

# Conference for Food Protection – Committee FINAL Report

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*Committee Final Reports are considered DRAFT until deliberated and acknowledged by the assigned Council at the Biennial Meeting*

**COMMITTEE NAME:** Ice Maker Equipment Cleaning and Sanitizing Committee (IMC)

**COUNCIL or EXECUTIVE BOARD ASSIGNMENT:** Council I

**DATE OF REPORT:** January 10, 2016

**SUBMITTED BY:** Peter Voss & Tim Tewksbary - Co-chairs of the Ice Maker Equipment Cleaning and Sanitizing Committee

**COMMITTEE CHARGE(s):** Assigned by Issue 2014 I-029

1. Survey regulatory agencies to determine:
  - a. Existing regulatory authority or guidance criteria for ice maker cleaning and sanitizing procedures and frequency.
  - b. Determine extent of critical and non-critical inspection violations.
2. Review ice maker manufacturers/owner's manuals to establish their recommended cleaning and sanitizing processing and frequencies and its rationale.
3. Report back to the 2016 biennial meeting with recommendations.

## **COMMITTEE ACTIVITIES AND RECOMMENDATIONS:**

The committee formed two (2) working groups to focus on the regulatory and equipment components of the charge.

### ***PROGRESS ON OVERALL COMMITTEE ACTIVITIES:***

#### **REGULATORY ACTIVITIES**

1. The ice maker regulatory working group prepared a letter and survey which were sent via email to the CFP State Delegates from the 2014 biennial meeting requesting the following information be provided to the committee by the State or inspecting agency (local health districts).
  - a. Do your adopted rules relating to ice machine cleaning and/or sanitizing frequency or procedures vary in any significant way from the 2013 FDA Food Code?
  - b. Does your agency have any guidance documents for inspectors and/or operators relating to commercial ice makers and/or ancillary ice handling equipment and their cleaning and sanitizing frequency and/or clean in place procedures?
  - c. Does your agency have a searchable database of its inspection reports?
  - d. If your agency does have a searchable database, please compile a report of your inspection records that will elucidate for us the number of violations associated with contaminated ice machines and related systems, and establish the number of critical to non-critical violations per total number of inspection records.
2. Seventy nine (79) responses were received:
  - a. 14 States.
  - b. 1 Territory.
  - c. 57 Local Health Districts.
  - d. 7 No name given.
3. After reviewing the responses submitted:
  - a. 98 percent use rules based on the current 2013 FDA Food Code.
  - b. 96 percent currently do not have guidance available on the cleaning of ice machines.

- c. 62 percent do not have a searchable database because they use paper forms.
  - d. Only 5 jurisdictions were able to provide inspection records associated with ice machines.
4. The committee reviewed the 5 sets of data provided by the regulatory agencies and came up with the following summary:
    - a. 3,763 violations were identified in 2014 related to mold or soil accumulation in the ice bin, bin walls, ice chute, door, and/or gaskets.
    - b. 1,427 violations were identified in 2014 related to the ice scoop, personal items being stored in the ice bin, and chemicals being stored over ice.
    - c. There were no violations identified regarding the internal components of the ice maker.
  5. Based on the findings described, it seems that regulatory agencies are only inspecting areas which could be seen at a quick glance with no ice maker disassembly. This could be attributed to both the design of the equipment and absence of tools needed to open ice makers in the field.

