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Introduction

Background and Significance

Foodborne illness in the United States is a major cause of personal distress, preventable illness and death, and avoidable economic burden. CDC estimates that each year roughly one in six Americans (or 48 million people) gets sick, 128,000 are hospitalized, and 3,000 die of foodborne diseases. The annual cost of foodborne illness in terms of pain and suffering, reduced productivity, and medical costs is estimated to be as much as \$77 billion. Nationwide, approximately 1,000 reported disease outbreaks are identified each year. Of the outbreaks with an identified cause, half are attributed to restaurants. However, most foodborne illnesses occur in persons who are not part of any recognized outbreaks.

Though the magnitude of the challenge of addressing foodborne upon illness initial review may insurmountable, potential intervention strategies have been documented as being effective in improving food safety. It is because of the scope of the issue and the availability of evidence based practices to address the issue that CDC has designated food safety as one of its key public health strategies. CDC has food safety as one of 10 winnable battles (http://www.cdc.gov/winnablebattles/). It is for these same reasons why the City of Milwaukee Health Department (MHD) has selected it as one of our key public health outcomes. In our efforts to improve food safety, the Department's Consumer Environmental Health Division's (CEH) intervention strategies can be grouped into three broad categories:

Figure 1: Food Safety Interventions **Education** and Regulatory Outreach



- Regulatory strategies to assure the adoption of science-based food safety principles in retail and foodservice settings to minimize the incidence of foodborne illness
- Education and Outreach to assure inspectors, operators, and consumers are adequately informed of the causes of foodborne illness and the key strategies to prevent foodborne illness
- Surveillance and Investigation to assure the timely identification and response to foodborne illness in order to minimize morbidity and mortality

Purpose

This report is provided in accordance with Chapter 68-7-3 of the Milwaukee Code of Ordinances, which requires that the City of Milwaukee Health Department (MHD) annually report to the Common Council and Mayor on sanitary conditions in food establishments. This report is submitted in place of the annual "Compliance Report on Sanitary Conditions." Furthermore this report supports the complaint data analysis and review requirements of FDA Voluntary National Retail Food Regulatory Program Standard No. 5: Foodborne Illness and Food Defense Preparedness and Response as well as the risk factor study requirements under Standard No. 9: Program Assessment.

The FDA Voluntary National Retail Food Regulatory Program Standards represent effective evidence-based practices for retail food regulatory programs. The standards focus on the reduction of risk factors known to cause or contribute to foodborne illness and the promotion of active managerial control of these risk factors. The nine standard self-assessment tools provide a framework for evaluation of the effectiveness of food safety interventions implemented by the department.

¹ FDA Voluntary National Retail Food Regulatory Program Standards http://www.fda.gov/Food/GuidanceRegulation/RetailFoodProtection/ProgramStandards/ucm245409.htm



Guiding Principles

Food safety activities conducted by the Department are guided by the 10 Essential Environmental Public Health Services, which are:

- 1. Monitor environmental and health status to identify and solve community environmental public health problems
- 2. Diagnose and investigate environmental public health problems and health hazards in the community
- 3. Inform, educate, and empower people about environmental public health issues
- 4. Mobilize community partnerships and actions to identify and solve environmental health problems
- 5. Develop policies and plans that support individual and community environmental public health efforts
- 6. Enforce laws and regulations that protect environmental public health and ensure safety
- 7. Link people to needed environmental public health services and assure the provision of environmental public health services when otherwise unavailable
- 8. Assure a competent environmental public health workforce
- 9. Evaluate effectiveness, accessibility, and quality of personal and population-based environmental public health services
- 10. Research for new insights and innovative solutions to environmental public health problems

Cost Effectiveness

The overall average cost per case of foodborne illness is estimated to be between \$1,068 and \$1,626.² Using the annual frequency of occurrence of foodborne illness determined by CDC of one in six people translates to approximately 99,800 cases of foodborne illness annually in the city based on 2012 U.S. Census population estimates. That places the annual estimated economic burden of foodborne illness for the city at \$106 to \$162 million per year. A 10% decrease in foodborne illness would result in a net savings of \$10 to \$16 million.

Though the potential cost savings for even a modest improvement in food safety is substantial, little data exists to establish the cost effectiveness of any one individual intervention strategy, further supporting the multifaceted intervention strategy being utilized by the department.

