

**Training Program for the Professional Food Service Sanitarian
Michigan Department of Agriculture**

Trainer's Guide

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Michigan Department of Agriculture
Training Program
For
The Professional Food Service Sanitarian

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Videos

Module 1

Video #1

**Charting a Safer Course
Using HACCP in an Inspection** 63 min

Video #2

On the Front Line (Vending) 20 min
Taylor Soft Serve Videos (3) 90 min

Module 3 & 10

Effective Communication 60 min
The Food Code 40 min
Communication Skills for Regulators 6 hours

Module 4

Starting Out with Food Safety 12 min
Ensuring Proper Personal Hygiene 10 min
Purchasing Receiving and Storing 14 min
Preparing Cooking and Serving 13 min
Cleaning & Sanitizing 10 min
Food Safety Challenge 40 min

Modules 5 & 8

Integrated Pest Management 14 min
What Is HACCP? 39 min
Critical Control Points in Retail Food 17 min
Managing Food Safety 20 min

Module 7

Foodborne Illness Surveillance 51 min

Michigan Department of Agriculture

Training Program
For
The Professional Food Service Sanitarian

Introduction:

The purpose of the “Training Program for the Professional Food Service Sanitarian” is to provide an organized uniform approach for local health departments to use to train sanitarians new to the food service sanitation program. The program strives to develop the individual both technically as well as professionally. Upon completion of the training program, the sanitarian should be capable of understanding the cause and prevention of foodborne illness, the principles of effective communication, have an appreciation for the foodborne illness investigation and the plan review processes, be familiar with enforcement procedures, have the ability to conduct himself/herself as a professional, and conduct competent food service establishment inspections. Completion of the training course will result in a “Certificate of Training” issued by MDA.

The training program is voluntary. Local health departments have the complete authority and responsibility for training their staff and making certain that competent sanitarians are conducting the food service sanitation program. The local health department has the final decision as to the point in time by which the trainee is ready to perform.

The training program is available on the MDA web-site (<http://www.MDA.state.mi.us/>). The videos are on loan from the Food & Dairy Division. In order for the trainee to receive a certificate, the trainee must be under the instruction of a recognized local health department “Trainer”. The trainer is not only an expert in the food service sanitation program but is also a mentor for helping the trainee to develop as a professional. The trainer is responsible for making certain that the material is read, the exercises are completed, the videos are viewed, and the written and field standardization tests are taken and passed. The local health department trainer will make a recommendation to MDA for the issuance of the training certificate. MDA will maintain a record of the certificates issued.

Some local health departments may not have a “Trainer” recognized by MDA. Anyone is welcome to visit the web-site and use the training materials. However, the various tests will not be administered and a certificate of training will not be issued. Local health departments without a trainer might consider exploring the possibility of collaborating with other local health departments for the purpose of sharing expertise and resources.

The trainer is always free to add elements to the training curriculum. An editorial board consisting of volunteer local health trainers will be created for the purpose of keeping the program current. It is our hope that this training program will have a positive and noticeable effect upon your department and the food service industry in your jurisdiction.

**Michigan Department of Agriculture
Training Program
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Certificate of Training Recommendation

I hereby certify that _____ (trainee's name) has successfully completed the Training Program for the Professional Food Service Sanitarian and is entitled to receive a Certificate of Training.

Trainer: _____

Department: _____

Date: _____

Trainer's Guide

**Michigan Department of Agriculture
Training Program
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Module 1 – Food Service Sanitation Program Introduction

Pass/Fail: The trainee must obtain a score of at least 80% on the written quiz for this module.

Suggested Topics for Discussion:

- a. Discuss your local health department organization. How does the food service program fit into the structure?
- b. Discuss the department's purpose (i.e. philosophy, mission statement) and how the food service program helps to fulfill that purpose.
- c. Talk about the role of the professional sanitarian in your department.
- d. Talk about your department's relationship with the local food service industry (i.e. local food service program advisory board, department sponsored sanitation awards, department participation with local chef/culinary associations, department relationship with local high school/college vocational and career food service programs, newsletter, etc.)
- e. Give some examples to show how the department provides community food safety leadership (i.e. press releases, exhibits, speaking engagements, representation on governmental and community boards, representation on state and professional committees, etc)
- f. Indicate the number of food service licenses issued in the jurisdiction, the license expiration date, and the role of the sanitarian in the licensing process.
- g. Discuss some recent foodborne outbreaks in your jurisdiction, the number of people involved, the lessons learned, and the importance of the sanitarian in preventing foodborne illness.
- h. Indicate the department's support for training, credentials, professional association memberships
- i. Introduce the trainee to MDA's forum on "Healthline"
- j. Discuss the MDA food service program's consultants' names and duties.
- k. Discuss the MDA regional food inspector's duties
- l. Indicate the department's role and interaction with other governmental agencies and organizations involved with food safety (FDA, USDA, CDC, NSF, ETL, UL, NRA, MEHA, NEHA, IAMFES, AFDO, etc.).
- m. Discuss the Minimum Program Requirements (MPRs) as they relate to the inspection program component (i.e. MPR I - Quantitative Requirements, MPR II – An Effective Inspection Program, MPR III – Uniform Inspection Program, MPR IV – Trained Regulatory Staff)
- n. Talk about your department's standards, expectations, code of conduct, dress, etc. for the professional food service sanitarian.

- o. The inspection process requires the trainee to apply a variety of skills and knowledge. Help bring it all together for the trainee by discussing how knowledge of the industry, microbiology, HACCP, the regulations, enforcement procedures, the plan review process, understanding food labels, and the ability to communicate, all become important.
- p. Discuss a game plan for conducting the inspection. Where should the trainee begin the inspection?
 - Practice conducting a menu review.
 - Discuss your department's procedures for assessing the knowledge of the person in charge at a food service establishment.
 - Discuss your department's recommended techniques for taking notes (note pad, tape recorder, inspection computer, etc).
 - Review the types of issues that are normally encountered in different areas of the establishment (i.e. Dry store room: food off the floor, food covered, food not under water/sewer lines or open stairwells, floors, walls, ceilings, shelf design/maintenance, light shielding, approved source, chemical storage, outer openings protected, single service storage, clean/soiled linen storage, food properly labeled, approved food scoops properly stored, etc)
- q. Arrange for the trainee to spend a day with a mobile operator. Follow the flow of food from preparation at the commissary, transportation and service, and return to the commissary for disposition of leftovers and cleaning and sanitizing of the unit at the end of the day.
- r. Arrange for the trainee to spend a day with a vending machine operator. Follow the flow of food from preparation at the commissary through transportation and service. Ask the operator to demonstrate the cleaning and sanitization process, handling outdated food, demonstrate equipment fail safe systems, etc.
- s. Review some of the major festivals and events that occur each year in the jurisdiction. Discuss how the department plays a vital role in helping the event planners make certain that public health safeguards are in place.
- t. Discuss the number of temporary licenses that are issued each year, the types of operations that generally require a license, indicate the type of operations that are fee exempt (i.e. nonprofit organizations) and those that are exempt from licensure (i.e. pot luck dinners). Indicate the impact that the temporary events have on the department's workload, scheduling overtime, who is responsible for conducting the inspections, etc.

Inspections:

- a. Complete the field training component as outlined in H9 of the Minimum Program Requirements.
- b. Allow the trainee to accompany experienced staff on mobile, temporary, vending, and STFU inspections.

Discussion Topic Outline for the Video – “Food Programs – Charting a Safer Course

- I. Program Objectives
 - A. Vision
 - B. Goals

- II. Tools of the Trade
 - A. Communication
 - 1. Finding the right approach to accomplish our goals
 - B. Surveillance
 - 1. Monitoring problems
 - 2. Discover the cause of foodborne outbreaks
 - 3. Target resources

 - C. Education
 - 1. Educate ourselves
 - 2. Educate the operator

 - D. The Inspection Process
 - 1. Discover hazards – follow the flow of food
 - 2. Influence behavior – communication and education

 - E. Enforcement

 - F. Political Support
 - 1. Obtain support to strengthen food program

- III. Summary
 - A. Two-way communication
 - B. Federal, state, and local regulatory agencies and industry all working together and sharing common goals.
 - C. Focus & Results

Discussion Topics for the Video: “On the Front Line”

- I. Personal Hygienic Practices – Service Personnel
 - A. Wash hands
 - B. Start with the procedures that require clean hands
 - 1. Load cups
 - 2. Add food items
 - 3. Clean food contact surfaces
 - 4. Clean inside the machine
 - C. Finish with procedures that do not require clean hands

1. Empty waste
 2. Clean exterior of the machine
- II. Cleaning tools
 - A. Clean pail
 - B. Hand soap
 - C. Paper towels
 - D. Brush
 - E. Spray cleaners
 - F. Sanitizers
 - III. Temperature Cut-off Control
 - IV. Cleaning and Sanitizing Procedures for Hot and Cold Machines

Discussion Topic Outline for the Video: “Taylor Operations Training”
Taylor Soft Serve Ice Cream Machine – Models 339/754
Gravity Fed – No Standby Mode

- I. Assembly, Sanitizing, and Priming Procedures
- II. Part Names
 - A. Air mix tube
 - B. Air orifice
 - C. Beater assembly
 - D. Scraper blades
 - E. Drive shafts
 - F. Freezer door assembly
 - G. Hand screws
 - H. Adjustable draw handles
 - I. Pivot pin
 - J. Design caps
 - K. Prime plugs
 - L. “O” rings
 - M. Approved lubricant
- III. Starting Procedures
- IV. Closing Procedures

Discussion Topics for the Video: “Taylor Operations Training”
Taylor Softserve Ice Cream Machine – Model 8756
Pressure Fed Model – No Standby mode

This machine is cleaned, sanitized, and operated similar to models 339/754. The principle difference is the pump versus gravity feed.

