

**STATE OF NEW JERSEY
CONTINGENCY PLAN FOR THE CONTROL OF
SHELLFISH POTENTIALLY CONTAMINATED BY MARINE BIOTOXIN**

(Revised Jan 2016)

Introduction

With the advent of the paralytic shellfish poisoning (PSP) outbreaks in East and West coast shellfish areas not previously known to be affected by *Alexandrium* blooms, and with recent reports of neurotoxic disturbances in humans affected by *Gymnodinium breve* toxin in Florida, it is important that states develop contingency plans in the event of an outbreak.

New Jersey has not experienced any illnesses related to shellfish harvested from NJ waters affected by marine biotoxins. However the National Shellfish Sanitation Program requires that states develop and implement a marine biotoxin contingency plan. This plan is put into place in the event that toxic algal blooms that could render shellfish unfit for human consumption occur in the state's waters. The primary goal of this planning is to ensure that maximum public health protection is provided. To achieve this goal the following objectives should be met:

- A. Procedures should be instituted to provide an early warning system.
- B. Procedures should be instituted to define the severity and extent of the occurrence.
- C. Procedures should be instituted to provide effective State response in order to minimize illness.
- D. Procedures should be instituted to provide adequate intelligence and surveillance information, gathered and evaluated by qualified control officials. Consultation with adjacent jurisdictions, marine biologists and other environmental officials may also occur.
- E. Procedures should be instituted to reclaim contaminated areas for harvesting.

Under provisions of the Interstate Shellfish Sanitation Conference (ISSC), the U.S. Food and Drug Administration (FDA) and receiver states should have assurance that shellfish-producing states are taking and/or can take adequate measures to prevent harvesting, shipping, and consumption of toxic shellfish. To provide this assurance, the State of New Jersey has prepared this contingency plan, defining how each of the objectives will be accomplished.

A. Early Warning System

New Jersey's Early Warning system for marine biotoxins consists of three components:

- 1) **Notification from sources external to the New Jersey Bureau of Marine Water Monitoring.** This consists primarily of notification from the public of patches of discolored water in coastal areas. The New Jersey Department of Environmental Protection maintains a 24-hour hotline for the public to report unusual environmental/pollution conditions (1-877-WARNDEP). Observations by other State and local government officials (such as bird or fish kills, water discoloration, and abnormal behavior of shellfish or marine scavengers) also come in through the hotline. The Communication Center which operates the 24-hour hotline can contact the Bureau of Marine Water Monitoring staff assigned primary and secondary emergency response duties. During the summer months, the Department of Environmental Protection performs aerial surveillance of the State's Atlantic Coastal waters by aircraft. Discolored water conditions observed by the staff manning the aircraft are reported to the Bureau of Marine Water Monitoring within 24 hours of the observation.
- 2) **Monitoring performed by the Bureau of Marine Water Monitoring.** There are two components of the Bureau's phytoplankton monitoring program:
 - a) **Fixed Station Monitoring.** During the summer months, sampling was performed by the EPA Helicopter at 16 stations biweekly, but the EPA eliminated the Helicopter flights in 2014. The bureau designed a new

sampling protocol which utilizes existing staff by merging the phytoplankton sampling with the NSSP program, in order to continue to protect public health. A total number of 48 stations from Raritan Bay to Delaware Bay were selected to cover the entire coastal region of New Jersey. All samples will be collected by the Bureau's Boat Captains for phytoplankton identification and chlorophyll a analysis using methods SM10200F and SM10200H respectively. The focus will be for toxin producing species and dominant species, which will include cell counts to determine bloom conditions.

- b) **Remote Sensing.** The other component of the Bureau's phytoplankton monitoring program involves the use of remote sensing to identify areas of high chlorophyll a levels where phytoplankton blooms may be occurring. Aircraft remote sensing is used on a near-daily basis during the summer months and on a weekly basis in the Fall and Spring months. This is augmented with satellite remote sensing which is used to monitor large water bodies (Raritan Bay, Delaware Bay, Atlantic Ocean). The Bureau has regular access to MODIS satellite imagery. Once remote sensing identifies potential bloom areas, a boat or helicopter will collect samples from such areas so that the predominant phytoplankton species involved can be identified as toxic or non-toxic.
- 3) **Coordination of Information Handling.** All marine biotoxin related information is coordinated through the New Jersey Department of Health. This includes receipt of illness reports from within New Jersey, reports of illness from outside New Jersey that are traced to New Jersey shellstock and communication with FDA, local health officials and health officials in adjacent states to distribute all marine biotoxin related information.