Regulatory

Regulatory strategies to improve food safety work to assure the adoption of science-based food safety principles in retail and foodservice settings to minimize the incidence of foodborne illness. Activities performed by the Department include plan review and pre-inspection of new or remodeled food establishments, routine annual inspection of food establishments, response to citizen complaints, and the development and implementation of policies that support food safety. Compliance and enforcement activities focus on critical risk factors, which are the risk factors known to contribute to foodborne illness. The five major risk factors are:

- Improper holding temperatures
- Inadequate cooking
- Cross contamination
- Food from unsafe sources
- Poor personal hygiene

The City Clerk's Office is a key partner in implementing regulatory controls. The City Clerk's Licensing Division issues all food dealer's permits, food peddler permits and temporary food permits while the Legislative Reference Bureau takes the lead on drafting changes to local ordinances.

² Scharff RL. Economic burden from health losses due to foodborne illness in the United States. *J Food Protect* 2012;75(1):123-31



Regulatory Performance Measures/Goals

Inspection	Status
All permanent food establishments receive an inspection prior to operating	V
All new food establishments receive initial routine inspection within 60 days of opening	V
All food establishments receive a minimum of one inspection per year	
All food peddlers receive at least one inspection per year	₹
All schools receive at least two annual routine inspections	V
All retail establishments that process food and all moderate or complex restaurants receive two annual inspections	×

Enforcement	Status
All critical violations receive a re-inspection	V
All critical violations receive a re-inspection within 10 business days of the compliance deadline	×
Less than 20% of all routine inspections have one or more critical violations upon routine inspection	×

Policy	Status
CEH is actively engaged in food policy at the local level	V
CEH is actively engaged in food policy at the state level	V
CEH is actively engaged in food policy at the federal/national level	V
All CEH policies/procedures have been updated and reviewed within the past 24 months	×
All agreements/MOUs have been updated and reviewed/resigned within the past 60 months	×
CEH has adequate program support to meet FDA minimum inspection staffing requirements	×
An adequate regulatory foundation is in place to support inspection, compliance and enforcement activities in food establishments	×

Activity Tracking

Food Revenue Collected, 2013 to 2015³

	2013		2014	2015	3 Year Average		
Licenses	\$ 2,228,388		\$ 2,234,599	\$2,299,006	\$	2,253,998	
Inspection Fees	\$ 87,464		\$ 155,421	209,782	\$	150,889	
Total	\$	2,315,852	\$ 2,390,020	\$2,508,788	\$	2,404,887	

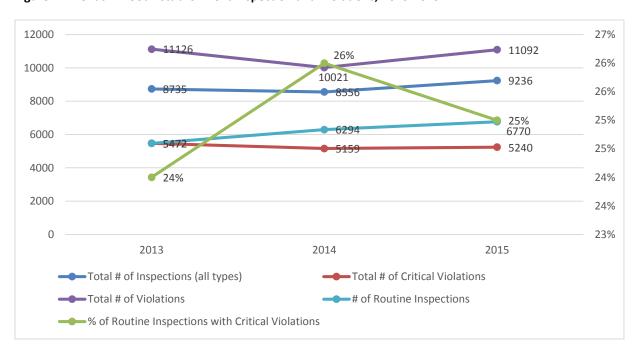
³ Revenue collected by calendar year for both the Health Department and the City Clerk's Office related to food establishments. License fees are collected by the City Clerk's Office. Inspection fees are collected by the Health Department.



Establishment Type by State Fiscal Year⁴

License Type	2014-2015
Permanent	3468
Retail Food Establishments	1157
Restaurants	1414
Restaurants - Additional Sites	149
Schools (exempt)	330
Taverns	345
Community Food Program	70
Bed and Breakfast	3
Seasonal, Temporary, or Mobile	1345
Vehicles, Carts, or Containers	266
Temporary Events	975
Seasonal or Farmers Markets	104
Total	4813

Figure 2: Trends in Food Establishment Inspection and Violations, 2013-2015



⁴ Data on license issued is by state fiscal year to allow for comparison to state level data.