Discussion Topics for the Video: “Taylor Operations Training”
Taylor Softserve Ice Cream Machine – Model 8756
Softserve Heat Treatment Operational

This machine has an overnight heat treatment sanitization cycle. The heat treatment cycle reaches 150 F and takes 4 hours to complete. Upon completion, the machine returns to a standby mode. Although there are daily starting and closing procedures, manual brush cleaning and sanitizing must only be done once every two weeks.

Discussion Topics for the Video: “Using HACCP During an Inspection”

1. Video is a dramatization of a HACCP based inspection.
2. Note the various techniques that the sanitarian uses during the interview process.
 - a. Focuses on the flow of food
 - b. Evaluates procedures
Identifies and points out both good procedures as well as those that are in need of improvement.
 - c. Asks pointed questions aimed at the Critical Control Points for each food item.
 - d. Determines what standards (critical limits) the person in charge uses to determine if a food product has been prepared safely.
 - e. Determines what corrective action is used should an error occur.
 - f. Listens carefully. Does not interrupt needlessly. Shows respect.
 - g. Takes careful notes.
 - h. Divides the over-all inspection into 3 distinct segments: 1) Initial operator interview / menu review. 2) Focused inspection based upon information obtained during the operator interview. 3) Exit interview. A balanced summary of the findings (both positive & negative). Develops a compliance schedule.
3. The inspection process is often as much of a learning process for the sanitarian as it is the operator. It is necessary to learn and understand the various food handling procedures before a food safety evaluation can be competently made.
4. Relate the video to the standardization procedures that will be used in the employees training process.

Suggested Tools for conducting the Inspection

1. Inspection computer and required paraphernalia
2. Clipboard
3. Pencils/pens
4. Inspection report forms
5. Hair restraint
6. Thermometer, thermistor, termocouple
7. Maximum recording thermometer or temperature sensitive tape for testing warewasher final temperatures.
8. Chemical test strips – chlorine, iodine, quaternary ammonia
9. Test strips for pH
10. Flashlight
11. Alcohol swabs
12. Orders for voluntary food destruction, holding food, food destruction, stop-work
13. Inspection mirror
14. Food inventory forms to be used in conjunction with the orders listed above
15. Light meter
16. Vials for insect samples
17. Tape measure
18. Camera

A Strategy For Field Training New Food Service Sanitation Program Sanitarians

Introduction:

Occasionally, local health department trainers seek guidance from MDA relative to training procedures for new employees. The “Training Program for the Professional Food Service Sanitarian” provides an organized approach for teaching technical program information. This document is intended to be a voluntary guide to help trainers provide structure to the field training component

Pre-requisite:

Prior to beginning the field training procedures, the following is recommended to help provide a base of knowledge:

1. **“Training Program for the Professional Food Service Sanitarian”;**
 - **Module 1 – Food Service Sanitation Program Introduction**
 - **Module 2 – Introduction to the Food Service Industry**
 - **Module 3 – Risk Communication**
 - **Module 4 – Facility Operation**
2. Completion of an approved manager certification program such as “Serve-Safe”.
3. 1999 Food Code Familiarization Guide including a review of the Michigan Food Law 2000.
4. Video: “Communication Skills for Regulators”

Minimum Program Requirements:

H7.2 states: An employee first assigned to conducting inspections of food service establishments satisfactorily completes field training that includes the following components:

1. **Twenty-five joint training inspections with a standardized trainer from a local health department; and**
2. Twenty-five independent inspections reviewed by the standardized trainer (either on-site or paperwork review).
3. Five evaluation inspections with a standardized trainer from a local health department or MDA.

Goal:

The purpose of the field training component is to teach a set of personal and technical skills that will provide the basis for conducting uniform and effective inspections. Upon completion of the field training component, the new sanitarian should be able to independently conduct inspections of the varying types of food service establishments in accordance with the Michigan Food Law 2000 and achieve results. The environmental health director should have complete confidence in the trainee's abilities to independently perform assigned tasks and responsibilities in the community as a representative of both the department and the environmental health profession.

Elements of Field Training:

The inspection process should be taught using the risk based inspection elements outlined in "Procedures for Field Standardization of Local Health Department Trainers; Chapter 3 – Field Requirements for Standardization". An effective training session observes the following procedures: A) Trainer describes the task. B) Trainer demonstrates the task. C) Student performs the task. D) Trainer evaluates performance and makes recommendations for improvement.

Scope of Training:

The food service program sanitarian must be able to master a wide range of personal and technical skills that are necessary to conduct competent inspections. Each training session must have a purpose. It is therefore important to understand the individual skills that must be taught and create a lesson plan that accomplishes that mission. In addition, the industry varies from simple to highly complex operations. Each type poses unique food safety challenges and inspection approaches. Examples include fixed establishments that range from cocktail lounges to complex full service operations, to mobile, temporary, vending, catering/commissary, and special transitory food units. The trainer should assess the skills that have been achieved and determine which types of facilities the individual is qualified to inspect.

Tracking System:

The standardized trainer will want to track and document the field training and evaluation activities. Ideally, the standardized trainer should advise the environmental health director as to the skills the new sanitarian has accomplished and which types of establishments the new sanitarian is fully trained and prepared to inspect.

Skills: Appendix A – "Basic Food Service Sanitation Program Skills" is a summary of the basic skills needed to conduct foodservice inspections and indicates the dates the standardized trainer has determined that the student has mastered the skill.

Etablissement Type: Appendix B – "Standardized Trainer Endorsement" lists the types of establishments the trainer believes the student is qualified to inspect.

General Training Strategy for Food Service Operations

The MPRs are minimum program requirements. Twenty-five inspections with the standardized trainer may not be enough inspections to accomplish training goals. In addition, some students learn faster than others. The training process should be continued as long as it is necessary to accomplish the task.

Have a Lesson Plan:

Develop both a master plan and timetable along with daily lesson plans. Before heading into the field, complete an outline of the skills you intend to cover and go over the outline with the student. Describe the day's planned activities and how you intend to convey the training information.

Start with the Basics:

Start with simple operations. Evaluate which skills are needed for each type of establishment. Most of the skill requirements come into play for even the simple operations. Simple operations such as coffee shops, bars, and theaters offer fewer distractions for laying the basic foundation of the systematic risk based food service inspection. Increase the level of difficulty with each facility.

Debriefing:

At the end of each inspection and at the end of the day, review the events and the lessons that were covered. Allow time for questions and the opportunity to clear up any misunderstandings. Ask the student to tell you the most valuable and least valuable experiences of the day. Ask the student to describe to you what areas they would like to focus on during the next inspection. Provide feedback on how you thought the day went and how the student's overall skills are progressing. Use this information to help refine the lesson plan for the next training exercise.

Gradually Hand Over the Reins:

Initially, the trainer will be in charge and do most of the talking and demonstration. However once the subject is sufficiently covered, the student should be encouraged to take on the responsibility for evaluating compliance. For example, once field inspection techniques for mechanical warewashing machines have been described and demonstrated, the student should be encouraged to take the lead in evaluating warewashing machines from that point on under the guidance of the trainer. At the end of the field training experience, the student should be competent as well as confident.

Be a Coach and a Mentor:

Remember that some training days will go better than others. Neither the trainer nor the student should allow themselves to become discouraged. Understand that we are all human. Each day is a new day full of opportunity. The following are some basic principles:

- The trainer should be careful not to run the student down by constantly pointing out faults and short-comings. The key is to help provide the skills the student needs to improve. As the student improves, he/she will gain more self respect, develop confidence and self-esteem. The enjoyment and productivity of each training session will increase proportionally with the student's level of confidence.
 - Progress is based upon a forward moving momentum. Where is the student today, where do you want the student to be tomorrow, and how are you going to help them get there? Establish a timetable for completing the goals. Break the tasks necessary to achieve the goals down into bite-size doable pieces. Avoid procrastination.
 - Trainers are not there to simply give answers but to ask questions to help students figure things out for themselves.
 - Always do your best. Focus on continuous improvement.

Appendix A

Basic Food Service Sanitation Program Skills

Student Name: _____ Standardized Trainer: _____

Skill	Date Mastered	Comments
Legal Skills:		
<p style="text-align: center;">Working Knowledge of Food Law 2000</p>		
<i>Working Knowledge of 1999 Food Code</i>		
<i>Consistently identifies violations under appropriate Food Code section</i>		
<i>Competently answers law/Code related questions from the Person in Charge, food employees, and the standardized trainer</i>		
Communication Skills		
<p>In accordance with Chapter 3 - Field Requirements for Standardization:</p>		
<i>Initiates the inspection with appropriate introduction</i>		
<i>Menu review</i>		
<p style="text-align: center;">Ability to identify risk factors</p>		
<p style="text-align: center;">Oral communication of technical information</p>		
<p style="text-align: center;">Exit interview</p>		

Written Inspection Report		
Risk Control Plan		

Skill	Date Mastered	Comments
Personal Skills:		
Professional appearance including hair restraint		
Leads by example – uses good hygienic practices		
<i>Has the ability to use good judgement, exercise authority, handle conflict, and has the sense of justice and fair play</i>		
<i>Looks and acts confident and competent</i>		
Able to use inspection equipment, make accurate measurements, calibrate, and correctly interpret results		
<i>Understands food service equipment terminology, equipment uses, installation requirements, and standard operating procedures</i>		
<i>Able to identify critical control points in the operation and determine if they are under control</i>		
<i>Uses a systematic inspection approach that identifies all significant critical and non-</i>		