## **EQUIPMENT ACTIVITIES**

1. The ice maker equipment working group generated a list of 33 ice makers Original Equipment Manufacturer (OEMs), and ice vending manufacturers with contact information. A letter was sent via email to the OEMs requesting the following information:
  - a. Specific ice machine cleaning and sanitizing procedures with recommended frequency as well as procedures for any ice storage bins and dispensers that may be part of a comprehensive ice delivery system.
  - b. Field study and laboratory test data supporting specific recommended ice machine cleaning and sanitizing procedures.
  - c. Additional equipment recommended such as water filters etc. that may impact overall equipment cleanliness and sanitation.
2. Manitowoc, Kold Draft and Vogt were the only OEMs that responded and provided limited information that is readily available from their websites. The ice vending manufacturers Arizona Water and Polarmatic responded that they utilize “off the shelf” ice maker equipment and referred us to the OEM’s recommended cleaning and sanitizing procedures. There were no responses or information available online from ice vending machine manufacturers for cleaning/sanitizing procedures or frequency for their comprehensive ice delivery systems.
3. The equipment work group reviewed available online OEM cleaning and sanitizing procedures to determine if there are common generally recommended practices. There was a general lack of uniformity regarding both cleaning/sanitization frequency and type of chemicals to be used. Cleaning frequencies ranged from quarterly, to annually, to “when dirty”. Sanitizing with chlorine and quaternary ammonium compounds (quats) were both suggested without addressing water temperature, while the 2013 Food Code (4-501.114) limits the use of quaternary ammonium compounds at temperatures above 24°C (75°F). Further, many OEMs offer limited cleaning instructions and in some cases they do not indicate that the cleaning methods described must be followed by a sanitizing step. Finally, no test data or field studies to support the recommended cleaning and sanitizing procedures, frequencies and chemicals utilized were provided.
4. Many internal surfaces of commercial ice machines are food contact surfaces and are subject to the ANSI sanitation standards applicable to food equipment. Current ice machine designs which passed the existing performance certification standards are not always accessible for cleaning and inspection and may require tools that are not commonly available to the cleaning personnel or inspectors. Tools listed in the food code (4-202.11) such as “screwdrivers, pliers, open-end wrenches, and Allen wrenches” may be available to maintenance, which is not always at the site during times when the cleaning and sanitization is performed, or when the equipment is inspected. The committee could not find research regarding the possibility of the growth of pathogenic microorganisms in the internal, inaccessible parts of ice machines.

## **RECOMMENDATIONS FOR CONSIDERATION BY COUNCIL:**

1. The Conference for Food Protection request academic research institutions or interested parties to consider conducting research with the objective being a risk assessment which may also necessitate testing and data generation that:
  - a. Characterizes the type of microbial contamination and the location of areas of concern within commercial ANSI NSF listed ice machines and factors contributing to their growth rate. Research is needed regarding the surfaces of the interior of ice machines which includes but not limited to ice chutes, cubers, doors, tubing and pumps to determine if there are pathogens of food safety and public health concern.
  - b. Establishes data driven cleaning and sanitizing frequency
  - c. Develops test methods to enable field verification that internal food contact surfaces are clean and sanitary.
2. In light of the numerous reported soil and mold violations in the accessible food contact surfaces of ice makers and delivery systems, primarily ice bins, chutes and doors, Conference for Food Protection requests FDA change the food code section 4-602.11 Equipment Food Contact Surfaces and Equipment-Frequency (E) (4) language. Proposed additions to existing language are underlined: *EQUIPMENT such as ice bins and BEVERAGE dispensing nozzles and enclosed components of EQUIPMENT such as ice makers, cooking oil storage tanks and distribution lines, BEVERAGE and syrup dispensing lines or tubes, coffee bean grinders, and water vending EQUIPMENT:*
  - a. *At a frequency specified by the manufacturer or more frequently, if necessary, to preclude accumulation of soil or mold, or*
  - b. *Absent manufacturer specifications, at a frequency necessary to preclude accumulation of soil or mold*
3. The Conference for Food Protection request FDA update the Food Establishment marking instructions in Annex 7, Guide 3B under items 16 and 47 to specifically include ice making components that may be inaccessible in addition to ice storage components. Proposed additions to existing language are underlined:
  - a. **16. Food-contact surfaces: cleaned and sanitized** - *This item must be marked OUT of compliance when manual and/or mechanical methods of cleaning and sanitizing food-contact surfaces of equipment and utensils are ineffective; or if one continuous-use piece of equipment such as an ice machine or one multiuse piece of equipment such as a slicer or can opener is visibly soiled and being used at the time of the inspection.*
  - b. **47. Food and non-food-contact surfaces cleanable, properly designed, constructed and used** - *Equipment and utensils including ice machines must be properly designed and constructed, and in good repair to enable ready access to the internal food contact surfaces for cleaning, sanitization and inspection. Proper installation and location of equipment in the food establishment are important factors to consider for ease of cleaning in preventing accumulation of debris and attractants for insects and rodents. The components in a vending machine must be properly designed to facilitate cleaning and protect food products (e.g. equipped with automatic shutoff, etc.) from potential contamination. Equipment must be properly used and in proper adjustment, such as calibrated food thermometers.*
4. The Conference for Food Protection draft a letter to NSF International for the creation of working group to review the existing NSF/ANSI 12 Standard for ice machine cleaning and sanitizing certification with participation of academia and organizations such as AOAC, ASTM with peer review process elements to ensure:
  - a. Food contact surfaces are readily accessible for inspection and effective cleaning and sanitization for new equipment.

