiley and Sons. New York, NY. pp. 579-590.
7. Bonner, J.R. *et al.* 1983. Spectrum of *Vibrio* Infections in a Gulf Coast Community. *Ann. Intern. Med.* 99:464-469.
8. Colwell, R.R. 1984. Vibrios In The Environment In: Colwell, R.R.; *et al.*, eds. *Vibrios in the Environment*. John Wiley & Sons. New York, NY. pp. 1-12.
9. Davey, G.R. *et al.* 1982. Detection of *Vibrio cholerae* In Oysters, Water And Sediment From The Georges River. *Food Technol. Aust.* 34:334-336.
10. DePaola, A. 1981. *Vibrio cholerae* in Marine Foods and Environmental Waters. A literature review. *Jour. of Food Sci.* 46:66-70.
11. Desmarchelier, P.M. 1984. Significance Of *Vibrio* spp. in Foods. *Food Technol. Aust.* 36:220-222.

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12. Food and Drug Administration. 1985. *Vibrio vulnificus* and Patients with Liver Disease. In: *FDA Drug Bulletin*. April. 15(1):5-6.
13. Joseph, S.W. *et al.* 1982. *Vibrio parahaemolyticus* And Related Halophilic Vibrios. *CRC Crit. Rev. in Microbiol.* 10:77-124.
14. Madden, J.M. *et al.* 1982. *Vibrio cholerae*. In Shellfish From U.S. Coastal Waters. *Food Tech.* 36(3):93-96.
15. Morris, J.G. Jr. *et al.* 1981. Non-O group 1 *Vibrio cholerae* Gastroenteritis in the United States. *Ann. of Int. Med.* 94:656-658.
16. Morris, J.G., Jr. *et al.* 1985. Cholera And Other *Vibrioses* In The United States. *N. Engl. J. Med.* 312:343-350.
17. National Institute of Health (NIH). 1984. Highly Invasive New Bacterium Isolated From U.S. East Coast Waters. *JAMA.* 251:323-325.
18. Oliver, J.D. 1982. The Pathogenicity and Ecology of *Vibrio vulnificus*. *Marine Tech. Soc. Jour.* 15:45-52.
19. Oliver, J.D. *et al.* 1983. Distribution of *Vibrio vulnificus* and Other Lactose-Fermenting Vibrios in The Marine Environment. *Appl. Environ. Microbiol.* 45:985-998.
20. Rodrick, G.E. *et al.* 1982. Human *Vibrio* Gastroenteritis, Symposium On Intestinal Infections. *Med. Clinics of North Amer.* 66:665-673.
21. Spira, W.M. 1984. Tactics For Detecting Pathogenic Vibrios In The Environment. In: Colwell, R.R. *et al.*, eds. *Vibrios in the Environment*. John Wiley & Sons. New York, NY pp 251-268.
22. Tacket, C.O., *et al.* 1984. Clinical Features and an Epidemiological Study of *Vibrio vulnificus* Infections. *Jour. Infect. Dis.* 149:558-561.
23. Tamplin, M., *et al.* 1982. Isolation and Characterization of *Vibrio vulnificus* From Two Florida Estuaries. *Appl. Environ. Microbiol.* 44:1466-1470.
24. Watkins, W. and S. McCarthy. 1994. *Proceedings of the 1994 Vibrio vulnificus Workshop*. U.S. Department of Health and Human Services, Public Health Service, Office of Seafood (HFS-400), Shellfish Sanitation Branch, 200 C Street, SW, Washington, D.C. 175 pages.

Description: Flow chart showing the post harvest processing verification sampling protocol and decision making process.

Collect monthly shellfish meat samples for process verification.

If the monthly samples pass, no action is required.

If the monthly samples fail, take the following measures; (1) Identify the problem, (2) Fix the problem, (3) re-verify the process by sampling. If the re-verification samples pass, no further action is required. If the re-verification samples fail, then; (1) Corrective action must be taken on the product, (2) The process must be investigated, (3) Any problems identified must be adjusted, and (4) The process shall be revalidated. No labeling claims can be made during the interim revalidation process.

If the monthly samples fail and no problem can be identified then; (1) Adjustments shall be made to the process, and (2) The process shall be revalidated. No labeling claims can be made during the interim revalidation process.