<i>critical violations</i>		
<i>Able to explain the public health significance behind each violation</i>		

Skill	Date Mastered	Comments
Technical Skills:		
Has the ability to assess:		
Knowledge of the Person in Charge		
<i>Consumer Advisory</i>		
<i>Employee Health and Hygiene</i>		
<i>Bare Hand Contact</i>		
<i>Date Marking</i>		
<i>Food – approved source, protected, shellstock tags, parasite destruction, cross-contamination, labeling, thawing, condition, re-service, restrictions for highly susceptible population</i>		
<i>Time / Temperature relationships</i>		
<i>Food Contact Surfaces – material, installation, maintenance, cleaning frequency</i>		
<i>Warewashing / Sanitization</i>		
<i>Storage / handling FUELLS</i>		

<i>Storage / handling Chemicals</i>		
<i>Insect / Rodent Control</i>		
<i>Plumbing / Cross-Connection Control</i>		
<i>Water Supply / Hot Water</i>		

Skills	Date Mastered	Comments
Technical Skills cont'd		
<i>Sewage Disposal</i>		
Toilet facilities		
Equipment and Utensils		
<i>Single Service Items</i>		
<i>Laundry, linens, wiping cloths, sponges</i>		
<i>Lighting</i>		
<i>Ventilation</i>		
<i>Physical facility – floors, walls, ceilings, dressing rooms, cleaning equipment, separation from living quarters, maintenance, unnecessary articles</i>		
<i>Garbage / Refuse storage and disposal</i>		
<i>Premises</i>		
Enforcement Skills:		
Understands dept enforcement policy		

<i>Ability to obtain voluntary compliance</i>		
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Appendix B

Standardized Trainer Endorsement

It is my opinion that _____ is fully prepared and qualified to inspect the following types of food service establishments that I have endorsed:

Standardized Trainer: _____

Establishment Type	Endorsement Date
Vending	
Temporary	
Mobile	
Special Transitory Food	
Grocery / Convenience Store	
Commissary (Mobile, Vending, Catering)	
Simple Fixed Food (bar, fast food, coffee shop, etc)	
Complex Fixed Food	

Module #1 – Food Service Sanitation Program Introduction - Quiz

1. Each year in the United States there are:
 - A. Tens of millions of cases of foodborne illness with 9,000 deaths
 - B. Tens of thousands of cases of foodborne illness with a few hundred deaths
 - C. Hundreds of cases of foodborne illness with some deaths
 - D. No one tracks this type of information

2. One of the major causes of foodborne illness is:
 - A. Insect and rodent infestations
 - B. Hair in food
 - C. Improper holding temperatures of potentially hazardous food
 - D. Inadequate ventilation

3. Among the factors most essential to an effective food service sanitation program are:
 - A. Educated public, educated operator, trained sanitarian, uniform enforcement
 - B. Clip board, inspection report forms, flash light
 - C. Good salaries, travel expenses, annual leave plans
 - D. Low license fees

4. The primary role of the sanitarian is to:
 - A. Inspect as many establishments as possible
 - B. Eliminate public health hazards
 - C. Report inspection findings to the newspaper
 - D. Identify violations and bring them to the attention of the supervisor

5. A sanitarian:
 - A. Is the official representative of the agency
 - B. Conducts environmental health inspections
 - C. Reviews plans and specifications
 - D. All of the above

6. A sanitarian:
 - A. Must be highly technically skilled and be capable of educating and motivating food service operators
 - B. Can assure food safety through the stringent use of the department's enforcement authority.
 - C. Can generally fake what he/she doesn't know

- D. Is protected by government immunity in liability issues when the sanitarian is negligent in identifying causes of foodborne illness and making certain the causes are eliminated.
7. Inspections alone have a limited effectiveness in preventing foodborne illness
- A. True
 - B. False
8. The Conference of Food Protection was established to:
- A. Enforce food codes
 - B. Award food handlers for outstanding performance
 - C. Provide recommended changes to the Model Food Code
 - D. Provide educational seminars for sanitarians
9. In Michigan, a food service license:
- A. Is valid for 5 years
 - B. Is issued based upon compliance with the regulations and payment of a fee
 - C. Can be sold by the present licensee to the new operator when change of ownership occurs.
 - D. Are issued after the operator has had an opportunity to gain experience operating the establishment for six months
10. In Michigan:
- A. Every food service establishment must be operated by a Certified Food Manager
 - B. Each food service establishment must have a person in charge at all hours of operation that demonstrates knowledge of the food code.
 - C. Every food service establishment must be operated by a person who reports to a Certified Food Manager
 - D. Every food service establishment must be operated by person who has seen the video: "Managing Food Safety"
11. A inspection of an establishment can be lawfully made in all of the following examples except:
- a. When refused admission
 - b. With the consent of the owner
 - c. In an emergency
 - d. When a search or inspection warrant has been issued
12. The signature of the establishment owner on the inspection form implies agreement with the inspection findings. TRUE or FALSE

13. Critical items in an inspection process are requirements that are most associated with public health significance. TRUE or FALSE
14. The inspection
- Is the primary tool a regulatory agency has for detecting procedures and practices which may be hazardous and for implementing prevention.
 - Is an unorganized process for detecting violations.
 - Is always conducted on an unannounced basis.
 - Should be conducted when the establishment is not operating.
15. Michigan's food service inspection report form consists of a 44 item checklist accompanied by a narrative report. TRUE or FALSE
16. In Michigan, computers are not allowed to be used to conduct inspections. TRUE or FALSE
17. The inspection report
- Should not only point out violations but also help the operator prevent problems from occurring in the future.
 - Must be written using complete sentences that are easily understood.
 - Should be organized by listing critical violations first.
 - All of the above
18. It is appropriate to state "The chicken soup was found to be at 118 F. Chicken soup and other potentially hazardous foods must be reheated to 165 F and held at 140 F. This violation must be corrected in three days. TRUE or FALSE
19. As a rule of thumb, it is better to bring only a few violations to the operator's attention rather than hitting him/her with them all at once. TRUE or FALSE
20. During the exit interview, the sanitarian should instruct the operator to be quiet and listen. TRUE or FALSE
21. During the exit interview, the operator becomes very angry. You should:
- Erase the violations which are upsetting
 - Fight back
 - Apologize for conducting a poor inspection
 - Remain calm, stay emotionally neutral, maintain the characteristics of a professional
22. Glass thermometers are approved for taking food temperatures in food service establishments. TRUE or FALSE
23. A bimetallic metal stem thermometer gives the average temperature of the food from the tip two inches up the stem. TRUE or FALSE

24. An infrared thermometer is the best type of thermometer for taking internal food temperatures. TRUE or FALSE
25. The diameter of the probe of a thermometer affects the response time. TRUE or FALSE
26. A thermocouple thermometer is suitable for taking the temperature of thin foods. TRUE or FALSE
27. All chemical sanitizing spray type dishwashing machines use chlorine for the sanitization process. TRUE or FALSE
28. When inspecting a spray type dishwashing machine, the sanitarian must:
 - a. Determine the type of machine to be checked
 - b. Study the data plate
 - c. Have appropriate equipment for testing the machine
 - d. All of the above

Answer Key– Introduction to the Food Service Sanitation Program - Quiz

1. a
2. c
3. a
4. b
5. d
6. a
7. True
8. c
9. b
10. b
11. a
12. False
13. True
14. a
15. False
16. False
17. d
18. False
19. False
20. False
21. d
22. False
23. True
24. False
25. True
26. True
27. False
28. d

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Module 2 – Introduction to the Food Service Industry

Pass/Fail: The trainee must obtain a score of at least 80% on the written test for this module.

Suggested Discussion Topics:

- a. The food service industry has a language onto it's own. In order to understand the business and communicate with the industry, it is important to be able to identify people, processes, and equipment by their proper name.
- b. Make arrangements for the trainee to spend a day with the Chef of a large food service establishment in the jurisdiction. Ask the chef to explain the various positions and their responsibilities, the educational skills required for positions of responsibility, daily management challenges, and the complexities of the operation. Ask the Chef to explain and/or demonstrate the various specialized pieces of equipment and utensils used to prepare food and explain various food preparation/cooking styles that may be in progress.
- c. Take the trainee to one or more food service establishments along with the training materials for this module. Attempt to identify as many food service personnel positions as possible. Interview the individuals in order to obtain the duties and responsibilities of each position. Use the glossaries as a guide to try to identify culinary techniques, equipment, and utensils.
- d. Make arrangements to meet with a local college professor involved with the college's Hospitality Management training program. Find out about career opportunities in food service, the nature of the industry, what the future holds for the industry, the type of courses an individual must take for a degree, etc.
- e. Find out the time, date, and meeting place for the next local restaurant, culinary/chef, etc. Association meeting. Have the trainee attend the meeting to introduce him/herself to the group as being a new sanitarian and listen to the various agenda items that help to define the industry.
- f. Arrange to meet with a sales representative from a major supplier (i.e. Gordon's, Sysco). Review the types of value-added food products offered that reduce or eliminate the number of food handling steps in the establishment. Also talk about the various types of food safety utensils/equipment offered (thermometers, frozen stir paddles, ice buckets, coded cutting boards, slicer cleaners, hand sink faucet controls, etc). Talk about the role the supplier plays in promoting & assuring a safe food supply.
- g. Arrange for the trainee to spend a day with a local vending machine service representative. Ask the representative to show the trainee the different types of food vending machines, demonstrate proper cleaning and sanitization methods, demonstrate proper inspection techniques, indicate common problems, etc.