Food Establishment Inspections and Critical Violations Citywide, 2013-2015

		2013	2014	2015	3-Year Avg.
Total # of I	nspections (all types)	8735	8556	9236	8842
ons	Retail	2783	2907	3300	2997
Inspections by Type	Restaurant	5139	4869	5013	5007
Inspe by	School	813	780	786	793
Total # of \	Violations	11126	10021	11092	10746
Total # of 0	Critical Violations	5472	5159	5240	5290
# of Routin	ne Inspections	6475	6294	6770	6513
#	of Routine Inspections with Critical Violations	1523	1661	1783	1661
%	of Routine Inspections with Critical Violations	24%	26%	26%	25%
	Unsafe Source	185	164	150	164
by sk	Inadequate Cooking	18	24	20	21
ons al Ri gor	Improper Hold	1303	1249	1444	1332
Violations by Critical Risk Category	Cross Contamination	1340	1252	1293	1295
Si Si	Personal Hygiene	1603	1502	1456	1520
	Other	1023	968	877	956

Food Establishment Inspections and Critical Violations by Aldermanic District, 2015

	10041		Inspectio			utine Inspe	rtions	51361166,		ation by	Risk Categori	es	
201	.5	# of Inspections	# of Violations	# of Critical Violations	# of Routine Inspections	# with Critical Violations	% with Critical Violations	Unsafe Source	Inadequate Cooking	Improper Hold	Cross Contamination	Personal Hygiene	Other
Cityw	ide	9236	11092	5240	6770	1783	26%	150	20	1444	1293	1456	877
	1	510	587	256	366	95	26%	12	2	66	68	63	45
	2	438	636	290	304	90	30%	11	1	64	87	76	51
	3	790	926	520	611	181	30%	14	2	120	134	147	103
	4	1498	1801	842	1143	300	26%	21	4	240	171	250	156
	5	390	594	330	302	94	31%	1	0	92	104	84	49
	6	652	717	367	429	117	27%	10	3	97	90	110	57
ಕ	7	418	573	269	260	79	30%	9	0	56	77	75	52
District	8	441	421	196	366	98	28%	11	1	78	33	54	19
	9	469	566	290	319	79	25%	3	0	91	70	70	56
	10	444	337	146	364	67	18%	6	2	49	40	36	13
	11	365	447	198	261	63	24%	4	1	68	42	45	38
	12	962	1080	509	704	185	26%	18	1	153	104	146	87
	13	711	928	444	489	146	30%	13	2	124	129	103	73
	14	612	724	350	499	120	24%	2	1	90	97	127	33
	15	509	746	228	341	67	19%	15	0	54	47	68	44
	OT*	27	6	5	12	2	16%	0	0	2	0	2	1

^{*} OT district is designated for out of town operators who hold City of Milwaukee Temporary Event or Peddler licenses



Food Establishment Inspections and Critical Violations by Aldermanic District, 2014

		All	Inspectio	ns	Rou	utine Inspe	ctions	Violation by Risk Categories					
201	4	# of Inspections	# of Violations	# of Critical Violations	# of Routine Inspections	# with Critical Violations	% with Critical Violations	Unsafe Source	Inadequate Cooking	Improper Hold	Cross Contamination	Personal Hygiene	Other
Cityw	ide	8556	10021	5159	6294	1661	26%	164	24	1249	1252	1502	968
	1	420	493	226	312	84	27%	6	2	31	67	72	48
	2	409	725	309	282	84	32%	14	2	65	91	90	47
	3	781	958	525	578	165	29%	12	3	129	113	164	104
	4	1225	1309	703	918	246	27%	26	3	196	152	191	135
	5	419	595	358	324	100	33%	5	4	95	82	113	59
	6	598	670	360	437	123	27%	13	3	53	75	139	77
ಕ	7	310	407	206	226	66	28%	7	1	29	70	64	35
District	8	386	385	212	312	75	24%	12	0	61	43	59	37
	9	570	849	457	359	98	28%	13	3	126	113	120	82
	10	485	387	191	393	91	22%	5	0	52	47	57	30
	11	333	297	123	244	49	20%	2	0	51	21	30	19
	12	781	980	509	559	146	26%	18	0	119	106	137	129
	13	719	790	439	498	138	29%	10	2	115	133	108	71
	14	634	604	302	486	105	21%	3	1	77	85	92	44
	15	486	572	239	366	91	24%	18	0	50	54	66	51

Food Establishment Inspections and Critical Violations by Aldermanic District, 2013

