Commercial Shellfish Growing Areas

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Preharvest Shellfish and Marine Biotoxin Monitoring Program
Outline

• Background
• Standards for commercial shellfish
  – sanitary survey
  – water quality indicators
• Shellfish harvesting closures
• How thresholds are changed
Bivalve molluscan shellfish

Oysters, Mussels, Clams, Scallops

Filter feeders with high illness risk
- Concentrate microbiological organisms and toxins
- Can be eaten raw
What We Do

Preharvest Shellfish Program
Commercial Shellfish Growing Area Oversight
Issue SGA Certificates (location specific)
  • Allow harvest of shellfish for sale for human consumption. (Title 17. §7706)
Assess sanitary quality and monitor.

Marine Biototoxin Monitoring
For commercial and recreational shellfish.
Commercial Growing Areas

CLASSIFICATION:
- Cond. Approved
- Restricted

Humboldt Bay:
- 4164 Acres
- 4 Companies

Tomales Bay:
- 230 Acres
- 6 Companies

Morro Bay:
- 269 Acres
- 2 Companies

Santa Barbara Channel:
- 240 Acres
- 1 Company

Agua Hedionda Lagoon:
- 5 Acres
- 1 Company
Shellfish Standards

National Shellfish Sanitation Program Model Ordinance

• Sanitary standards for shellfish moving into interstate commerce.

State and federal cooperative program with industry participation
Growing Area Assessment

Sanitary Survey
Determines if the area is able to be classified for harvest for human consumption.

Continuous process
- Annual update reports
- Full sanitary survey report every 12 years
Sanitary Survey

Pollution Source Survey

• Identify and evaluate actual and potential pollution sources
  – Agricultural waste
  – WWTP, domestic waste
  – Marinas
  – Wildlife areas
  – Industrial waste
  – Storm water

• Shoreline Survey

• Establish Prohibited areas around waste water treatment plant (WWTP) Outfalls and marinas
Prohibited Areas Example
Sanitary Survey

• Hydrographic and Meteorological Characteristics
  – Tides and currents
  – Rainfall
  – Wind
  – River discharge

• Water Quality Study
  – Sample sites must be adequate to assess pollution
  – Follow NSSP sampling strategies

• Determination of growing area classification
  – Approved, Conditionally Approved, Restricted, Conditionally Restricted, Prohibited
NSSP Water Quality Bacteriological Indicators

Total & fecal coliform method options in NSSP

Fecal coliform in seawater
- Multiple tube fermentation
  - 5 tube, 3 dilution
- Result: Most Probable Number (MPN)/100 mL

Laboratory needs to be evaluated by federal Food and Drug Administration for NSSP shellfish methods.
NSSP Fecal coliform Water Quality Criteria

For 5 tube, 3 dilution method.
Required: Minimum of 30 samples for analysis. Minimum 5-6 per year.

<table>
<thead>
<tr>
<th>Approved Classification (direct to market)</th>
<th>Threshold</th>
<th>Sampling Strategy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geometric Mean</td>
<td>14 MPN</td>
<td>Both</td>
</tr>
<tr>
<td>Percent Samples ≥ 43 MPN</td>
<td>10 %</td>
<td>Adverse Pollution</td>
</tr>
<tr>
<td>Estimated 90th Percentile</td>
<td>43 MPN</td>
<td>Systematic Random</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Restricted Classification (relay or depurate)</th>
<th>Threshold</th>
</tr>
</thead>
<tbody>
<tr>
<td>Geometric Mean</td>
<td>88 MPN</td>
</tr>
<tr>
<td>Estimated 90th Percentile</td>
<td>260 MPN</td>
</tr>
</tbody>
</table>
NSSP Bacteriological Standards

NSSP water quality standards for growing area classification have two (2) components.

The first component establishes a median (geometric mean) MPN value. The second component, intended for use with data collected under uniform conditions, represents the variability inherent in the testing procedure and a small allowance for some additional variability peculiar to the changing conditions in the water being sampled.

(NSSP, 2019)

Estimated 90th percentile is based on method 95% confidence interval.
Shellfish Meat Bacteriological Data

Not used for basic growing area classification. Specific applications like: relay, depuration, cleansing studies, WWTP evaluation

Meat indicators (not interchangeable, specific applications):
• total coliform
• fecal coliform
• male specific coliphage (viral indicator)
Conditional Classifications

Option when predictable conditions exist when WQ does not meet standards. Can create closures around those conditions.

Conditional Area Management Plan defines procedures:

- Closures due to predictable pollution events
  - Rainfall amount, duration
- Seasonal closures
  - Months when WQ does not meet criteria
Rainfall Closure Example

<table>
<thead>
<tr>
<th>Rainfall Management Area</th>
<th>24-Hour Cumulative Rainfall Total</th>
<th>Start Closure</th>
<th>Closure Length = End of Storm Plus Below:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Agua Hedionda Lagoon Lease Area</td>
<td>&gt;0.40 Inch</td>
<td>When the approved rain gauge exceeds threshold limit.</td>
<td>72-hrs (3-days)</td>
</tr>
</tbody>
</table>

Note: Start of Closure and Closure Length is reinitiated and recalculated each time 24-hour cumulative rainfall threshold is exceeded (including during periods in which closure is already in effect).

CDPH tracks rainfall every day and issues closure and reopening notices.
Changing Standards

NSSP Model Ordinance can be changed through the cooperative process of the Interstate Shellfish Sanitation Conference.

ISSC holds biennial meetings where change proposals are deliberated and voted on.
Thank you!

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