Module 2 – Introduction to the Food Service Industry Quiz

1. The food service industry has a rich history and a language unto its own which encompasses the various cultures of the world offering a wide variety of dining choices and experiences to the consumer.

- A) True
- B) False

2. Food service managers do not need a great deal of education, experience, and savvy to compete and be successful in today's environment.

- A) True
- B) False

3. Successful food service management positions are likely to continue to be low paying jobs.

- A) True
- B) False

4. A Sous Chef is the chef in charge of production for a large corporation.

- A) True
- B) False

5. The Garde Manager is in charge of the dining room

- A) True
- B) False

6. The Expeditor is the person who is responsible for making certain orders are filled promptly and the quality of food is acceptable.

- A) True
- B) False

7. Braising is a process by which food is cooked in fat and a little moisture in a closed pot.

- A) True
- B) False

8. Broiling is a process in which food is cooked by exposure to radiant heat.

- A) True
- B) False

9. Parboil is a process by which food is boiled for a long period of time.

- A) True
- B) False

10. Pan Broiling is a process by which food is cooked in fat in a covered pan.

- A) True
- B) False

11. Roasting is a process by which food is cooked with moist heat.

- A) True
- B) False

12. Sushi is always made with cooked fish

- A) True
- B) False

13. Tartare is seasoned minced meat or fish that is served uncooked

- A) True
- B) False

14. A clam shell grill is used for cooking clams.

- A) True
- B) False

15. A rolling grill is a grill on wheels

- A) True
- B) False

16. A smoker is a device that removes cigarette smoke from the dining area.

- A) True
- B) False

17. A Baine Marie is a piece of equipment used to hold hot food.

- A) True
- B) False

18. A proofing cabinet is used to store customer receipts for the IRS audit.

- A) True
- B) False

19. A China cap is a funnel shaped colander.

- A) True
- B) False

20. A whip is a kitchen utensil used to mix food.

- A) True
- B) False

Answer Key to Quiz – Module #2 – Introduction to the Food Service Industry

1. T
2. F
3. F
4. F
5. F
6. T
7. T
8. T
9. F
10. F
11. F
12. F
13. T
14. F
15. F
16. F
17. T
18. F
19. T
20. T

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Module 3 – Risk Communication

Pass/Fail: The trainee must obtain a minimum score of 80% on the quiz for this module

Suggested Topics for Discussion Upon Completion of the Reading and Video Assignments:

- a. Discuss how risk communication skills apply to everyday interactions with food service operators and the general public.
- b. Give examples in everyday transactions and also in dealing with larger projects as to how following (or not following) the seven cardinal rules of risk communication affected the process and final outcome.
- c. Discuss the department's policy regarding communicating with the news media and state and local elected governmental officials.
- d. Discuss the importance of good communication skills. (i.e. ask the right questions to fully determine if a hazard exists, listen to the answers, be able to communicate a course of action to eliminate the hazard, communicate in a manner that educates and instills the operator's desire and commitment to eliminate the hazard, communicate in a manner that establishes a good rapport, establish yourself as a trusted competent leader, etc.)

Discussion Topic Outline for the Video –“Effective Communications”

- I. Attitude makes it happen
 - a. What kinds of people are operators?
 - b. How important are public health and safety issues to them?
 - c. The self fulfilling prophesy: Believing is Seeing

- II. Seven ways to create rapport
 - a. Make an appointment
 - b. Clarify your intentions
 - c. Show interest in the operator
 - d. Sit down together with the operator
 - e. Go over the menu
 - f. Disclose agenda – talk about foodborne illness and its relationship to critical processes
 - g. Ask for the operator's cooperation

- III. Three steps to good listening

- a. Don't talk
 - b. Maintain eye contact – show interest with gestures
 - c. Paraphrase what was said
- IV. Gets in the Way of Good Listening
- a. I want to respond or argue
 - b. I get distracted by other things going on
 - c. Boredom, disinterested in what is being said
 - d. Fidgeting, nervousness
- V. Four ways to handle disagreements
- a. Paraphrase – Restate what you hear the other person say. Ask them to restate what you said
 - b. Declare your intentions
 - c. Reverse roles – put yourself in my place
 - d. Middle ground – find a compromise
- VI. Five keys to negotiating agreements
- a. Ask – What is the operator going to do
 - b. Restate – Restate operator suggestions, write it down
 - c. Intentions – Ask what the operator intends to do about the problem. Get them invested in the process
 - d. Willingness – State and write down what you and the operator are willing to do
 - e. Appointment – Set up appointment for the next visit

Module 3 – Risk Communication – Quiz

1. Risk communication is a one-way dialogue used to sell the agency's policies and decisions.
TRUE or FALSE
2. The public tends to place a greater emphasis on the emotional qualities of risk (Outrage) whereas experts and government tends to focus primarily on the "assessment" of risks.
TRUE or FALSE
3. Communication, in general, involves four specific areas. A lack of understanding or breakdown in any one of these four areas can create risk communication problems. These areas include (select all that applies)
 - a. Limited information in the message
 - b. Over distortion of the technical risks
 - c. Public's demand for "Zero" tolerance
 - d. Premature and inaccurate release of scientific information
4. Scenario: A confirmed Hepatitis A Virus outbreak occurred involving a local caterer as the source of the virus. Due to the possibility that a large portion of the community has been exposed to the implicated foods/handler and the need to immediately identify and notify exposed consumers, your agency has decided to initiate a press release with the caterer. This method of joint press release follows which Cardinal Rule (select only one best answer)
 - a. Rule #1, Accept and involve the public as a legitimate partner
 - b. Rule #4, Be Honest, frank, and open
 - c. Rule #6, Meet the needs of the media
 - d. Rule #7, Speak clearly and with compassion
5. One reason for interview failures due to misquotes or misrepresentation by the media or receivers is from lack or failure to develop a key message. This lack of planning could have easily been prevented by following which cardinal rule (select only one best answer)
 - a. Rule #1, Accept and involve the public as a legitimate partner
 - b. Rule #4, Be Honest, frank, and open
 - c. Rule #6, Meet the needs of the media
 - d. Rule #7, Speak clearly and with compassion
6. A key element to effective communication is listening. Good listening skills will allow the communicator to recognize emotions, _____, and broaden an accepting attitude toward the speaker. (Select the best possible answer)
 - a. Coerce/convince the public to agree on the agency's policies
 - b. Identify hidden agendas
 - c. Allow a more reactive "fire fighting" response
 - d. Eliminate the need to involve the public in decisions

7. One of the hardest things for anyone of regulatory authority to admit to is uncertainty. In these situations, the best possible answer to provide to the public is _____ (select the best possible answer).

- a. "No comment at this time"
- b. "That's a good question"
- c. "I do not know the answer for that question"
- d. "I do not know the answer for that question but I will find out and notify you immediately"

8. All but one of the following are good ways to create rapport with an operator

- a. Surprise inspections
- b. Go over the menu together
- c. Show interest in the operator
- d. Clarify your intentions

9. One thing that gets in the way of good listening is

- a. Not talking enough
- b. Urge to respond or argue
- c. Paraphrasing what has been said
- d. Maintaining eye contact

10. When negotiating agreements, all but one of the following statements are key elements

- a. Ask what the other person is willing to do
- b. Get the other person invested in the process
- c. Put the agreement in writing
- d. Do not tip your hand as to the real purpose of your intentions

ANSWER KEY FOR COMMUNICATION SKILLS QUIZ

1. False
2. True
3. a, b, c, d
4. a
5. b
6. b
7. d
8. a
9. b
10. d

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Module 4 – Facility Operation

Pass/Fail: The trainee must receive a Certified Food Manager Certificate and obtain a minimum score of 80% on the quiz for this module.

Suggested Activities:

- a. Arrange for the trainee to meet with a company representative that specializes in cleaning supplies (i.e. ECO-Lab, Gordon's Food Service, Sysco). Ask the representative to explain or demonstrate their line of products. Explain how different cleaning problems demand specialized cleaning solutions, types of sanitizing products available, how they are used, how they are tested, special use precautions, etc.
- b. Arrange for the trainee to spend a day with a local mechanical dish machine repair person. Ask the representative to instruct the trainee in dish machine operation, common problems, what to look for, how to test, equipment needed to inspect, explain the differences between the various types of machines, machine maintenance, etc.
- c. Arrange for the trainee to spend some time with a top-notch food service operator in your area on a day when considerable activity within the establishment is planned (i.e. food shipment arrival, cooking, cooling, reheating, hot/cold holding, date marking, etc). Ask the operator if it would be possible for the trainee to participate hands-on in such activities as inspecting shipments, storing foods received, date marking, cooling foods, cleaning & sanitizing equipment/utensils, etc. The purpose of the visit is to see how the various practices learned in the module are put into real practical use.
- d. Ask the trainee to write a report summarizing the lessons learned as a result of completing the suggested activities. The process of writing the report will help the trainee to organize the material and remind him/her to ask questions of any areas that are still not clear. The completed report can be shared with the other staff members.

Discussion Topics for the Video: “Starting Out with Safe Food”

- I. What a Foodborne Illness Is and How it Occurs
 - a. Is a disease that is transferred to people by food
 - b. There are three types of hazards – biological, physical, and chemical.
 - c. Foods that support the growth of microorganisms are called potentially hazardous foods – review examples of these foods
 - d. Identify physical and chemical hazards

- II. How Foods Become Unsafe
 - a. Time and temperature abuse: temperature danger zone 41 F to 140 F – the 4 hour rule
 - b. Cross-contamination – how food and food contact surfaces become contaminated
 - c. Poor personal hygiene – humans are the biggest source of foodborne illness because of improper handwashing practices.