B. Defining Severity and Extent of Occurrences

When information provided from the early warning system described above suggests that toxic species may be present in sufficient numbers to pose a public health threat, the monitoring program will be expanded to more accurately assess the threat. If tissue standards exist for the species identified, tissue sampling and analysis will be initiated from the affected area. Where tissue standards do not exist, decisions will be based on cell concentrations. Sampling will be conducted at predetermined stations in order to monitor the increase or decrease in cell concentrations. Sampling results, field reports, and hydrographic and meteorological data are evaluated to determine the severity and extent of a toxic harmful algal bloom. Hydrographic and meteorological factors are evaluated to predict the transport direction and distribution of a bloom. If it is determined that additional shellfish harvesting areas or zones will be impacted, those waters are temporarily placed in closed status.

C. State Response

Closure of Growing Areas Associated with the Presence of Marine Biotoxins

A growing area or portion(s) thereof will be placed in the closed status for the taking of shellstock when the Bureau of Marine Water Monitoring determines that the level of biotoxin present in shellfish meats or toxic species in the water column is sufficient to cause a health risk. The closed status shall be established based on the following criteria:

- (a) PSP - cells/L n/a; 80 µg/100 grams
- (b) NSP - 5,000 cells/L or 20 MU/100 grams (0.8 mg brevetoxin-2 equivalents/kg)
- (c) AZP - cells/L n/a; 0.16 mg azaspiracid-1 (AZA-1) equivalents/kg (0.16 ppm)
- (d) DSP – cells/L n/a; 0.16 mg okadaic acid (OA) equivalents/kg (0.16 ppm)
- (e) ASP - cells/L n/a; 2 mg domoic acid/100 grams (20 ppm)
- (f) The concentration of paralytic shellfish poison (PSP) equals or exceeds 80 µg per 100 g of edible portion of raw shellfish; or
- (g) For neurotoxic shellfish poisoning (NSP), the harvesting of shellstock shall not be allowed when: (i) The concentration of NSP equals or exceeds 20 mouse units per 100 grams of edible portion of raw shellfish; or (ii) The cell counts for *Karenia brevis* organisms in the water column exceed 5,000 per liter
- (h) For domoic acid, the toxin concentration shall not be equal to or exceed 20 ppm in the edible portion of raw shellfish.
- (i) For azaspiracid shellfish poisoning (AZP), the concentration of azaspiracids shall not be equal to or exceed 0.16 mg/kg (AZA-1 equiv.) in the edible portion of raw shellfish.
- (j) For diarrhetic shellfish poisoning (DSP), the concentration of DSP toxins shall not be equal to or exceed 0.16 mg/kg (OA equiv.) in the edible portion of raw shellfish.

For any marine biotoxin producing organism for which criteria have not been established under the ISSC's Model Ordinance, best professional judgment will be used by the Bureau as the criteria for not allowing the harvest of shellstock. When sufficient data exist to establish that certain shellfish species can be safely exempted from the marine biotoxin contingency plan, the closed status for harvesting may be applied selectively to some shellfish species and not others.

The Bureau of Marine Water Monitoring has the ability to test for NSP, ASP, DSP, and PSP using Abraxis test kits, and will close shellfish harvesting if any of the biotoxin levels exceed the standards indicated above. Samples will then have to pass certified methodology tests in order for the growing area to return to open status. Analyses for paralytic shellfish poison (PSP) will be performed by mouse bioassay at the NJ Bureau of Marine Water Monitoring. Other toxin analyses are typically performed using HPLC. These analyses would be submitted to the NJ Department of Health or FDA laboratory, for testing if needed. New techniques will be used when validated and accepted by the National Shellfish Sanitation Program Model Ordinance.

When a closure is put into effect, notification of the closure is accomplished by three methods:

- 1) Immediate posting of closure signs at common access points to the affected waters (boat ramps, marinas, beaches).
- 2) The Department of Environmental Protection issues a Public Notice describing the extent and reason for the closure.
- 3) Local marine enforcement and health officials are immediately faxed the Public Notice.

The closed status shall remain in effect until the Bureau of Marine Water Monitoring has data to show that the toxin content of the shellfish in the growing area is below the level established for closing the area. The determination to return a growing area to the open status shall consider whether toxin levels in the shellfish from adjacent areas are declining. The analysis upon which a decision to return a growing area to the open status is based shall be adequately documented.

