

National Shellfish Sanitation Program
Guide for the Control of Molluscan Shellfish
2007

Section II. Model Ordinance
Chapter VII. Wet Storage in Approved and Conditionally Approved Growing Areas

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Requirements for the Authority.

[Note: The Authority must meet the requirements of this section even if the Authority does not formally adopt this section in regulation.]

@.01 General

- A. The Authority shall permit all wet storage activities to ensure that all wet storage activities are conducted by certified NSSP shellfish firms.
- B. The Authority shall approve and maintain the following records while the wet storage activity continues:
 - (1) Construction and remodeling plans for any permitted wet storage facility;
 - (2) Wet storage operational plans;
 - (3) Wet storage permits; and
 - (4) Inspection documentation.
- C. The Authority shall inspect wet storage activities at the following frequency:
 - (1) Activities in offshore natural bodies of water at least annually;
 - (2) Activities at land-based sites with flow-through systems at least every six months; and
 - (3) Activities at land-based sites with recirculating systems semi-annually.
- D. The Authority shall immediately notify (within 24 hours) all wet storage permit holders affected by a change in growing area classification or status.
- E. Reshippers shall not engage in wet storage activities.

Requirements for the Dealer.

.01 Source of Shellstock.

- A. Dealers shall wet store shellstock harvested only from areas classified as approved, or conditionally approved, in the open status.
- B. Shellstock shall be harvested, identified and shipped to the wet storage activity in accordance with the requirements of Chapters VIII and IX.

.02 General.

- A. Wet storage may be used to store, condition, remove sand or to add salt to shellstock. Wet storage shall be deemed a processing activity.
- B. Wet storage of depurated product shall occur only within the facility in which it was depurated. The shellstock shall be packed and labeled according to the requirements in Chapter XV.
- C. Wet storage shall be practiced only by a dealer in strict compliance with the provisions in the written approval for the wet storage activity given by the Authority.
- D. While awaiting placement in a wet storage activity, shellstock shall be protected from physical, chemical or thermal conditions which may compromise shellstock survival, quality or activity during wet storage.
- E. Conditions and water quality during wet storage shall be sufficient to minimize the potential for compromising the sanitary quality of the shellstock during storage.
- F. Shellstock from a wet storage activity shall be harvested, handled, identified, processed and shipped according to the requirements of Chapters VIII, IX, and X.
- G. The wet storage operator shall keep complete and accurate records to enable a lot of shellstock to be traced back to the original harvest location and wet storage location, and include the dates the shellstock were held in wet storage. The records shall be maintained for a minimum of one year.
- H. Unless the dealer is in the Authority's commingling plan under Chapter I .01 F., different lots of shellfish shall not be commingled during wet storage. If more than one lot of shellstock is being held in wet storage at the same time, the identity of each lot of shellstock shall be maintained.

.03 Wet Storage Sites in Natural Bodies of Water (Offshore).

- A. Natural bodies of waters used for wet storage shall meet the requirements for classification as approved or conditionally approved while shellstock is being held in storage. Areas classified as conditionally approved may be used only when in the open status. When an area classified as conditionally approved is placed in a status other than its open status, any shellstock in wet storage in that area shall be:
 - (1) Subjected to relaying or depuration prior to human consumption; or
 - (2) Held in the wet storage site until the area is returned to the open status.
- B. Site evaluations of natural bodies of water shall include:
 - (1) The sanitary survey of the storage site, with special consideration of potential intermittent sources of pollution;

- (2) The location of storage sites and/or floats;
- (3) The examination of the construction of shellstock containers, if used, to ensure the free flow of water to all shellstock; and
- (4) A review of the operation's plan and operating procedures for an offshore activity as submitted by the dealer.

C. Different lots of shellstock shall not be commingled in wet storage. If more than one lot of shellstock is held in wet storage at the same time, the identity of each lot of shellstock shall be maintained.

.04 Wet Storage in Artificial Bodies of Water (Land-Based).

A. General

- (1) If the dealer chooses to practice wet storage in artificial bodies of water, the dealer shall meet the requirements of Chapter VII .01 and .02.
- (2) For the purpose of permitting, each wet storage site or activity shall be evaluated in accordance with @ .01. B. The evaluation shall include a review of the plan and operating procedures for conducting land-based wet storage activity as submitted by the dealer.
- (3) Prior to commencing construction, all plans for construction or remodeling of wet storage facilities shall be reviewed and authorized by the Authority.
- (4) The wet storage facility evaluation shall include a review of:
 - (a) The purpose of the wet storage activity, such as holding, conditioning or increasing the salt content of shellstock;
 - (b) Any species specific physiological factors that may affect design criteria; and
 - (c) The plan giving the design of the land-based wet storage facility, source and quantity of process water to be used for wet storage, and details of any process water treatment (disinfection) system.

B. Operation Specifications.

- (1) General. Each land-based wet storage activity shall meet the following design, construction, and operating requirements.
 - (a) Effective barriers shall be provided to prevent entry of birds, animals, and vermin into the area.
 - (b) Storage tanks and related plumbing shall be fabricated of safe material and shall be easily cleanable. This requirement shall include:
 - (i) Tanks constructed so as to be easily accessible for cleaning and inspection, self-draining and fabricated from nontoxic, corrosion

resistant materials; and

(ii) Plumbing designed and installed so that it can be cleaned and sanitized on a regular schedule, as specified in the operating procedures.

(c) Storage tank design, dimensions, and construction are such that adequate clearance between shellstock and the tank bottom shall be maintained.

(d) Shellstock containers, if used, shall be designed and constructed so that the containers allow the free flow of water to all shellstock within a container.