- b. That the performance certification tests methods used for cleanability and sanitization of new equipment food contact surfaces has correlation to cleanability of those same surfaces when in use.
5. The Conference for Food Protection disband the Ice Maker Cleaning and Sanitizing Committee and form a new committee with to address the broader issue of design, cleaning, sanitizing and inspection of food process equipment with inaccessible food contact surfaces. The specific charges for the new committee are addressed in Issue Submittal 6 below.

#### **CFP ISSUES TO BE SUBMITTED BY COMMITTEE**

1. Acknowledge the 2014-2016 Ice Maker Cleaning and Sanitizing Committee final report, thank the committee members for their work, and disband the committee.
2. Request Research on Microbial Contamination in Ice Machines
  - a. Research is needed to identify the type of microbial growth and location(s) of concern within ANSI NSF listed ice machines. This data will aid in the research to establish cleaning and sanitizing frequencies along with field verification test methods.
  - b. The Conference recommends the Conference Chair submit a request to academic research institutions or interested parties to submit grant funding proposals for conducting research with the objective being a risk assessment which may also necessitate testing and data generation that:
    - i. Characterizes the type of microbial contamination and the location of areas of concern within commercial ANSI NSF listed ice machines and factors contributing to their growth rate. Research is needed regarding the surfaces of the interior of the ice machine which includes but not limited to ice chutes, cubers, doors, tubing and pumps to determine if there are pathogens of food safety and public health concern.
    - ii. Establish data driven cleaning and sanitizing frequency
    - iii. Develops test methods to enable field verification that internal food contact surfaces are clean and sanitary.
3. Amend FDA Food Code subparagraph 4-602.11 (E) (4): Equipment Cleaning Frequency
  - a. Subparagraph 4-602.11 (E) (4) of the 2013 FDA Food Code states that Equipment should be cleaned at a frequency specified by the manufacturer. Based upon the number of cleaning violations noted in our survey and the lack of guidance provided by manufacturers regarding cleaning frequencies we propose that simply cleaning ice machines based on a manufacturer's recommendations may be inadequate and that it should be combined with reviewing whether the equipment is clean or not.
  - b. The Conference for Food Protection recommends that FDA amend the 2013 Food Code subparagraph on Equipment Food Contact Surfaces and Equipment-Frequency, 4-602.11 (E) (4). Proposed additions to existing language are underlined:  
*EQUIPMENT such as ice bins and BEVERAGE dispensing nozzles and enclosed components of EQUIPMENT such as ice makers, cooking oil storage tanks and distribution lines, BEVERAGE and syrup dispensing lines or tubes, coffee bean grinders, and water vending EQUIPMENT:*
    - i. *At a frequency specified by the manufacturer, or more frequently if necessary, to preclude accumulation of soil or mold, or*
    - ii. *Absent manufacturer specifications, at a frequency necessary to preclude accumulation of soil or mold*
4. Amend FDA Food Code Annex 7, Guide 3B: Food Establishment Marking Instructions
  - a. The Ice Maker Equipment Cleaning and Sanitizing committee surveyed the State Delegates of The Conference for Food Protection with regard to the inspection process. The survey results indicated 3,763 violations related to mold or soil accumulation in the visible areas of the ice machines in 2014; however, there were no violations identified

regarding internal components of the ice maker. A specific reminder for the inspection of ice machines including the not readily accessible areas can be included in the Food Establishment marking instructions.

