



environment, forestry  
& fisheries

Department: Environment, Forestry  
and Fisheries  
REPUBLIC OF SOUTH AFRICA

# Standard Operating Procedure: Control of Abalone Contaminated with Paralytic Shellfish Toxin

Branch: Fisheries Management  
Chief Directorate: Aquaculture & Economic Development  
Directorate: Sustainable Aquaculture Management

Issue 3: March 2021

**TITLE**

Standard Operating Procedure: Control of Abalone Contaminated with Paralytic Shellfish Toxin

**COMMENCEMENT**

This Standard Operating Procedure comes into force on 1 March 2021.

**REVOCATION**

This programme issue revokes and replaces Standard Operating Procedure: Marketing of Abalone via Fish Processing Establishment, Issue 2 as well as any previous issues of the document.

**STANDARD OPERATING PROCEDURES ISSUED**

Issue	Date of issue
1	9 March 2016
2	1 August 2020
3	1 March 2021

**ISSUING AUTHORITY**

This Standard Operating Procedure is issued by the Environmental Officer Specialised Production of the Directorate Sustainable Aquaculture Management of the Department of Environment, Forestry and Fisheries in terms of the South African Shellfish Monitoring (Issue 8) and Control Programme that was issued by the Deputy Director General of the Branch Fisheries Management.



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Environmental Officer Specialised Production  
DATE: 23/02/2021

Contents

1. DOCUMENT CONTROL ..... 4

2. SCOPE ..... 5

3. BACKGROUND ..... 5

4. FOOD SAFETY CONTROL..... 6

    4.1. Application to Process Abalone ..... 6

    4.2. Biotxin Monitoring ..... 7

5. REFERENCES ..... 8

## 1. DOCUMENT CONTROL

The Standard Operating Procedure (SOP): Control of Abalone Contaminated with Paralytic Shellfish Toxin was compiled by Department of Environment, Forestry and Fisheries: Food Safety Office (FSO) of the Directorate Sustainable Aquaculture Management. The SOP is administered by the FSO and will be reviewed and updated as relevant new information becomes available.

A detailed record of all amendments shall be maintained, and the latest version will be made available at the FSO and will be loaded onto the DEFF website. Suggestions for alterations that would significantly improve the document are welcomed. These should be forwarded to the coordinator, Mr John Foord and enquiries can be directed to Mr Mayizole Majangaza (Appendix 1).

## 2. SCOPE

This document covers the procedures for the control of cultured abalone (*Haliotis midae*) that is contaminated with PST and harvested for processing to meet the requirements stipulated in terms of the South African Shellfish Monitoring and Control Programme (SASM&CP).

The procedures are applicable to all abalone production facilities located between Port Nolloth in the Northern Cape and Haga Haga in the Eastern Cape and relevant FPEs. FPEs, for the purposes of this protocol refers to any authorised facility that processes or packages aquacultured abalone or products thereof. Currently, however, only the farms on the West Coast are at risk.

## 3. BACKGROUND

The Department of Environment, Forestry and Fisheries (DEFF) is the managing and regulatory authority for the undertaking of aquaculture activities that include farming, harvesting and transporting of fish for wholesale trading in terms of the Marine Living Resources Act, 1998 (Act No. 18 of 1998) and associated regulations. The Directorate: Sustainable Aquaculture Management (D: SAM) of the Fisheries Branch of DEFF is responsible for the development, management and regulation of a sustainable aquaculture industry that contributes towards job creation, food security, rural development and economic growth. D: SAM aims to achieve the above mentioned strategic objectives through the development and implementation of relevant enabling legislation, policies and programmes as well as be responsive and compliant to international obligations and agreed standards. The Food Safety Office (FSO) within D: SAM is responsible for the development and management of food safety programmes stipulated in the permit conditions issued in terms of the Marine Living Resources Act, 1998 (Act No. 18 of 1998) including the SASM&CP, South African Aquacultured Marine Fish Monitoring and Control Programme (SAMFM&CP) and National Residue Control Programme (NRCP). The objectives of the food safety programmes include providing guarantees to domestic and international markets and consumers that South African cultured fish products are safe for human consumption.