Restricting Harvesting

The authority to close shellfish beds in the event that it is determined that marine biotoxins pose a public health threat is found in New Jersey's Administrative Code:

N.J.A.C. 7:12-1.5(c) "... The Department shall immediately suspend shellfish harvest in the event that it is determined that the level of biotoxin present in shellfish meats or the level of naturally occurring harmful algal blooms in the waters of the harvest area is sufficient to cause a health risk."

Patrol Program

There are 11 Conservation Officers assigned to the Marine Law Enforcement Region within the Division of Fish and Wildlife's Bureau of Law Enforcement. They have the primary responsibility to enforce shellfish regulations. The New Jersey State Police Marine Services Unit also has approximately 85 State Troopers assigned to Division of Fish and Wildlife is immediately notified in the event of a shellfish closure. Conservation Officers would patrol the area of closure to prevent harvest. Conservation Officers also have the authority to examine harvest and dealer records to further link possible illegal harvest to closure areas. They also have the authority to seize all shellfish products harvested from closed waters along with any equipment used to harvest or transport illegal shellfish. Law Enforcement officers also contact shellfish dealers in and around the closed shellfish area to better inform harvesters of the closure.

With an early warning system, timely and representative sampling, and prompt shellfish harvesting area closure, the potential for harvest and distribution of potentially contaminated shellfish is minimized.

Restriction of Distribution (Embargo & Recall Procedures)

Each shipment of shellstock is required to be tagged with either a harvester's or dealer's tag which among other requirements must contain the date and location of harvest. In addition each dealer must maintain transaction and shipping records that permit a lot of shellstock to be traced back to the original growing area and date of harvest. In the event that potentially contaminated shellfish has entered the distribution chain, the New Jersey Department of Health has the authority to examine the records of its certified dealers to ascertain information regarding the distribution of product so that appropriate action such as embargo, recall, or destruction can be taken. If record review indicates that potentially contaminated product has been shipped beyond the initial dealer, New Jersey Department of Health will request that the dealer initiate recall procedures. New Jersey Department of Health will notify other regulatory jurisdictions and FDA of these actions as necessary.

Embargoing Any Potentially Toxic Shellfish

- If there is probable cause to believe that a food product contains any poisonous or deleterious substance which may render it injurious to health, the New Jersey Department of Health has the authority to embargo such product. (R.S. 24:4-12)

Suspension of Certification

The Department of Health and Senior Services has the authority to suspend the shellfish certification of any dealer pending hearing when in its determination the protection of the public health warrants such action.

Procedures to Disseminate Information

- Industry - Direct notification of selected harvesters and processors by New Jersey Department of Health personnel.
- Health Agencies - Direct notification and written notification by New Jersey Department of Health personnel.
- Other States - Direct notification by New Jersey Department of Health personnel.
- Public – Public Notice by the New Jersey Department of Environmental Protection and the New Jersey Department of Health.

D. Gathering and Evaluation of Surveillance Information

In addition to the procedures described above, all surveillance information gathered will be evaluated by qualified staff of both the Department of Environmental Protection and the Department of Health and Senior Services. In addition, due to the lack of previous illnesses from marine biotoxins in New Jersey, technical assistance will be requested from FDA in the evaluation of surveillance information.

E. Re-opening of Growing Areas Closed Due to Marine Biotoxins

Growing areas that are placed in closed status as a result of the presence of marine biotoxins will not be reopened until three consecutive samples of shellfish meats from the area show that toxins are present at levels that are safe for harvest. If there are no tissue-level criteria available for the specific toxin of concern, then the criteria will be three consecutive water samples exhibiting levels of the biotoxin-producing phytoplankton species considered safe for shellfish harvest. If neither type of criteria are available, technical assistance will be requested of the FDA to decide the process for re-opening the waters.

Contact Information:

Function	Contact
Water classification, closures, water quality monitoring and shellfish tissue monitoring.	Robert Schuster Bureau of Marine Water Monitoring NJ Department of Environmental Protection (609) 748-2000
Patrol and Closure Enforcement	Mark Chicketano Bureau of Marine Enforcement NJ Department of Environmental Protection (609) 748-2050
Illness Reports, product recall and consumer notification.	Loel Muetter Consumer and Environmental Health NJ Department of Health (609) 826-4935