(Revised Topic Questions for Science-Based Approach to *V.p.* Risk Management *(Revised)*

I. Illness Data and Reporting

a. What is the distribution of reported *Vp* illness in the US?
   i. Are increasing numbers of reported illnesses a result of higher risk, greater exposure, or changes in reporting?
   ii. Are increases associated with particular regions of the US?

b. What is the extent of *Vp* illnesses underreporting?
   i. Are there any appreciable regional differences in underreporting?
   ii. How has this been trending over time?

II. Pathogen Ecology and Virulence

a. What are the pathogenic strains (subpopulation of total *Vp*) that are capable of causing illness?
   i. What is the virulence (dose-response or potency) of the pathogenic strains?
      1. Is this influenced in any substantive manner by environmental conditions or other factors?
   ii. What are the appropriate markers and/or tests for these pathogenic strains?
   iii. How can emerging pathogenic strains be identified?

b. What is the geographic range of these pathogenic strains?
   i. How has the geographic range been trending over time?
   ii. How is abundance influenced by environmental conditions?
   iii. To what extent do blooms (i.e., rapid and transient increase) in *Vp* abundance occur and, if so, what environmental conditions influence that?

c. Does the presence/growth of other Vibrio spp. influence the populations/growth rates of Vp?

III. Pathogen Exposure

a. What is the abundance of total *Vp* and pathogenic strains (relative to total *Vp*) in shellfish species prior to harvest?
   i. How is this affected by environmental conditions?

b. What is the growth rate of the pathogenic strains in shellfish species post-harvest (relative to that of total *V.p.*)?
   i. What factors or environmental conditions (e.g., salinity) affect growth rates?
   ii. Are there any appreciable regional and seasonal differences?
   iii. How variable are growth rates?
   iv. Are these rates different in different shellfish species (*C. gigas* v. *C. virginica* v. *M. mercenaria*)?
   v. How do variations in temperature affect these growth rates?

c. Do total and pathogenic populations behave similarly in response to refrigeration and/or icing?
   i. What are the survival and decline rates?

d. How quickly are *V.p.* depurated from shellfish when harvest practices involve some type of resubmergence?
   i. How is this influenced by environmental conditions?
   ii. Do total and pathogenic populations purge at the same rate(s) from shellfish that are resubmerged?
   iii. What factors affect rates of purging from resubmerged shellfish (handling prior to resubmerging or the environment in which they are resubmerged)?

e. How much shellfish is harvested for the raw market (regionally, seasonally, by harvest practice, by species, etc. …)?
   i. For each State (or region) how much of the raw market comes from which States (or regions)?

IV. Current Monitoring Programs and Methods

a. What is the extent of state monitoring total and pathogenic *Vp*?
   i. What pathogenicity markers are they using and how are they doing it?
   ii. Are environmental strains being monitored?
   iii. How expensive is it?
   iv. How effective is it?

V. Current Controls and Effectiveness

a. What is happening to *Vp* populations under current handling practices (including harvest, post-harvest, cooling, etc.)?

b. Was the 2013 outbreak strain mitigated by controls, has it gone away?

c. Have illnesses trended down over the last two years since the Conference has implemented the tiered approach?

d. Is an illness counting approach working anywhere?
   i. How are they doing it?

e. Are there controls that have had success and how is success being measured?

VI. Other

a. What is the temperature profile of shellfish when exposed during various harvest practices (submerged, intertidal, resubmerged, etc. …) and subject to specified NSSP time-temperature requirements?
   i. How variable are these temperature exposure profiles?

b. Do the Vp calculators only consider growth rates of total Vp?