- III. How to Keep Food Safe during the Flow of Food.

Point out examples of how food can become unsafe at each step of the flow of food because of time and temperature abuse, cross-contamination, and poor personal hygiene. The steps include:

 - a. receiving
 - b. storing
 - c. preparing
 - d. cooking
 - e. holding
 - f. serving
 - g. cooling
 - h. reheating

Review the basics of food safety:

- a. Keep things clean and sanitized
- b. Practice good personal hygiene
- c. Wash hands thoroughly and frequently
- d. Minimize the time food spends in the danger zone
- e. Prevent cross-contamination

Discussion Topics for the Video: “Ensuring Proper Personal Hygiene”

- I. How Employees Can Contaminate Food

- a. By failing to wash hands after using the restroom
- b. After touching their hair, face, or body and then touching food.
- c. By coughing or sneezing near food or food surfaces
- d. By touching a cut or abrasion and then touching food
- e. After touching anything that can contaminate food

II. Personal Cleanliness Practices

Employees should do the following to protect food:

- a. Report illness'
- b. Shower or bathe daily
- c. Bandage and cover any cuts or abrasions
- d. Clean and trim fingernails
- e. Avoid wearing nail polish or false fingernails
- f. Leave all jewelry at home
- g. Wear clean uniforms and aprons
- h. Avoid eating, smoking, or drinking on the job
- i. Wear a hair restraint when working with food

III. When to Wash Your Hands

- a. After using the restroom
- b. Before and after handling raw food
- c. After touching hair, face, or body
- d. After coughing and sneezing into your hands
- e. When switching from one task to another
- f. After handling chemicals
- g. After handling garbage
- h. Before and after your break
- i. After eating, drinking, or smoking
- j. Anytime you come into contact with anything that can contaminate food.

IV. Where to Wash Hands

Hands must be washed in a dedicated handwashing sink. They should never be washed in a food prep sink or utensil washing sink.

V. How to Wash Hands

- a. Wet hands with hot running water
- b. Apply enough soap to build up a lather
- c. Rub hands together for at least 20 seconds. Lather well beyond the wrists and the exposed portion of the arms
- d. Clean under fingernails and between fingers

- e. Rinse thoroughly under running water
- f. Dry hands using an approved drying device

VI. How to Use Gloves Properly

- a. Gloves should never be worn in place of handwashing
- b. Gloves must be changed when they are:
 - Soiled or torn
 - Before beginning a different task
 - After handling raw meat and before handling cooked or ready-to-eat food

Discussion Topics for the Video: “Purchasing, Receiving, and Storing”

I. How to Calibrate and Use a Thermometer

Explain the basics of using a thermometer – What they do, how to calibrate, how to check temperature, the types of thermometers, right thermometer for the job, etc.

II. When to Accept or Reject a Delivery

Temperature
Appearance, color, smell, and texture of the product
Condition of the product

III. How to Properly Store Food

- a. Store foods quickly after they are received
- b. Store foods in a clean and dry place away from chemicals and garbage
- c. Follow the FIFO principle
- d. Store raw meat, poultry, and fish below ready-to-eat foods
- e. Regularly monitor the temperature of food stored in refrigerators and freezers
- f. Store food at least six inches off of the floor

Discussion Topics for the Video: “Preparing, Cooking, and Serving”

I. Proper Thawing Practices

- a. Never thaw at room temperature
- b. Thaw under refrigeration at 41 F or below
- c. Thaw under running water at 70 F or lower
- d. Thaw in a microwave and cook immediately
- e. As part of the cooking process

- II. Proper Preparation and Cooking Practices - Discuss
 - a. Preparing food in small batches
 - b. Storing prepared foods as quickly as possible
 - c. The minimum internal cooking temperature for poultry, ground meat, pork, beef, and fish.
 - d. Foods that may require special handling (i.e. eggs, egg mixtures, batters and breading)

- III. Proper Holding Practices - Discuss
 - a. Hold hot foods at 140 F or higher
 - b. Hold cold foods at 41 F or lower

- IV. Discuss Proper Serving Practices

- V. Proper Cooling Practices - Discuss
 - a. Cool hot food from 140 F to 70 F within 2 hours and then cool to 41 F or lower within the next 4 hours.
 - b. Use the following methods to cool foods
 - Reduce the size of the food
 - Put the food in ice water baths
 - Blast chill the food
 - Stir the food with ice paddles

- VI. Proper Reheating Practices - Discuss
 - a. Reheat food for hot holding to an internal temperature of 165 F for 15 seconds within 3 hours
 - b. Never reheat food in hot-holding equipment that isn't designed for rapid reheating

Discussion Topics for the Video: "Cleaning and Sanitizing"

- I. Cleaning vs Sanitizing – Explain that
 - a. Cleaning removes soil while sanitizing reduces microorganisms on a surface to safe levels
 - b. Any surface that comes into contact with food must be cleaned and then sanitized
 - c. Food contact surfaces should be cleaned and sanitized in accordance with section 4-602.11 of the Food Code.

- II. How Sanitizers Work – Explain that the effectiveness depends upon the:
 - a. Temperature of the water
 - b. Amount of time the sanitizer is in contact with the item
 - c. Concentration of the sanitizer
 - d. Sanitizers must be used in accordance with the label

- IV. How to Manually Clean and Sanitize
 - a. Use the 3 compartment sink.

- b. Wash using a suitable detergent in the first compartment
 - c. Rinse in clear water in the second compartment
 - d. Sanitize in the third compartment. Test the water for proper concentration and temperature
- V. How to use a Dishwashing Machine
- a. Check chemical dispensers to make certain they are filled
 - b. Check water temperature and pressure
 - c. Keep the machine clean inside and out
 - d. Do not overload dish racks
 - e. Test the chemical sanitizer concentration routinely
 - f. Wash hands before handling clean utensils
- VI. How to Store Clean Items
- a. Clean and sanitize drawers, shelves, carts, and the trays used to store and transport clean and sanitized items
 - b. Handle clean and sanitized items with clean hands while avoid touching areas that may come into contact with the customers mouth.
 - c. Store glasses, bowls, pots, etc upside down
 - d. Store flatware and utensils with the handles up
- VII. How to Store Cleaning Supplies
Store chemicals away from FEULSS

Discussion Topics for the Video: “Take the Food Safety Challenge”

What the student should have caught:

CC = cross-contamination

T&T = time and temperature abuse

PH = poor personal hygiene

C&S = improper cleaning and sanitizing

I. Quick Service Restaurant

Bad Practices

1. Customer tray makes contact with trash (CC)
2. Hot soup held improperly (T&T)
3. Chemical and rag stored near food (C&S)
4. Employee runs had through hair (PH)
5. Freezer door left open (T&T)
6. Ham sitting out on slicer (T&T)
7. Too much food brought out (T&T)
8. Cook wearing jewelry while preparing food (PH)
9. Cook licks fingers before handling cheese (CC, PH)
10. Employee scoops ice with bucket stored on floor (CC)

11. Employee mixing chemicals in same bucket (dangerous practice)
12. Employee handles hair (PH)
13. Employee touches other employee's shirt (CC)
14. Employee takes and eats a french fry (CC, PH)
15. Employee licks her fingers (CC, PH)

II. Convenience Store – Bad Practices

1. Customer handles croissant with bare hands (CC)
2. Customer stacks salad outside of refrigeration (T&T)
3. Employee scratches himself (PH)
4. Employee handles bun without washing hands (CC)
5. Customer removes hot dog from roller with bare hands (CC)
6. Hot dogs being temperature abused (roller turned off) (T&T)
7. Improper utensils used in condiment dispenser (CC)
8. Employee sprays cleaner near refrigerated foods (C&S)
9. Employee wipes knife on apron (CC)
10. Employee wears jewelry and hair is not properly restrained (PH)
11. Employee places cleaner and rag near food (C&S)
12. Ham sitting out on slicer (T&T)
13. Handwashing sink filled with pans (PH)
14. Hand towel dispenser empty (PH)
15. Employee improperly washes hands (PH)
16. Walk-in refrigerator door propped open (T&T)
17. Employee dries hands on shirt and cleaning towel (CC, PH)
18. Employee scratches himself (PH)
19. Employee handles pizza with contaminated hands (CC)
20. Employee failed to cover bandage on hand (PH)
21. Employee shakes hands with customer and handles sandwich (CC)
22. Dairy delivery sitting out at room temperature (T&T)

IV. Full Service Restaurant – Bad Practices

1. Employee uses apron to carry fruits and vegetables (CC)
2. Chemicals stored with food (CC)
3. Employee preps produce on top of garbage can (CC)
4. Dish rack overloaded with dishes (C&S)
5. Chickens being improperly thawed in sink (T&T)
6. Knife stored improperly (CC)
7. Employee handles salad without washing hands (CC, PH)
8. Raw chicken is stored above ready to eat food (CC)
9. Pot of hot soup is wrapped and stored in refrigerator to cool (T&T)
10. Chef improperly checks temperature of hot food (T&T)
11. Servers thumbs make contact with food (CC)
12. Server has towel tucked in pants (CC)
13. Server scoops ice from bin with glass (CC and physical hazard)
14. Buser handling glassware improperly (CC)
15. Bartender fails to wash hands after handling dirty ash tray (CC, PH)

16. Bartender scoops cherries with bare hands (CC)
17. Server handles glassware by the rim (CC)
18. Server uses hands to scoop food into carry-out container (CC)
19. Server has checkholder stuffed down back of pants (CC)