		All	Inspectio	ns	Rou	utine Insp	ections	Violation by Risk Categories					
201	3	# of Inspections	# of Violations	# of Critical Violations	# of Routine Inspections	# with Critical Violations	% with Critical Violations	Unsafe Source	Inadequate Cooking	Improper Hold	Cross Contamination	Personal Hygiene	Other
Cityw	ide	8735	11126	5472	6475	1523	24%	185	18	1303	1340	1603	1023
	1	315	404	207	256	68	27%	6	1	34	69	60	37
	2	415	670	298	258	75	29%	13	1	60	81	88	55
	3	931	956	555	649	180	28%	15	1	141	118	172	108
	4	1401	1543	833	1091	232	21%	24	3	250	146	255	155
	5	481	882	448	336	102	30%	10	1	95	127	131	84
	6	448	671	328	364	101	28%	25	0	37	79	123	64
t	7	317	450	194	226	58	26%	7	0	31	67	53	36
District	8	414	445	226	341	70	21%	18	0	56	52	68	32
	9	493	778	372	317	84	26%	14	2	95	108	87	66
	10	476	473	234	374	96	26%	3	0	46	62	81	42
	11	393	490	220	301	53	18%	4	1	67	68	60	20
	12	814	1081	548	633	131	21%	11	3	129	120	158	127
	13	651	735	336	487	93	19%	7	0	110	94	73	52
	14	638	743	335	493	87	18%	9	1	85	73	95	72
	15	511	805	338	348	93	27%	19	4	67	76	99	73



Peddler Inspections, 2013-2015

	2013	2014	2015	3-Year Avg.
Total Number of Inspection Occurrences	640	537	658	612
Total Number of Violations	326	256	343	308
Total Number of Inspections with a Critical Violation	67	72	101	80
% of Occurrences with a Critical Violation	10%	13%	15%	13%



Workforce

Number of FTEs assigned to conduct food inspections (fully staffed, all inspection types)	18
Number of FTEs assigned to conduct weights and measures inspections	
Number of FTEs involved in technical support, management and administrative support	
Total number of FTEs in CEH	
Number of standardized trainers	

Inspectional Capacity versus Inspectional Workload

			Number	of Annual I	spections	Required			
Establishment Type	Number of Establishments	Current Practice ⁵		Minimum Required ⁶		Proposed Risk Based Model ⁷			
Restaurants	1414	1768		15	1555		22		
Restaurants - Additional Sites	149	18	36	16	4	2:	13		
Retail	1157	14	46	12	73	16	55		
Schools	330	825		726		7:	26		
Taverns	345	431		431 380		380		493	
Community Food Programs	70	8	8	7	77		00		
Peddlers	267	33	34	294		38	32		
Complaints	1013	12	66	11:	1114		.14		
Temporary/Seasonal Events	1079	1349		113	37	11	.87		
Total	5824	76	93	67	70	78	92		
Inspection FTEs		18		18 18		1	.8		
Ratio		42	27	37	6	4:	38		
FDA Staffing Goal		320	280	320	280	320	280		
Required FTE		23	26	20	23	24	27		
Additional FTE Needed		5	8	2	5	6	9		

⁵ Number of inspections required for current practice is based upon schools receiving two routine inspections per year and all other establishments inspected once per year. It also assumes that 25% of establishments will have one or more critical violations requiring a re-inspection. This reflects the minimum routine inspection frequency along with MHD's current practice to re-inspect all critical violations found regardless of the operator's ability to initially correct the violation at the time of inspection.

⁶ Minimum required is based upon schools receiving two routine inspections per year and all other establishments inspected once per year. Re-inspection would be done upon the next routine inspection except for critical violations the operator is unable to correct onsite equating to a 10% re-inspection rate. This reflects the minimum routine inspection and the minimum re-inspection requirement permitted.

⁷ Proposed risk based model is based upon schools and high risk establishments receiving two routine inspections per year and all other establishments inspected once per year. Re-inspection would be done upon the next routine inspection except for critical violations the operator is unable to correct onsite equating to a 10% re-inspection rate. The proposed model increases the emphasis on conducting full inspections while reducing re-inspections to only the most significant.



Policy

Members of Consumer Environmental Health are engaged at the local, state and the national level in the development of policy. Activites in 2015 include:

- CEH staff serving on various MATC curriculum planning committees;
- CEH staff serving on the statewide DATCP/DHS temporary event and equpiment committees;
- CEH staff serving on the National Association of City and County Health Officials (NACCHO) Food Safety Advisory Workgroup and on the Council to Improve Foodborne Illness Response (CIFOR); and
- CEH staff participating on Conference for Food Protection (CFP) workgroups.