The risks to food safety of cultured fish include environmental residues (heavy metals, pesticides, polychlorinated biphenyl, dioxins polycyclic aromatic hydrocarbons and radionuclides) and veterinary drug residues (hormones, antibiotics and anthelmintics), the accumulation of biotoxins (Paralytic Shellfish Toxins (PST), Lipophilic Shellfish Toxins (LST) and Amnesic Shellfish Toxins (AST)) and microbiological contamination in shellfish indicated by the presence of *E. coli*. Historically, however, only PST in abalone from the West Coast have proven to be a food safety risk.

The Competent Authority (CA) viz. National Regulator for Compulsory Specifications (NRCS) in association with the DEFF is required to determine whether a risk exists in any geographical areas under its control. Should there be a risk in abalone the CA is required to put in the necessary mechanisms in accordance with Standard for Live Abalone and for Raw Fresh Chilled or Frozen Abalone for Direct Consumption or for further Processing (CODEX STAN 312-2013) to ensure that the part of the abalone to be consumed, meets with the regulatory levels in the Standard for Live and Raw Bivalve Molluscs (CODEX STAN 292-2008). Abalone from some geographical areas have been found to accumulate PST, which are not eliminated by cooking. Research, however, has shown that if the epithelium layer on the foot and the epipodial fringe is properly removed by scrubbing and the abalone is eviscerated, the PSTs are removed (Pitcher, Franco, Doucette, Powell, & Mouton, 2001). Concessions may thus be granted for the processing of abalone that has exceeded the PST concentration limit provided the part of the abalone to be consumed meets the requirements of the SASM&CP and Codex Stan 292-2008.

## 4. FOOD SAFETY CONTROL

Abalone samples from the marine aquaculture farms are taken as outlined in the Standard Operating Procedure: Sampling and Transport of Aquacultured Marine Fish. The samples are sent to officially approved laboratories for the testing of PST. The test results are submitted to the DEFF for the monitoring and control of the food safety of the product harvested. Should any of the contaminant concentrations exceed the regulatory limits the farms are temporarily closed until the product meets the requirements stipulated in the SASM&CP.

### 4.1. Application to Process Abalone

The abalone farm wanting to process abalone that contains PST concentrations that have exceeded the regulatory limit may apply to the DEFF in writing for permission to harvest and process the abalone. The letter shall be addressed to the Director Sustainable Aquaculture Management (Appendix 1) and a scanned copy emailed to SAMSanitation@environment.gov.za. The letter shall include:

- Farm name and farm code (issued by DEFF)
- Species to be harvested
- FPE name and the FPE code (issued by the NRCS)
- Duration of processing.

The Director Sustainable Aquaculture Management shall consider the request and relevant information and if satisfied will grant permission to harvest and process the abalone at the specified FPE. Should the farm want to market live abalone during this period it shall inform the FSO and NRCS (Appendix 1) by email indicating the period of live marketing. The Approval letter from the Directorate: Sustainable Aquaculture Management to process the abalone must be referenced and attached to the email.

The following conditions apply to the processing of abalone that is contaminated with PST that exceed the regulatory limits:

1. A Movement Document that is properly completed in accordance with the SOP Traceability of Cultured Shellfish and a valid copy of the letter from the Department granting permission to harvest the abalone shall accompany each batch of abalone from the production facility to the FPE.
2. The abalone is to be properly eviscerated, removing the gills and viscera including oesophagus and head.
3. The abalone foot and epipodial fringe shall be thoroughly scrubbed to properly remove the epithelial layer.
4. Once processed a sample of 5 abalone from each batch shall be sampled and tested for PST. The sample identification on the test report shall include:
  - FPE number; Sample Date and the NRCS reference number e.g. E37; 2015/11/18; NRCS Ref: SP318
  - Production facility number and the date harvested e.g. FW01; 2021/12/01
5. The test results shall be sent by the laboratory to the NRCS managers (Appendix 1) and a copy shall be sent to the DEFF FSO (SAMSanitation@environment.gov.za).
6. Once satisfied that the abalone have been properly processed and that the PST concentration meets the regulatory requirements, the NRCS inspector shall sign the copy of the movement

document that is filed at the FPE together with the letter from DEFF and attach a copy of the PST test report.