V. Supermarket – Bad Practices

Deli

1. Potentially hazardous food at room temperature (T&T)
2. Deli case door is open (T&T)
3. Walk-in cooler door open (T&T)
4. Raw chicken stored above ready-to-eat (CC)
5. Employee leaves walk-in cooler door open (T&T)
6. Employee mixes new food with old food
7. Employee scratches hair with gloved hand and handles ham (CC)

Bakery

1. Box of deli tissue is empty
2. Hot pies placed in cooler raising cooler temp (T&T)
3. Chemical and cleaning rag stored near food prep area (C&S)
4. Bakery employee licks icing from fingers while decorating (CC, PH)
5. Bakery employee wears excess jewelry while decorating cake (PH)

Meat and Seafood Dept

1. Ice shovel stored on the floor (CC)
2. Butcher moves from cutting chicken to cutting meat without cleaning and sanitizing knife (CC)
3. Spray cleaner stored next to butcher paper (CC)
4. Butcher wipes nose with his hand (PH)
5. Butcher wipes nose again (PH)
6. Employee is wearing excess jewelry (PH)
7. Employee's hand and tray of beef contaminate butcher paper (CC)
8. Contaminated paper used to wrap cooked shrimp (CC)

Buffet

1. Pan of chicken not being held properly (T&T)
2. Customer dips finger into salad dressing (CC)
3. Employee adds old soup to new
4. Employee places soup ladle on cleaning rag and then back to soup (CC)
5. Customer returns to food bar with dirty plate and contaminates ladle and tongs (CC)
6. Employee sprays glass cleaner near food and utensils (C&S)
7. Customer places head under sneeze guard and samples food (CC)
8. Carving fork becomes contaminated after touching heat lamp (CC)

Module 4 – Facility Operation – Quiz

1. Food safety can be best accomplished through:
 - a) process controls
 - b) detecting problems after they occur
 - c) subscription to food safety journals
 - d) relying upon the regulatory agency for detection of food safety hazards

2. The eight broad areas of food sanitation include all but one:
 - a) safety of the drinking water
 - b) serving low cholesterol foods
 - c) condition and cleanliness of food contact surfaces
 - d) prevention of cross contamination

3. Cleaning is a process which:
 - a) removes soil and prevents accumulation of food residues which may decompose or support the growth of disease causing organisms or production of toxins.
 - b) implies the complete destruction of all microorganisms.
 - c) reduces the number of disease causing organisms to acceptable levels.
 - d) insoluble particles are held in solution.

4. Sanitizing is a process which:
 - a) removes soil and prevents accumulation of food residues which may decompose or support the growth of disease causing organisms or production of toxins.
 - b) implies the complete destruction of all microorganisms.
 - c) reduces the number of disease causing organisms to acceptable levels.
 - d) insoluble particles are held in solution.

5. Sterilization is a process which:
 - a) removes soil and prevents accumulation of food residues which may decompose or support the growth of disease causing organisms or production of toxins.
 - b) implies the complete destruction of all microorganisms.
 - c) reduces the number of disease causing organisms to acceptable levels.
 - d) insoluble particles are held in solution.

6. A good cleaner has:
 - a) quick and complete solubility
 - b) good wetting and penetration action
 - c) good rinsing properties
 - d) all of the above

7. One factor that does not increase cleaning efficiency is:
 - a) select the right cleaner for the job
 - b) increase the turbulence
 - c) increase the temperature of the cleaning solution
 - d) decrease the contact time the cleaner has with the surface to be cleaned

8. When looking for an approved sanitizer, the label must include all but one:
 - a) EPA registration number
 - b) States the product may be used on food contact surfaces
 - c) The price per ounce of product
 - d) Does not require a potable rinse

9. Chlorine sanitizers:
 - a) are inexpensive, irritating to skin, corrosive, have a short shelf life.
 - b) Are expensive, non-irritating to skin, non-corrosive, have a long shelf life.
 - c) Are not compatible with hard water, requires the highest concentration of the 3 general types of sanitizers, produces foam on mechanical operations.

10. Iodine sanitizers:
 - a) are inexpensive, irritating to skin, corrosive, have a short shelf life.
 - b) Are expensive, non-irritating to skin, non-corrosive, have a long shelf life.
 - c) Are not compatible with hard water, requires the highest concentration of the 3 general types of sanitizers, produces foam on mechanical operations.

11. Quaternary Ammonium sanitizers:
 - a) are inexpensive, irritating to skin, corrosive, have a short shelf life.
 - b) Are expensive, non-irritating to skin, non-corrosive, have a long shelf life.
 - c) Are not compatible with hard water, requires the highest concentration of the 3 general types of sanitizers, produces foam on mechanical operations.

12. The slowest type of cooking method is:
 - a) conduction
 - b) convection
 - c) forced convection
 - d) microwave radiation

13. Heat resistance in bacteria is affected by all but:
 - a) Nature of the bacteria (psychrophile, mesophile, thermophile)
 - b) Spores vs vegetative cells
 - c) Type of food
 - d) Lack of free oxygen

14. All but one is an important food safety consideration in the cooking process:
 - a) heat stable toxins
 - b) size of the pan
 - c) effect of stuffing
 - d) size and weight of the food

15. The main purpose of hot holding is:
- prevent spores from germinating and/or vegetative cells from germinating
 - to reheat foods to safe temperatures
 - to make the food more palatable
 - a necessary part of the cooling process (i.e. cook – hot hold – cool)
16. A piece of equipment that is suitable for reheating food is:
- steam table
 - baine-marie
 - convection oven
 - crock pot
17. Freezing and long term frozen storage is primarily effective in controlling:
- virus
 - vegetative bacterial cells
 - parasites
 - bacteria spores
18. Upon completion of the cooking process, which of the following is true:
- the food is sterile
 - the food may contain spores which can turn into vegetative cells during the cooling process
 - the food may become re-contaminated during the cooling process
 - b & c
19. The 1999 Food Code requires food to cool from _____ degrees F to _____ degrees F in _____ hours and then to _____ degrees F with the next _____ hours.
20. All but one of the following factors affect the cooling rate of food:
- density
 - color
 - size and shape
 - agitation / stirring
21. The pH level below which pathogen growth and toxin production is not a concern is:
- 4.6
 - 6.4
 - 6.0
 - .85
22. Foods having a water activity level above .85 do not require refrigeration (True, False)
23. Packaging is not considered to be an approved method for the control of pathogens (True, False)

24. The best thermometer for measuring the temperature of thin foods is:

- a) mercury-in-glass
- b) bi-metallic stem
- c) thermocouple

25. All but one of the following is a food storage consideration:

- a) packaged foods should be stored in low light conditions
- b) raw food of animal origin should be stored so as not to contaminate ready-to-eat foods
- c) food should not be stored under open stairwells, in toilet rooms, and under exposed sewer lines
- d) food should be stored in closed containers at least 6 inches above the floor

Answer Key to the Facility Operation Quiz

1. a
2. b
3. a
4. c
5. b
6. d
7. d
8. c
9. a
10. b
11. c
12. a
13. d
14. b
15. a
16. c
17. c
18. d
19. 140 degrees to 70 degrees within 2 hours and then to 41 degrees within the next 4 hours
20. b
21. a
22. False
23. True
24. C
25. a

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Module 5 – Pest Control

Pass/Fail: The trainee obtain a minimum score of 80% on the quiz for this module.

Suggested Activities:

Arrange for the trainee to spend a day with a local licensed pest control operator that is actively servicing food service establishments. Ask the operator to explain his/her company's integrated pest control procedures, how to detect the presence of pests, types of products that are suitable for use in a food service establishment, types of products that must be applied by a licensed pest control operator, how to avoid an infestation, etc.

Discussion Topics for the Video “IPM: Control of German Cockroaches in Commercial Kitchens

- I. Integrated Pest Management
 - A. Is a balance of cultural, sanitation, and chemical procedures
 - B. Is more efficient
 - C. Results are longer lasting
 - D. More safe
 - E. Less dependant on chemicals

- II. The Cultural Component
 - A. Alters the pests environment
 - B. Includes:
 - 1. Changes in food buying practices
 - 2. Changes in food storage practices
 - 3. Changes in food preparation practices

- III. 5 Steps
 - A. Thorough Inspection
 - 1. Determine the level of infestation

2. Determine the source
 3. Determine the location of the problem in the facility
 4. Assess previous treatment strategies
- B. Identification – determine the type of pest
- C. Sanitation – elimination of harborage, food, and water
- D. Application of IPM Procedures
1. Mechanical – traps
 2. Cultural
 3. Biological
 4. Chemical
- E. Evaluation of Effectiveness

Module 5 – Pest Control Quiz

1. Matching: Put the letter of the description in Paragraph B before the correct term in Paragraph A.

Paragraph A

1. _____ Integrated Pest Management
2. _____ Mechanical Control
3. _____ Cultural Control
4. _____ Sanitation
5. _____ Biological Control
6. _____ Chemical Control
7. _____ First Step in an IPM Program
8. _____ Second Step in an IPM Program
9. _____ Third Step in an IPM Program
10. _____ Fourth Step in an IPM Program

Paragraph B

- a. use of physical methods to control pests
- b. elimination of pest harborages, water sources, and food sources
- c. process consisting of a balanced use of cultural, mechanical, biological, sanitation, and chemical procedures that are compatible and economically feasible.
- d. Involves the customer changing some of their normal habits or practices.
- e. Control of pests through the use of parasites and predators.
- f. The use of chemicals to control pest populations.
- g. Sanitation
- h. Identification