Education and Outreach

The purpose of education and outreach is to assure inspectors, operators, and consumers are adequately informed of the causes of foodborne illness and the key strategies to prevent foodborne illness. External education and outreach activities currently conducted by the Department include posting of inspection reports online, development and distribution of fact sheets and guidelines for operators, participation on the Food Safety Advisory Committee, and operator training sessions. Internal education activities include the development and implementation of a structured curriculum for new inspectors, adopting the FDA procedures for retail food inspector standardization and quality assurance.

CEH has two key partners in implementing education and outreach activities, the Health Department's Communications and Graphics section which assists with website and educational material development as well as media issues, and ITMD which maintains the online inspection portal.

Education and Outreach Performance Measures/Goals

Industry	Status
An actively engaged food safety advisory committee that meets at least annually to review and discuss food safety policy	V
CEH is actively involved in industry sponsored forums	V
Provided at least 50 food establishment operator trainings per year	V
Provided training to at least 250 operators per year	V
All operator education materials are reviewed and updated (when required) every 36 months	×
Implemented strategies to increase food safety awareness	√

Consumers	Status
All retail and restaurant routine food inspections are available online	V
All consumer education materials are reviewed and updated (when required) every 36 months	×
CEH is actively involved in community sponsored forums	V
Increase the proportion of consumers who follow key food safety practices	×



Inspectors	Status
100% of EHS with 18 months of experience have completed the FDA core food inspection curriculum	V
100% of EHS with 18 months of experience have completed standardization	V
100% of coordinators and supervisors are state standardized	X
100% of EHS, coordinators and supervisors receive 16 hours of relevant continuing education per year	V
100% of EHS with 18 months of experience have taken a retail HACCP course within the past 5 years	×
<20% of EHS have less than 24 months of experience in food inspection	×

Activity Tracking

Industry/Consumer Number of food handler training sessions performed	207
Number of food handlers trained	
Regulatory Staff	
% of EHS with more than 18 months experience who have completed core training curriculum	
% of EHS with more than 18 months experience who have completed standardization	100%
% of EHS with less than 24 months of experience	27%
% of CEH staff with less than 24 months experience in their position	15%

Surveillance & Investigation

The purpose of disease surveillance and investigation is to assure the timely identification and response to foodborne illness in order to minimize morbidity and mortality. Interventions include the investigation of all cases of reportable enteric disease, the investigation of all outbreaks or potential outbreaks, the evaluation of communicable disease, inspection and complaint investigation findings to identify trends and evaluate program performance and the testing of clinical and food samples to identify foodborne disease or food contamination. Enteric diseases are bacterial or viral infections that enter the body through the mouth and intestinal tract and are usually spread through contaminated food and water or by contact with vomit or feces. Enteric diseases are the causative agents of foodborne illness.

Key partners in the surveillance and investigation include the MHD Public Health Laboratory which conducts analysis of clinical, environmental and food samples and MHD Communicable Disease (CD) Program which investigates reportable disease. Members from CEH, CD, and the Lab all serve on the Department's Outbreak Response Team/Foodborne Illness Workgroup.

Surveillance and Investigation Performance Measures/Goals

Investigation	Status
100% of foodborne illness complaints are investigated, the final disposition for each complaint is obtained and tracked	V
100% of foodborne illness complaints investigations are initiated within 1 business day of being reported to the department	₹
The department has an active functioning multidisciplinary outbreak team with defined roles and responsibilities and written policies and procedures reviewed in the previous 24 months	V



Surveillance

Incidence of key enteric disease is at or below the Healthy People 2020 target

X

An annual review of communicable disease, inspection and complaint data is performed to identify trends and possible risk factors related to food safety and foodborne illness



An active retail food sampling program is in place to identify bacterial contamination in high risk foods



Case Management	Status
100% of reportable cases of enteric disease in Milwaukee residents are investigated	V
Investigation of cases of reportable enteric disease are initiated within 2 business days of report to the department	V
100% of food handlers who are either cases of enteric disease or contacts to cases of enteric diseases are evaluated to determine if work restrictions and/or clinical testing is required	V

Activity Tracking

Complaint Investigations, 2013 to 2015

Type of Complaint	2013	2014	2015	3-Year Average
Foreign Object	25	21	31	26
Illness	84	73	72	76
Labeling	7	3	4	5
Quality/Unwholesome Food	124	118	124	122
Facility Cleanliness	111	84	122	106
Pests/Vermin	42	86	72	67
Other/ Miscellaneous ⁸	128	343	519	330
Facility Repairs	8	24	19	17
Garbage/Litter	37	35	27	33
Personal Hygiene	19	28	23	23
Total Food Complaints	585	815	1013	804

