Conference for Food Protection
2010 Issue Form

Internal Number: 059
Issue: 2010 III-012

Council Recommendation:	Accepted as Submitted	_____	Accepted as Amended	_____	No Action	_____
Delegate Action:	Accepted	_____	Rejected	_____		

All information above the line is for conference use only.

Title:
Re-create - Hot Holding Committee

Issue you would like the Conference to consider:
The 2008-10 Hot Holding Committee has evaluated the information available on the TCS hot holding temperature requirement of 135°F., has determined that more information is needed, and recommends that the committee be re-created to continue the work of the committee through 2012.
One specfic area of study would be the "evaporative cooling range" -- the temperature loss that can occur in TCS food due to evaporative cooling in a hot holding unit over a set time period. The purpose of the study would be to determine a scientifically based "evaporative cooling range" temperature that could then be added to the 129°F. growth limit (for *Clostridium perfringens*) to calculate a scientifically based "safe" TCS hot holding temperature.

Public Health Significance:
The Public's health will continue to be served by further enhancing the latest science and food safety knowledge to promote a safe national food supply and thereby reduce the incidence of food borne illness.

Recommended Solution: The Conference recommends...:
that the Hot Holding Committee be re-created under the direction of Council III to address:

- a study of calibration methods for infrared units.
- the issues of evaporative cooling and its relationship to hot holding temperatures, including temperature loss, elapsed time, and corrective action.
- a final recommendation for a hot holding temperature requirement based on risk.

This scientifically based "evaporative cooling range" temperature could then be added to the 129°F. growth limit (for *Clostridium perfringens*) to calculate a scientifically based "safe" TCS hot holding temperature, and report back to Council III at the 2012 Biennial Meeting.

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Attachments:

- "2008-10 Hot Holding Committee Final Report"

It is the policy of the Conference for Food Protection to not accept Issues that would endorse a brand name or a commercial proprietary process.

COMMITTEE NAME: **Hot Holding Committee**

COUNCIL (I, II, or III): **III**

DATE OF REPORT: **January 8, 2010**

SUBMITTED BY: **Donna M. Garren and Roger E. Coffman, Co-Chairs**

COMMITTEE CHARGE(s):
Study Change of Hot Holding Temperature from 135ºF to 130ºF. The 2008 Biennial Meeting recommended that a committee be formed under the direction of Council III to address the issues of hot holding temperatures and times, and any microbial risks that may be associated with different temperatures and times, as well as the accuracy and proper use of temperature measuring devices for this purpose and report back to Council III at the 2010 Biennial Meeting.

COMMITTEE ACTIVITIES AND RECOMMENDATIONS:

The analysis of TCS (temperature control for safety) food hot holding temperature data available to the Committee from academic, regulatory, and industry sources around the country, combined with the results of the Hot Holding Committee survey that was conducted via e-mail distribution to retail food companies in June, 2009 (see attachments titled: *Original Survey Document* and *Summary of Completed Survey*), resulted in these answers:

- Regardless of the regulated TCS hot holding temperature requirements in various United States jurisdictions (130ºF., 135ºF., 140ºF., 145ºF., or 150ºF.), the recorded TCS food temperature data assembled showed that a wide range of hot holding food temperatures are occurring (170ºF. to 105ºF.). TCS hot holding temperatures of 129ºF. and below can allow organisms, such as *Clostridium perfringens*, to multiply in an un-controlled environment, increasing the risk of foodborne illness.

- It is reasonable to interpolate that in the majority of cases, **the commercially manufactured hot holding units are set up, and have the ability to hold TCS food at the current regulatory/industry temperature standard of 130/135ºF. or above.**

- Food temperatures measured and reported at colder levels (from 130/135ºF. down to 105ºF.) indicate the food was affected by stratification in the hot holding unit. The colder temperatures for the top of food in hot holding units (steam tables) are due to many issues, including "evaporative cooling", lack of stirring, and to a lesser degree, equipment malfunction.

- Metal stem thermometers/metal stem thermocouples were the usual method of choice for temperature measurement. Some use of infrared thermometers for surface

temperature measurement was reported. Infrared thermometers would be less effective in gathering necessary information, due to the inability to measure the "internal" temperature of the TCS food items in steam tables (temperatures closer to the hot holding thermal heat source). A study of calibration methods for infrared units may also be necessary.

- Evaporative cooling is a major cause of the TCS hot holding food temperatures being below 130/135ºF. Data showing how much temperature loss is attributed to evaporative cooling, which foods are affected more by the temperature loss (thick, protein foods such as refried beans), the elapsed times that are involved (4 hours as an example), and corrective measures needed must be included in future analysis projects.

- One limiting factor to evaluating the occurrence of clostridium perfringens growth is that illnesses due to *Clostridium perfringens* are not a "reportable illness", so data collection on the public health affects of this organism is sporadic at best.

- The unknown value needed to calculate a safe TCS hot holding temperature is the evaporative cooling temperature loss that can be expected in hot holding units.

In conclusion, a scientifically reviewed value for what can be labeled as the **"evaporative cooling range"** must be determined. The "evaporative cooling range" would be the temperature loss that can occur in TCS food due to evaporative cooling in a hot holding unit over a set time period. The temperature that organisms begin to grow in TCS foods (129ºF. or below for *Clostridium perfringens*) must then be taken into account.

The scientifically based "evaporative cooling range" temperature could then be added to the 129ºF. growth limit to calculate a scientifically based higher "safe" TCS hot holding temperature.

Hot holding food data must continue to be assembled, processed, and analyzed for this study. Representatives from academia, industry and regulators can evaluate the collected information to reach an accurate recommendation for a hot holding temperature requirement, based on the risk to grow an organism such as *Clostridium perfringens* in TCS foods held in hot holding units. It is recommended that the charge issued to the Hot Holding Committee be re-issued, so that this study can be continued.

It is the recommendation of the Committee to re-create the Hot Holding Committee to continue the on-going studies of the science and data available on hot food holding, including:

- A study of calibration methods for infrared units.
- A study of evaporative cooling and temperature loss, elapsed time, and corrective action.
- A final recommendation for a hot holding temperature requirement based on risk.

REQUESTED ACTION

The Hot Holding Committee is submitting two Issues for Council III's consideration:
Issue 1 – Report - Hot Holding Committee
Issue 2 – Re-Create - Hot Holding Committee

The following attachments are submitted with this report:

- Original Survey Document
- Summary of Completed Survey
- Quantitative Microbial Risk Assessment (QMRA) for Hot Holding Survey Charts and Graphs
- 2008-10 Hot Holding Committee Roster