- i. Inspection
 - j. Evaluation
 - k. Application of two or more pest management procedures
 - l. Inventory of supplies
 - m. Scientific selection
2. Re-treatment of a pest problem would normally occur before the effectiveness of the initial treatment is evaluated.
- a. True
 - b. False
3. Communication with the client in a pest management program
- a. is not particularly important because you are the expert
 - b. is of some importance but your program can be successful without it
 - c. is extremely important because the client is in the facility every day and knows what is going on better than you do
4. Caulking and sealing cracks is a mechanical control method for controlling German cockroaches. Circle the benefit(s) derived from using this IPM method.
- a. reduces cockroach harborage
 - b. is toxic to cockroaches
 - c. increases future use of pesticides
 - d. helps save time on future services
5. Which two IPM methods are being used when a client is informed about proper garbage handling procedures?
- a. sanitation and insecticide application
 - b. inspection and biological control
 - c. cultural control and inspection
 - d. cultural control and sanitation

6. What information should be included in a pest control report?
 - a. harborage sites
 - b. pests identified
 - c. building deficiencies
 - d. recommended building repairs
 - e. all of the above

7. The first element of an IPM system is:
 - a. spraying
 - b. determine how pests are entering the building
 - c. install glue boards
 - d. equipment cleaning

8. Preventative housekeeping steps include all but one of the following
 - a. Keep pests out by carefully inspecting all incoming goods.
 - b. Proper building construction and maintenance
 - c. Good sanitation
 - d. Crack and crevice treatment

9. The three most common species of pests birds are:
 - a. pigeons, sparrows, starlings
 - b. woodpeckers, chick-a-dees, nuthatch
 - c. geese, ducks, swans
 - d. hawks, vultures, eagles

10. The first step in bird management is:
 - a. trapping
 - b. repellents
 - c. sanitation
 - d. shooting

11. The three major domestic rodents in the U.S. are:
 - a. house mouse, roof rat, Norway rat
 - b. raccoons, possums, skunks
 - c. house mouse, shrew, sewer rat
 - d. hamster, gerbil, Guinea pig

12. Rodents have all but one highly developed senses listed below
- balance
 - smell
 - touch
 - vision
13. Rats can jump up to:
- 2 to 3 feet vertically, 4 feet horizontally
 - can't jump due to poor balance
 - only a few inches
14. Signs of rodents include:
- Gnawings
 - Tracks
 - Urine stains
 - All of the above
15. The most basic fact a manager must know about rodent management is that:
- rodents are good swimmers
 - rodents leave droppings
 - rodents must have adequate food and harborage to live and multiply
 - rodents make rub-marks
16. Which of the following is true about the importance of housekeeping:
- removes food and harborage for rodents
 - enhances the baiting program
 - must include both the inside and outside of the facility
 - all of the above
17. Examples of non-chemical rodent population reduction methods include all but one of the following:
- glue boards
 - anticoagulant
 - snap trap
 - automatic trap
18. An important thing to remember when placing traps is that:
- rodents like to run touching a wall or object with the side of their body

- b. rats will travel up to 150 feet from their nest to feed while mice travel up to 30 feet to feed.
- c. Snap traps are placed with the trigger against the wall.
- d. All of the above

19. Bait in a food establishment must be:

- a. green in color
- b. placed in a neat pile away from food
- c. placed in an enclosed bait station
- d. placed only when the establishment is closed for business

20. All but one is true about anticoagulants:

- a. destroys the coagulating powers of the blood
- b. death is slow
- c. are relatively low in hazard to pets and livestock
- d. are only available in paraffin block form

21. All but one is true about many non-anticoagulants:

- a. generally do not promote bait shyness
- b. some are slow acting while others are fast acting
- c. can not be used in food establishments
- d. some are single dose while others must be eaten several times

22. The first priority of an insect pest control program is:

- a. inspection and detection
- b. pesticide application
- c. securing the services of a licensed pest control operator
- d. use a good insect repellent

23. The largest cockroach in the U.S. is:

- a. Oriental
- b. American
- c. German
- d. Asian

24. The most common moth infesting stored food in the U.S. is:

- a. monarch
- b. luna
- c. granary
- d. Indian meal

25. Stored food pests include:

- a. weevils
- b. beetles
- c. moths
- d. all of the above.

26. General treatment using an insecticide means:

- a. application into cracks and crevices
- b. application onto broad expanses of surfaces.
- c. application onto a limited area where insects are likely to occur
- d. application onto food contact surfaces

27. Residual insecticides

- a. may only be used for crack and crevice treatment in food areas
- b. are not allowed in food areas
- c. are approved for general treatment in food areas
- d. are restricted to spot treatment usage

28. A type of insect resistance to insecticides include:

- a. behavioral
- b. environmental
- c. genetic
- d. a and c

29. Which of the following is not true about fumigants:

- a. is a pesticide chemical
- b. is in a liquid form
- c. can penetrate almost any material
- d. are lethal to a wide spectrum of pests

30. Which of the following are true about fumigants

- a. are highly toxic
- b. act fast
- c. may be odorless
- d. all of the above

Answer Key for Pest Control Quiz

1.

1. c
2. a
3. d
4. b
5. e
6. f
7. I
8. H
9. K
10. J

2. B

3. C

4. A, D

5. D

6. E

7. B

8. D

9. A

10. C

11. A

12. D

13. A

14. D

15. C

16. D

17. B

18. D

19. C

20. D

21. C

22. A

23. B

24. D

25. D

26. B

27. A

28. D

29. B

30. D

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Module 6 – Food Microbiological Control

Pass/Fail: Trainee must obtain a minimum score of 80% on the quiz for this module.

Suggested Discussion Topics Upon the Completion of the Reading and Video Assignments:

- a. Explain that biological hazards account for over 80% of the foodborne outbreaks. Therefore it is important to understand the factors and mechanisms that affect microbial growth. The sanitarian must first understand the causes of foodborne illness before he/she can be effective at prevention.
- b. Explain that the sanitarian will encounter situations in food service establishments whereby training in microbiology will help the sanitarian to decide if a condition is a food safety hazard (i.e. The sanitarian finds food in the walk-in cooler at an internal temperature of 60% F. Is this a violation/hazard? What questions must be asked?)

Module #6 –Foodborne Microbiological Control– Quiz

1. Under ideal conditions, some bacteria have a generation time of as little as 30 minutes. Starting with 1,000 organisms, how many bacteria would be present after 4 hours.
 - a. 4,000
 - b. 16,000
 - c. 256,000
 - d. 32,000

2. The name for the segment of the bacteria growth cycle whereby the bacteria are adjusting to their new environment is called the:
 - a. Stationary phase
 - b. Lag phase
 - c. Log phase
 - d. Birth phase

3. All but one of the following are true
 - a. Spores cause foodborne illness
 - b. Spores survive normal cooking
 - c. Spores withstand hostile environmental conditions
 - d. Spores can germinate into vegetative bacteria

4. Which of the following is true:
 - a. All bacteria produce toxins
 - b. Only spore forming bacteria produce toxins
 - c. Cooking food to the proper temperature eliminates toxins
 - d. Foods, containing toxins, produce illness with short onset times

5. Viruses
 - a. Multiply in food
 - b. Require a living host cell to replicate
 - c. Are resistant to normal cooking temperatures
 - d. Must be present in extremely large numbers to make people ill

6. All but one is an example of fungi
 - a. Mold
 - b. Mushroom
 - c. Yeast
 - d. Lichen

7. Which of the following is not a factor affecting bacterial growth
 - a. Light
 - b. PH
 - c. Atmosphere
 - d. Nutrients

8. Psychrophiles pose special problems because they grow
 - a. At refrigeration temperatures
 - b. At hot temperatures
 - c. Without oxygen
 - d. With oxygen

9. Water activity refers to:
 - a. The amount of oxygen in water
 - b. The availability of water in food to an organism
 - c. The molecular activity of water in relation to freezing or boiling temperatures
 - d. The biological oxygen demand (BOD)

10. Most bacteria of public health significance will not grow when the water activity is _____ or less.

11. A natural or added chemical in food that prevents or restricts the growth of microorganisms is called
 - a. A gram negative substance
 - b. An inhibitor
 - c. A sanitizer
 - d. An emulsifier

12. Foods with a pH above 4.6 are said to be
 - a. High acid
 - b. Low acid
 - c. Pickled
 - d. Preserved

13. A foodborne illness that is caused by the growth of disease causing microorganisms within the body, that were ingested with the food, is called

- a. A foodborne infection
- b. A foodborne intoxication
- c. A foodborne indigestion
- d. A foodborne mesophilic episode

14. A microorganism that grows only in reduced oxygen environments is called

- a. Aerobe
- b. Anaerobe
- c. Facultative anaerobe
- d. Microaerophilic

15. The term “infective dose” refers to

- a. The foodborne illness antidote prescription
- b. The amount of microorganisms that must be ingested to cause illness
- c. The case fatality rate
- d. The number of bacteria on a Petrifilm plate count card

16. The term “onset” means

- a. The set of conditions that define the scope of a foodborne outbreak
- b. The list of symptoms associated with a foodborne illness
- c. The duration of a foodborne illness
- d. The length of time between the ingestion of contaminated food and the initial signs of symptoms of the illness

17. Which one of the following methods is useful in preventing Hepatitis A virus foodborne illness associated with the service of raw oysters

- a. Obtain the oysters from an approved source
- b. Keep the oysters refrigerated until service
- c. Use of growth inhibitors
- d. Modified Atmospheric Packaging (MAP)

18. Which of the following is not true about parasites

- a. Reproduction requires a specific host
- b. Some multiply in food
- c. Have a low infectious dose
- d. Typical long incubation periods makes epidemiological investigations difficult

19. Which of the following is effectively killed by freezing
- Bacteria
 - Virus
 - Bacteria spores
 - Parasites
20. All but one are important results of the rapid cooling process
- Minimizes the growth of viruses
 - Minimizes the growth of bacteria
 - Minimizes spore germination
 - Minimizes toxin production
21. All but one is true about the normal cooking process
- Does not deactivate spores
 - Destroys all toxins
 - Kills bacteria
 - Kills parasites
22. Retorting is a process
- Used to pasteurize food
 - Used to alter the pH of food
 - Used to produce commercially sterilized food
 - Used to alter the water activity level of food
23. Which of the following is not true about naturally occurring marine toxins
- Some are toxic at extremely low levels
 - Are some of the most poisonous substances in the world
 - Are destroyed by cooking
 - Are difficult to detect
24. Which of the following is not true about agricultural toxins
- Are generally grouped under the heading of mycotoxins
 - Are produced by bacteria
 - Can enter the food chain through contaminated animal feed
 - The best way to control the toxin is by preventing contamination of the food by toxic fungi.