- b. The Conference recommends that FDA update the Food Establishment marking instructions in Annex 7 of the 2013 FDA Food Code, Guide 3B under items 16 and 47 to specifically include references to ice making and storage components that may not be readily accessible. Proposed additions to existing language are underlined.
    - i. **16. Food-contact surfaces: cleaned and sanitized:** *This item must be marked OUT of compliance when manual and/or mechanical methods of cleaning and sanitizing food-contact surfaces of equipment and utensils are ineffective; or if one continuous-use piece of equipment such as an ice machine or one multiuse piece of equipment such as a slicer or can opener is visibly soiled and being used at the time of the inspection.*
    - ii. **47. Food and non-food-contact surfaces cleanable, properly designed, constructed and used.** *Equipment and utensils including ice machines must be properly designed and constructed, and in good repair to enable ready access to the internal food contact surfaces for cleaning, sanitization and inspection. Proper installation and location of equipment in the food establishment are important factors to consider for ease of cleaning in preventing accumulation of debris and attractants for insects and rodents. The components in a vending machine must be properly designed to facilitate cleaning and protect food products (e.g. equipped with automatic shutoff, etc.) from potential contamination. Equipment must be properly used and in proper adjustment, such as calibrated food thermometers...*
5. Working Group Formation to Update NSF/ANSI 12 Automatic Ice Making Equipment
    - a. The Ice Maker Equipment Cleaning and Sanitizing committee surveyed Ice Maker Original Equipment Manufacturers and Ice Vending manufacturers as to their specific cleaning and sanitizing procedures and any field study and laboratory test data supporting specific recommended cleaning and sanitizing procedures. The committee found that there was a general lack of uniformity and no test data available to validate the cleaning/sanitizing procedures. .
    - b. The Committee recommends the Conference for Food Protection send a letter to NSF International requesting the creation of a working group to review and update the existing NSF/ANSI 12 Automatic Ice Making Equipment Standard for cleaning and sanitizing certification with participation of academia and organizations such as Association of Official Analytical Chemists (AOAC), American Society for Testing and Materials (ASTM) with peer review process elements to ensure:
      - i. Food contact surfaces are readily accessible for inspection and effective cleaning and sanitation for new equipment.
      - ii. That the performance certification test methods used for cleanability and sanitation of new equipment food contact surfaces has correlation to cleanability of those same surfaces when in use
  6. The Conference for Food Protection CIP Committee Formation
    - a. The Ice Machine Cleaning and Sanitizing committee uncovered a significant discrepancy relating to cleanability of food contact surfaces. The FDA Food Code requires FOOD EQUIPMENT with inaccessible food contact surfaces that depend upon CIP processes for effective cleaning and sanitation to be designed to enable inspection access points for verification purposes, so it cannot be readily determined when cleaning is required. In addition, it is clear from a review of manufacturer's installation and service instructions that there is a lack scientific data for validation of the limited cleaning and sanitizing instructions that are provided.

- b. The Conference for Food Protection recommends formation of a Clean in Place (CIP) Committee to carry on the work begun by the Ice Machine committee, but with a broader focus to include all food equipment known to have designs that depend upon CIP processes for safety and do not allow for easy inspection, cleaning and sanitizing access of its food contact surfaces. The committee charges are:
  - i. Review ANSI sanitation standards for clean in place processes (CIP).
  - ii. Develop specific recommendations for:
    - 1. Minimum criteria for CIP systems, including suggested revisions to the FDA Food Code.
    - 2. A mechanism for on-going liaison with ANSI sanitation standards development organizations to reduce likelihood of future gaps in our national food safety, security and control programs.
  - iii. Report finding and recommendations to the 2016 biennial meeting of the Conference for Food Protection.