Cases of Enteric Disease, 2013 to 20159

Cases Reported	2013	2014	2015	Three Year Average	Estimated # of Cases Per Case Reported ¹⁰	Total Estimated Cases 2015	Total Estimated Cases Three Year Average
Campylobacter	55	64	48	55.7	30	1,488	1,727
E. coli 0157	11	10	8	9.7	26	216	262
Listeria	2	3	3	2.7	2	9	8
Salmonella	69	80	77	75.3	29	2,310	2,259
Vibrio	1	0	1	0.7	142	143	100
Yersinia	2	1	1	1.3	123	124	161

⁸ In 2014, MHD implemented the practice of entering delinquent license renewals as complaints for the purposes of activity tracking resulting in the large increase in other complaints and total complaints.

⁹ City of Milwaukee enteric disease cases from Wisconsin Public Health Information Network, Analysis, Visualization, and Reporting (AVR), on March 03, 2016. Please note that data are provisional and subject to change.

¹⁰ FoodNet Progress Report http://www.cdc.gov/foodnet/data/trends/trends-2012-progress.html



Incidence of Enteric Disease, 2013 to 2015

Incidence per 100,000 Population ¹¹	2013	2014	2015	Three Year Average	2014 National Rate ¹²	2020 Target ¹³	Status ¹⁴
Campylobacter	9.2	10.8	8.1	9.4	13.5	8.5	V
E. coli 0157	1.8	1.7	1.3	1.6	1.4	0.6	×
Listeria	0.3	0.5	0.5	0.4	.2	0.2	×
Salmonella	11.6	13.4	12.9	12.6	15.5	11.4	×
Vibrio	0.2	0.0	0.2	0.1	0.5	0.2	1
Yersinia	0.3	0.2	0.2	0.2	0.3	0.3	1

CIFOR Team Investigation, 2013 to 2015

<u> </u>			2017	v
	2013	2014	2015	Three Year Average
Investigation s	4	2	1	4

Food Sampling Program, 2015

	Deli	Frozen Dessert	Beef	Total
# of establishments sampled	25	81	38	144
# of samples tested	80	399	134	613
# of high counts	0	84	4	88
% of samples with high counts	0%	21%	3%	14%

Key Accomplishments/Opportunities

Key accomplishments for 2015:

- Recruited and hired 2 Environmental Health Specialists (EHS);
- Completed more than 900 inspections and addressed more than 11,000 food safety violations;
- Number of EHS to received Registered Sanitarian Certification = 2;
- Number of EHS to received Certified Professional Food Safety Certification = 3;
- Number of EH Coordinators to attain DATCP/DHS Standardization Certification = 2.

¹¹ Incidence calculated using 2010 U.S. Census Population data.

¹² CDC MMWR Incidents and Trends of Infection with Pathogens Transmitted Commonly Through Food – Foodborne Diseases Active Surveillance Network, 10 U.S. Sites, 2006-2014

http://www.cdc.gov/mmwr/preview/mmwrhtml/mm6418a4.htm

¹³ Food Safety, Healthy People 2020

http://www.healthypeople.gov/2020/topicsobjectives2020/overview.aspx?topicid=14

¹⁴ Based on comparison between 2014 City of Milwaukee incidence with 2020 target.



Key activities planned in 2016 to enhance food safety and to meet key performance goals include:

- Fill vacant positions;
- Pursue purchase of new electronic inspection system as a replacement for Chili and utilize for food and weights and measures inspections;
- Revise all inspection and enforcement procedures based upon process changes implemented to accommodate new electronic inspection system;
- Re-evaluate the frequency and timing of inspection / re-inspection in relation to foodborne illness risk and inspectional capacity post electronic inspection system implementation;
- Engage operators and consumers in the continued development of a food establishment grading system aligned with functional capabilities of electronic inspection system;
- Assess consumer food safety knowledge and begin to identify potential interventions to address gaps identified;
- Actively participate on the Local Business Action Team to refine licensing issuance / modification process to increase efficiency and improve customer service.
- Complete the Self-Assessment for FDA National Retail Food Standards 1-9;
- Make necessary adjustments due to the merger of DATCP/DHS as of July 01, 2016 and enter into a new agent contract.