(2) Buildings. When a building is used for the wet storage activity:

(a) Floors, walls, and ceilings shall be constructed in compliance with the applicable provisions of Chapter XI; and

(b) Lighting, plumbing, water and sewage disposal systems shall be installed in compliance with applicable provisions of Chapter XI.

(3) Outdoor Tank Operation. When the wet storage activity is outdoors or in a structure other than a building, tank covers shall be used. Tank covers shall:

(a) Prevent entry of birds, animals or vermin; and

(b) Remain closed while the system is in operation except for periods of tank loading and unloading, or cleaning.

C. Wet Storage Source Water

(1) General.

(a) Except for wells, the quality of the surface source water prior to treatment shall meet, at a minimum, the bacteriological standards for the restricted classification and water classified as Prohibited or Conditionally Restricted when in the Closed Status shall not be used as source water.

(b) Any well used as source water for wet storage shall meet the requirements of Chapter XI. 02 (with the exception of the salt content in salt water wells).

(c) Except when the source of the water is a growing area in the approved classification, a water supply sampling schedule shall be included in the dealer's operating procedures and water shall be tested according to the schedule.

(d) Results of water samples and other tests to determine the suitability of the source water supply shall be maintained for at least 2 years.

(e) Disinfection or other water treatment such as the addition of salt cannot leave residues unless they are Generally Recognized as Safe (GRAS) and do not interfere with the shellstock's survival, quality or activity during wet storage.

- (f) Disinfected process water entering the wet storage tanks shall have no detectable levels of the coliform group as measured by a recognized multi-tube MPN test per 100 ml. for potable water and acceptable for use with marine water and follow the protocol of the Decision Tree (Section IV. Guidance Documents Chapter III. 06.)
- (g) When the laboratory analysis of a single sample of disinfected process water entering the wet storage tanks shows any positive result for the coliform group daily sampling shall be immediately instituted until the problem is identified and eliminated.
- (h) When the problem that is causing disinfected process water to show positive results for the coliform group is eliminated, the effectiveness of the correction shall be verified on the first operating day following correction through the collection, over a 24 hour period, of a set of three samples of disinfected process water.
- (i) For water that is disinfected by ultra-violet treatment, turbidity shall not exceed 20 nephelometric turbidity units (NTUs) measured in accordance with *Standard Methods for the Examination of Water and Wastewater*, APHA.
- (j) The disinfection unit(s) for the process water supply shall be cleaned and serviced as frequently as necessary to assure effective water treatment.

(2) Continuous Flow-through System.

- (a) If the system is of continuous flow-through design, water from a growing area classified as:
 - (i) Approved may be used, without disinfection, in wet storage tanks provided that the near shore water source used for supplying the system meets the approved classification bacteriological criteria at all times that shellstock are being held in wet storage; or
 - (ii) Conditionally Approved in the Closed Status, Restricted or Conditionally Restricted in the Open Status may be used if the source water is continuously subjected to disinfection and it is sampled and analyzed daily following disinfection.
- (b) When a source classified as Conditionally Approved in the Closed Status, Restricted or Conditionally Restricted in the Open Status is used, a study shall be required to demonstrate that the disinfection system can consistently produce water that tests negative for the coliform group under normal operating conditions. The study shall:
 - (i) Include five sets of three samples from each disinfection unit collected for five consecutive days at the outlet from the disinfection unit or at the inlet to at least one of the wet storage tanks served by the disinfection system;

- (ii) Include one sample daily for five consecutive days from the source water prior to disinfection;
 - (iii) Use NSSP recognized methods to analyze the samples if determining coliform levels;
 - (iv) Require all samples of disinfected water to be negative for the coliform group; and
 - (v) Be repeated if any sample of disinfected process water during the study is positive for the coliform group.
- (c) Once sanctioned for use, the water system shall be sampled daily to demonstrate that the disinfected water is negative for the coliform group.
 - (d) When other than approved water is located between the intake of a flow-through wet storage system and the land-based facility then the Authority may require periodic verification of the system's integrity to ensure that the other than approved water does not infiltrate into the intake pipe.
- (3) Recirculating Water System.

- (a) A study shall be required to demonstrate that disinfection for the recirculating system can consistently produce water that tests negative for the coliform group under normal operating conditions. The study shall meet the requirements in §C. (2) (b) above.
- (b) Once sanctioned for use, the recirculating process water system shall be sampled weekly to demonstrate that the disinfected water is negative for the coliform group
- (c) When make-up water of more than 10 percent of the process water volume in the recirculating system is added from a growing area source classified as other than approved, a set of three samples of disinfected water and one sample of the source water prior to disinfection shall be collected over a 24 hour period to reaffirm the ability of the system to produce process water free from the coliform group or viable bacteria.
- (d) When ultra-violet treatment is used as the water disinfectant, each time a bulb change is required either to replace a burned out bulb or for servicing, new ultraviolet bulbs shall be installed and old bulbs discarded, and the weekly disinfected process water sample shall be collected and analyzed.

D. Shellstock Handling.

- (1) Shellstock shall be thoroughly washed with water from a source authorized by the Authority and culled prior to wet storage in tanks. Any deviation to this requirement is subject to permission from the Authority.
- (2) Unless the dealer is in the Authority's commingling plan under Chapter I @.01 F., different lots of shellstock shall not be commingled during wet storage in tanks. If

more than one lot of shellstock is being held in wet storage at the same time, the identity of each lot of shellstock shall be maintained.

- (3) Bivalve mollusks shall not be mixed with other species in the same tank. Where multiple tank systems use a common water supply system for bivalve mollusks and other species, wet storage process water shall be effectively disinfected prior to entering tanks containing the bivalve mollusks.