**Attachments – Content Documents:**

- 1. Committee Report
- 2. Committee Roster

Committee Name:

**Committee Name: Ice Maker Equipment Cleaning and Sanitizing Committee**

Last Name	First Name	(Chair/Member/ Non-voting)	Constituency	Employer	City	State	Telephone	Email
Andrews	Christine	Member	Food Industry Support	NSF International	Ann Arbor	MI	(734) 306-0232	<a href="mailto:candrews@nsf.org">candrews@nsf.org</a>
Arbizu	Thomas	Member	State Regulator	TX Dept of State Health Services	Austin	TX	(512) 834-6770	<a href="mailto:tom.arbizu@dshs.state.tx.us">tom.arbizu@dshs.state.tx.us</a>
Bacon	Brenda	Member	Retail Food Industry	Harris Teeter	Matthews	NC	(704) 844-4443	<a href="mailto:bbacon@harrissteeter.com">bbacon@harrissteeter.com</a>
Buswell	Cheri	Member	Food Service Industry	International Dairy Queen	Minneapolis	MN	(952) 830-0224	<a href="mailto:cheri.buswell@idq.com">cheri.buswell@idq.com</a>
Cavaliero	Kelli	Member	Food Service Industry	Walt Disney Parks and Resorts	Anaheim	CA	(714) 781-4219	<a href="mailto:kelli.cavaliero@disney.com">kelli.cavaliero@disney.com</a>
Daugherty	Rick	Member	Vending and Distribution Food Industry	National Automated Merchandising Association	Chicago	IL	(630) 921-8650	<a href="mailto:publichealth100@gmail.com">publichealth100@gmail.com</a>
Fletcher	Jessica	Member	Local Regulator	Mohegan Tribal Health Department	Uncasville	CT	(860) 862-6156	<a href="mailto:jfletcher@moheganmail.com">jfletcher@moheganmail.com</a>
Hodge	Lori	Member	Retail Food Industry	Bilo Holdings	Baldwin	FL	(904) 370-8721	<a href="mailto:lorihodge@biloholdings.com">lorihodge@biloholdings.com</a>
Johnson	Thomas	Member	Food Industry Support	JDP, Inc.	Mendota Heights	MN	(651) 203-2462	<a href="mailto:tomi@jdpinc.com">tomi@jdpinc.com</a>
Martin	Charles	Member	Retail Food Industry	Stop & Shop Supermarkets	Purchase	NY	(203) 246-0346	<a href="mailto:charles.martin@stopandshop.com">charles.martin@stopandshop.com</a>
McEwen	Jane	Member	Retail Food Industry	International Packaged Ice Association	Tampa	FL	(813) 258-1690	<a href="mailto:jane@packagedice.com">jane@packagedice.com</a>
Morgan	Lisa	Member	Local Regulator	Chatham County Public Health Department	Pittsboro	NC	(919) 545-8309	<a href="mailto:lisa.morgan@chathamnc.org">lisa.morgan@chathamnc.org</a>
Moris	Steven	Member	State Regulator	Kansas Department of Agriculture	Topeka	KS	785-564-6767	<a href="mailto:Steve.moris@kda.ks.gov">Steve.moris@kda.ks.gov</a>
Starobin	Anna	Non-voting	Food Industry Support	Ecocolab / Kay Chemical	Greensboro	NC	(336)931-2185	<a href="mailto:Anna.Starobin@ecocolab.com">Anna.Starobin@ecocolab.com</a>
Sudler	Robert	Member	Regulatory	FDA	College Park	MD	240-402-1943	<a href="mailto:Robert.Sudler@fda.hhs.gov">Robert.Sudler@fda.hhs.gov</a>
Tewksbary	Timothy	Co-Chair	State Regulator	Ohio Department of Agriculture	Reynoldsburg	OH	740-260-9012, 614-867-0056	<a href="mailto:ttewksbary@agri.ohio.gov">ttewksbary@agri.ohio.gov</a>
Vergne	Sue	Member	Food Service Industry	Jack in the Box Inc.	San Diego	CA	(858) 571-2171	<a href="mailto:sue.vergne@jackinthebox.com">sue.vergne@jackinthebox.com</a>
Voss	Peter	Co-Chair	Food Industry Support	Ecocolab	Eagan	MN	(651) 795-5981	<a href="mailto:peter.voss@ecocolab.com">peter.voss@ecocolab.com</a>
Yamnik	Dale	Member	Food Service Industry	Yum! Brands, Inc.	Saint Cloud	FL	(407) 593-6181	<a href="mailto:dale.yamnik@yum.com">dale.yamnik@yum.com</a>