7. The NRCS head office shall verify on quarterly basis that the movement documents have been signed by the NRCS inspector and that the relevant test reports and a copy of the letter are attached to each movement document.

#### 4.2. Biotxin Monitoring

The abalone farms on the West Coast are required to test abalone for PST every two weeks and LST and AST once a month in accordance with the SASM&CP. If, however, the abalone farm is processing all the abalone on the farm as per Section 4.1 the following testing is required:

1. The farm may be tested for PST once a month instead of the frequency of twice a month prescribed in the SASM&CP.
2. LST shall continue to be tested once.
3. AST shall continue to be tested once month on a regional basis.
4. Ranched abalone shall also be tested as above on a routine basis or the farm can request that each batch harvested be tested for the relevant biotoxins if abalone is harvested on an *ad hoc* basis.
5. The FPE must ensure that each batch is tested PST after processing.
6. The end product must comply with the requirements in terms of the SALMSM&CP and the relevant National Regulator for Compulsory Specifications Act, 2008 (Act No. 5 of 2008) regulations.

## 5. REFERENCES

- Codex Alimentarius. 2003. Standard for live and raw bivalve molluscs. Rome. World Health Organization and Food and Agriculture Organization of the United Nations. Vol 312, 1-5.
- Codex Alimentarius. 2008. Standard for live abalone and for raw fresh chilled or frozen abalone for direct consumption or for further processing. Rome. World Health Organization and Food and Agriculture Organization of the United Nations. Vol 292, 1-9.
- Department of Environment, Forestry and Fisheries. 2021 South African Shellfish Monitoring and Control Programme. Cape Town. Issue 8, 1-65.
- National Regulator for Compulsory Specifications. 2018. Procedure: Sampling and Transport of Aquacultured Marine Fish. Cape Town. Issue 1, 1-14.
- Pitcher, G. C., Franco, J. M., Doucette, G. J., Powell, C. L., & Mouton, A. 2001. Paralytic shellfish poisoning in the abalone *Haliotis midae* on the West Coast of South Africa. *Journal of Shellfish Research*, 20(2), 895–904.



## Appendix 1: Contact Information

### Department of Environment, Forestry and Fisheries

Food Safety Office  
 Directorate: Sustainable Aquaculture Management  
 Chief Directorate: Aquaculture and Economic Development  
 Department of Environment, Forestry and Fisheries  
 Sea Point Research Facility  
 307 Beach Road  
 Sea Point  
 8001

Director Sustainable Aquaculture Management  
 Department of Environment, Forestry and Fisheries  
 Private Bag X2  
 Vlaeberg  
 Cape Town  
 8018

### Food Safety Office

Contact	Email	Office	Cell
Food Safety Office	SAMSanitation@environment.gov.za	021 430 7065	-
Ms Helen Ntoampe	HNtoampe@environment.gov.za	021 430 7065	-
Ms Portia Dwane	PDwane@environment.gov.za	012 319 6397	076 172 7305
Mr Mayizole Majangaza	MMajangaza@environment.gov.za	021 430 7076	061 5062328
Mr John Foord	JFoord@environment.gov.za	021 430 7003	082 343 8327

### National Regulator for Compulsory Specifications (NRCS): Foods and Associated Industries

Contact	Email	Office	Cell
Mr Andre Dreyer	Andre.Dreyer@nracs.org.za	021 526 3402	081 496 5016
Mr Andre de Wet	Andre.DeWet@nracs.org.za	021 526 3413	084 710 0263
Mr Deon Jacobs	Deon.Jacobs@nracs.org.za	021 526 3412	079 368 6183
Mr Aldrid Prins	Aldrid.Prins@nracs.org.za	021 526 3403	083 228 4453