FDA-ISSC Vibrio Studies: Summer 2013

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Vibrio Studies

- Ice Slurry
  - Alabama

- Harvest practices
  - New Jersey
  - Virginia
  - Alabama

- Re-submerging
  - New Jersey (intertidal)
  - Washington (intertidal)
  - Alabama (anti-biofouling practices)
Vibrio Studies

• Ice Slurry
  – Maintained ≤40°F
  – Re-used 15-20 times
  – Water and oysters tested before dipping and after 15 min of final set
  – Tested for *V. vulnificus*, and total and pathogenic *V. parahaemolyticus* and fecal coliforms, *E. coli*, and *Clostridium perfringens* (as indicators of filth)
Ice Slurry Results

![Graphs showing the results of ice slurry tests for various bacteria and pathogens.

- **Fecal Coliform**
- **E. coli**
- **C. perfringens**

Before and after treatments are compared for water and oysters.

**Mean Log MPN/g**
Harvest Practices

• New Jersey
  – Vibrio levels at initial subtidal harvest versus 5h shaded, 7h shaded, and 7h shaded with overnight refrigeration
  – Tested for *V. vulnificus*, total and pathogenic *V. parahaemolyticus*
Harvest Practices – New Jersey

V. vulnificus
V. parahaemolyticus
tdh
trh

Mean Log MPN/g

Harvest
5h abuse
7h abuse
7h abuse, refrigerated overnight

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Harvest Practices

- Virginia
  - Harvest area #1. Vibrio levels at initial harvest versus ≤5h ambient (landing) and ≤5h ambient with time to internal temperature (refrigeration)
  - Harvest area #2. Vibrio levels at initial harvest versus immediately iced (landing) and time to internal temperature (refrigeration)
  - Tested for *V. vulnificus*, total and pathogenic *V. parahaemolyticus*
Harvest Practices – Virginia

Harvest Area #1

Harvest Area #2

Mean Log MPN/g

Harvest
Landing
Refrigeration
Harvest Practices

• Alabama
  – Vibrio levels at initial harvest versus after 1h and 5h ambient storage versus subsequent refrigeration (time to temperature)
  – Sampled from two different harvest areas
  – Tested for *V. vulnificus*, total and pathogenic *V. parahaemolyticus*
Re-submerging

• New Jersey
  – Vibrio levels at initial intertidal harvest versus after sorting and refrigeration (prior to resubmersion )
  – Compared to resubmerged oysters after one and two tidal cycles versus background levels
  – Tested for *V. vulnificus*, total and pathogenic *V. parahaemolyticus*
Re-submerging – New Jersey

![Graph showing Log MPN/g for different conditions and bacterial strains.](image-url)
• Washington
  – Vibrio levels at initial harvest versus maximum intertidal exposure
  – Vibrio levels resubmerged in bags and totes versus background levels
  – Tested for *V. vulnificus*, total and pathogenic *V. parahaemolyticus*
Re-submerging

- Alabama
  - Vibrio levels at initial harvest versus 5h or 24h ambient air storage
  - Compared to levels resubmerged in baskets after 7 and 14 days versus background levels
  - Tested for *V. vulnificus*, total and pathogenic *V. parahaemolyticus*
Re-submerging – Alabama

- V. vulnificus
- V. parahaemolyticus
- tdh
- trh

Log MPN/g

Harvest 24h abuse 7d resubmerged 7d background 14d resubmerged 14d background

Harvest 5h abuse 7d resubmerged 7d background 14d resubmerged 14d background
**Summary**

- Ice slurry – results indicate no adverse effect of shellfish quality after 15 min dip
- Harvest practices – NJ and VA results indicate 0.5-1 log growth of vibrios post-harvest within 5h, with slight reductions after overnight refrigeration
- Harvest practices – AL results indicate the potential for ~1 log growth of vibrios within 1h of harvest, with continued growth during refrigeration time cool down (allowed ~12h versus the 5h in NJ and VA studies)
• Re-submerging – NJ results indicate re-submerging for 1 tidal cycle increases vibrio levels, but levels return to background after a 2nd tidal cycle
• Re-submerging – WA results indicate re-submerging for 1 tidal cycle returns exposed oysters to near background levels, with slightly higher levels in totes versus bags
• Re-submerging – AL results indicate temperature abused oysters return to background vibrio levels within 1-2 weeks
Acknowledgements

Mr. Bob Schuster, New Jersey DEP
Mr. Rick Porso & Ms. Laura Wigand, Washington DoH
Mr. Keith Skiles & Ms. Julie Henderson, Virginia DoH
Mr. Thomas P. Kinsey, ISSC contract employee
Ms. Keri A. Lydon, FDA summer intern
Mr. George E. Doup, FDA