## Attachment A: Ice Machine Manufacturers

Ice Vending Machine Manufacturers	
Ice House of America	<a href="http://www.icehouseamerica.com">www.icehouseamerica.com</a>
Kooler Ice	<a href="http://www.koolerice.com">www.koolerice.com</a>
Watermill Express	<a href="http://www.watermillexpress.com">www.watermillexpress.com</a>
Mr. Zippy's Ice and Water	<a href="http://www.riderwash.com">www.riderwash.com</a>
Just Ice	<a href="http://www.just-icellc.com">www.just-icellc.com</a> ; <a href="http://www.icevendingmachine.net">www.icevendingmachine.net</a>
Polar Station Ice and Water	<a href="http://www.polariceandwater.com">www.polariceandwater.com</a>
The Ice Cube	<a href="http://www.the-ice-cube.com">www.the-ice-cube.com</a>
Ice Qik	<a href="http://www.icemachinesintl.com">www.icemachinesintl.com</a>
Polarmatic	<a href="http://www.polarmatic.com">www.polarmatic.com</a>
Bag of Ice	<a href="http://www.bagoffice.com">www.bagoffice.com</a>
Akoona Ice	<a href="http://www.akoona.com">www.akoona.com</a>
Arizona Water and Ice	<a href="http://www.azwatervendors.com">www.azwatervendors.com</a>
Self Service Ice Company	<a href="http://www.self-service-ice-company.it">www.self-service-ice-company.it</a>
Texas Snowman	<a href="http://www.txsnowman.com">www.txsnowman.com</a>
China vending machine	<a href="http://www.globalsources.com/si/AS/Pukui-Hongkong/6008827474514/pdt/Ice-Vending-Machine/1050711453.htm">http://www.globalsources.com/si/AS/Pukui-Hongkong/6008827474514/pdt/Ice-Vending-Machine/1050711453.htm</a>
Quick Ice USA	<a href="http://www.quickiceusa.com">www.quickiceusa.com</a>
Fast Ice	<a href="http://www.fastice.com.au">www.fastice.com.au</a>
Pure Ice and Water	<a href="http://purewater4health.com">http://purewater4health.com</a>
Ice Man Ice House	<a href="http://bestpriceice.com">http://bestpriceice.com</a>
The Ice Chest	<a href="http://theicechest.net">http://theicechest.net</a>
Ice Machine Manufacturers	
Ice Meister	<a href="http://icemeisterusa.com">http://icemeisterusa.com</a>
Hoshizaki	<a href="http://www.hoshizakiamerica.com">www.hoshizakiamerica.com</a>
Manitowac	<a href="http://www.manitowacice.com">www.manitowacice.com</a>
Scottsman	<a href="http://www.scottsman-ice.com">www.scottsman-ice.com</a>
Kold Draft	<a href="http://www.kold-draft.com">www.kold-draft.com</a>
Ice O Matic	<a href="http://www.iceomatic.com">www.iceomatic.com</a>
Follett	<a href="http://www.follettice.com">www.follettice.com</a>
Arctic-Temp	<a href="http://holiday-ice.com">http://holiday-ice.com</a>
A&V	<a href="http://www.av-refrigeration.com/en/industrial-ice-machines.html">http://www.av-refrigeration.com/en/industrial-ice-machines.html</a>
Vogt Ice	<a href="http://www.vogtice.com">www.vogtice.com</a>
Morris & Associates	<a href="http://www.morris-associates.com">www.morris-associates.com</a>
Ice Machine	<a href="http://www.usicemachine.com">www.usicemachine.com</a>
Cornelius	<a href="http://www.cornelius.com">www.cornelius.com</a>