

# MARINE BIOTOXIN MONITORING AND CONTROL PROGRAM

## FIELD SAMPLING PROTOCOL: SHELLFISH



*Prepared By*

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Environmental Management Branch  
and  
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### INTRODUCTION

The following field sampling protocol will accommodate analysis for both paralytic shellfish poisoning (PSP) toxins and domoic acid (DA). Because a preservative cannot be used at the time of sample collection, it is imperative that the field collectors take care to ensure the integrity of each sample.

1. **SAMPLING:** A sample should consist of a single species of bivalve shellfish (mussels, oysters, clams, etc.) collected randomly from the sampling site. Each sample should include a **minimum of 20 individuals and at least 250 grams of drained shellfish meat**; this provides adequate material for both analyses with a reserve as insurance against a possible lab accident. This is equivalent to a volume of about one (1) cup of shucked meats. It takes up to **40** small sea mussels (about 2 inches shell length) to produce 250 grams of meat. Avoid collecting only a few very large specimens: this may provide misleading information on the presence or absence of toxin.
2. **FIELD PREPARATION OF SAMPLES:**
  - a. Shucked samples.
    - (1) Thoroughly clean the outside of shellfish with water.
    - (2) Open shell by cutting the adductor muscle(s). Do not use heat or anesthetic before opening shell. **Cut carefully to avoid damage to body of mollusk.**
    - (3) Rinse the opened shellfish to remove sand or other foreign materials if needed.
    - (4) For mussels, cut off byssal threads (attachment hairs) with scissors and discard, saving all meat.
    - (5) Open shell and drain off excess liquid.
    - (6) Remove meat from shell by scraping off all attachments to the shell (minimize damage to tissue).
    - (7) Place drained meat into a wide-mouthed, 16-ounce sample bottle. About 1/2 to 2/3 of a sample bottle of shellfish meat provides the desired amount. NOTE: Do not overfill; be sure to leave an air space to accommodate expansion upon freezing. A Ziploc<sup>®</sup> bag may also be used.
    - (8) Tighten cap securely. Refrigerate immediately in the field.
    - (9) **Freeze sample** as soon as possible; ensure that sample is frozen prior to shipment.
    - (10) Fill out sample submission slip; be sure to record sample **bottle number** and **type of shellfish** (e.g., sea mussel, bay mussel, Pacific oyster, gaper clam, etc.). A list of representative sample types and their associated codes is presented in Table 1. In addition, please record the **sample location and sampling date**, and **include your name and telephone number** so that we may contact you immediately. The presence of high toxin concentrations may necessitate immediate resampling.
  - b. Unshucked samples are not accepted except by special arrangement with EMB. If you have been instructed or authorized to send unshucked shellfish samples, clean the outside of shellfish, wrap in newspaper to cover sharp edges, place in a heavy gauge plastic bag and seal, double bag the sample, and check for leaks. Refrigerate immediately. Do not freeze.

3. **SHIPPING:** Rapid testing of samples for PSP and DA is extremely important. Samples should be shipped as soon as possible by the most rapid means available, while taking care that they arrive at the laboratory in an unspoiled condition.
  - a. Place frozen sample(s) in an insulated shipping container with an adequate quantity of frozen ice packs, sandwiched in absorbent materials to soak up any leakage or condensation.
  - b. Place sample submission slip(s) on top of the Styrofoam lid; close and seal the shipping container.
  - c. Containers returned to you from the laboratory will have mailing labels inside a plastic mailing envelope taped onto the lid or side. Remove the label addressed to you and reverse labels so that the box is addressed to the laboratory. Remove or cover any old shipping label(s) that could cause confusion.
  - d. Package should be addressed to:
 

California Department of Public Health  
 MDL/EMDS  
 ATTN: Specimen Receiving  
 850 Marina Bay Parkway  
 Richmond, CA 94804
  - e. Send package by overnight Courier Service in accordance with prior arrangements.
    - (1) Next-day courier service may be provided in some locations by EMB: call (510) 412-4635 for information; or
    - (2) You may use your own courier at your own expense.
  - f. Avoid sending samples at the end of the week or the day before a holiday. Prolonged transit time causes increased risk of spoilage and sample rejection.
  - g. All questions regarding this protocol should be directed to the EMB office at (510) 412-4635.

SAMPLE TYPE	CODE
Wild Sea Mussels ( <i>Mytilus californianus</i> )	MUWS
Sentinel Sea Mussels	MUSS
Wild Bay Mussels ( <i>Mytilus galloprovincialis</i> )	MUBW
Sentinel Bay Mussels	MUBS
Cultured Bay Mussels	MUBC
Cultured Pacific Oysters ( <i>Crassostrea gigas</i> )	OYPC

Table 1. Common sample types and their respective codes.