Answer Key to the Introduction to Microbiology Quiz

1. c
2. b
3. a
4. d
5. b
6. d
7. a
8. a
9. b
10. .85
11. b
12. b
13. a
14. d
15. b
16. d
17. a
18. b
19. d
20. a
21. b
22. c
23. c
24. b

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Module 7 – Foodborne Illness Investigations

Pass/Fail: The trainee must obtain a minimum score of 80% on the quiz for this module.

Suggested Topics for Discussion Upon Completion of the Reading and Video Assignments:

- a. Introduce the trainee to the department's foodborne illness investigation team.
- b. Allow the trainee to observe an investigation in progress.
- c. Allow the trainee to review the report for the last one or two outbreaks
- d. Review the jurisdiction's relationship with the police department, hospitals, doctors, clinics, in the reporting and investigation of foodborne illness.
- e. Review the requirement for reporting foodborne illness complaints to MDA.
- f. Review the CDC's MMWR (Morbidity and Mortality Weekly Report)
- g. Discuss the relationship between MDA's Science & Technology Section, MDCH's Communicable Disease Epidemiology Division, and MDCH's Bureau of Laboratories
- h. Discuss the IAMFES "Procedures to Investigate Foodborne Illness"
- i. Introduce the trainee to the foodborne illness investigation kit.
- j. Introduce the trainee to EPI Info
- k. Introduce the trainee to APHA's "Control of Communicable Diseases Manual"
- l. Discuss the State of New York's "Foodborne Illness Update". Review the types of foods involved in foodborne illness outbreaks and the contributing factors. Review the type of organisms involved, the characteristics of each organism (infectious, intoxication, spore former, virus, parasite) and how the outbreak could have been prevented. What are the proper methods for cooking, reheating, cooling, hot/cold holding of food. Note the importance of personal hygiene as well as the role that physical and chemical hazards play in food safety.
- m. Discuss Foodnet and Pulsenet,

Review the Food Pathogen Advisor Program

- a. Note how the program can be used as a quick desk reference for finding information on any of the 250+ foodborne diseases on the data base.
- b. Note how the data base can be searched using symptoms (90 possible choices), foods involved, and incubation periods. Caution the trainee against routinely using duration as a parameter for which to base a search.

Discussion Topic Outline for the Video – “Foodborne Illness Surveillance”

- I. Introduction
 - A. Foodborne disease surveillance in New York State
 - B. Traditional foodborne disease data analysis
 - C. New vehicles and contributing factors
 - D. Linking foodborne disease data to HACCP
- II. Purpose of Foodborne Disease Surveillance
 - A. Immediate response
 - B. Long term trends
 - C. Identify new and emerging problems
 - D. Link foodborne disease data to regulatory program
- III. The Investigation
 - A. Sanitarians
 - B. Nurses
 - C. Epidemiologists
 - D. Lab scientists
- IV. Final Written Report
- V. New York State foodborne disease findings 1980 – 1991
 - A. Etiological Agents in New York State
 - 1. Bacterial 32%
 - 2. Unknown 32%
 - 3. Viral 25%
 - 4. Chemical 10%
 - 5. Parasite 7%
 - B. Major contributing factors to outbreaks
 - 1. Inadequate refrigeration 24%
 - 2. Contaminated ingredients 22%
 - 3. Inadequate cooking 21%
 - 4. Unapproved source 19%
 - 5. Infected person 18%
 - C. Methods of preparation
 - 1. Foods eaten raw or lightly cooked 20%
 - 2. Solid masses of PHFs 15%
 - 3. Multiple foods 12%
 - 4. Cook/serve 10%
 - 5. Natural toxicant 8%

D. Significant ingredients	
1. No significant ingredient	34%
2. Shellfish	20%
3. Finfish	7%
4. Beef	7%
5. Poultry	7%

VI. Use of data by field staff in food protection

VII. Summary

Quiz – Foodborne Illness Investigations

1. The environmental component of a foodborne illness investigation should:
 - a. compile information on the economic impact of the outbreak
 - b. identify contributing factors that lead to contamination, survival, or growth of the etiological agent.
 - c. Obtain laboratory confirmation of the etiologic agent from the patient
 - d. Determine the association between illness and some risk factor

2. The middle of a series of numbers that are ranked in order is referred to as the:
 - a. mean
 - b. median
 - c. mode
 - d. range

3. An outbreak is said to have a common source when
 - a. an outbreak is spread from person to person
 - b. a group of persons are exposed to a common agent and those individuals spread the disease to someone else
 - c. A group of persons are exposed to a common source of the agent
 - d. The outbreak is said to be propagated

4. The number of reports for a particular illness and the occurrence with which they are found in a population is called:
 - a. a medical incidence referral
 - b. a complaint frequency classification
 - c. Illness category report
 - d. Frequency distribution

5. The term “etiologic agent” refers to
 - a. The person who spreads a disease or illness
 - b. The cause(s) of an illness or disease
 - c. The potential for disease
 - d. The disease related food inventory

6. A foodborne outbreak is commonly defined as:
 - a. a group of people who ate a common meal
 - b. a group of people with vomiting and diarrhea
 - c. Two or more persons with the same illness, having similar features or pathogen, and there is a time, person, place association
 - d. An etiologic agent

7. A test of statistical significance
 - a. reflects the strength of the relationship between an exposure and a disease
 - b. explains the cause of a foodborne outbreak
 - c. provides an indication of the likelihood that the observed association is due to chance
 - d. none of the above

8. A confirmed case is:
 - a. an illness that is clinically compatible with the disease under consideration and for which there is no laboratory evidence of infection
 - b. an illness that is clinically compatible with the disease under consideration but laboratory evidence is inconclusive or incomplete
 - c. an illness that is clinically compatible with the disease under consideration and for which there is laboratory confirmation of the agent
 - d. none of the above

9. A suspect case is:
 - a. an illness that is clinically compatible with the disease under consideration and for which there is no laboratory evidence of infection
 - b. an illness that is clinically compatible with the disease under consideration but laboratory evidence is inconclusive or incomplete
 - c. an illness that is clinically compatible with the disease under consideration and for which there is laboratory confirmation of the agent
 - d. none of the above

10. A presumptive case is:
 - a. an illness that is clinically compatible with the disease under consideration and for which there is no laboratory evidence of infection
 - b. an illness that is clinically compatible with the disease under consideration but laboratory evidence is inconclusive or incomplete
 - c. an illness that is clinically compatible with the disease under consideration and for which there is laboratory confirmation of the agent
 - d. none of the above

11. Some of the functions of a team or task-force organized for investigating foodborne illness include:
- developing an emergency notification list including phone numbers
 - preparing a plan for notifying the public and press of outbreaks
 - selecting a coordinating person that all news media will be directed to
 - all of the above
12. A case of gastroenteritis was defined as three or more water stool or vomiting within a 24 hour period, with onset of symptoms between December 15th and January 9th. This is an example of:
- outbreak related definition
 - hypothesis
 - working case definition
 - all of the above
13. The case investigation questionnaire is designed to answer key questions including:
- does the individual have the reported illness
 - who might this person expose while infectious
 - what foods did the person eat
 - all of the above
14. A secondary case is:
- a person who has the signs and symptoms of the illness under investigation and was exposed to the event
 - a person who became infected from person to person contact with an outbreak related case or from a vehicle contaminated by an outbreak related case
 - a person who has the signs and symptoms of the illness under investigation and had contact with the outbreak related case many incubation periods later.
 - A and c
15. We seek and manage secondary cases in a foodborne outbreak because:
- the potential for additional transmission of the agent exists
 - we want to prevent further transmission of the agent by secondary cases
 - investigators need to determine if the exposed person has sought or received medical help
 - all of the above

16. The Chi square statistic:

- a. compares the actual number of ill with the expected number
- b. determines if the real cause of the illness is in the food prep review
- c. is used to establish risk
- d. is used to confirm a causal relationship

17. Which of the following are factors that can contribute to foodborne illness:

- a. the composition of the food is such that bacterial growth is supported
- b. the food remains at temperatures that favor bacterial growth
- c. there is an interval of time sufficient to produce a dangerous quantity of organisms or toxins
- d. all of the above

18. The primary purpose of a foodborne illness investigation is:

- a. provide additional research into the cause of foodborne illness
- b. support a tentative diagnosis of the disease
- c. provide factual information for possible legal action
- d. determine the circumstances leading to the outbreak and to halt the outbreak

19. Which one of the following foodborne illness issues are true:

- a. All cases in a foodborne illness outbreak will experience the same symptoms
- b. Spores can not survive typical cooking temperatures
- c. Mishandling food doesn't guarantee illness but increases the probability of foodborne illness
- d. The only evidence necessary to confirm an outbreak are the results of the attack rate table

20. The refined hypothesis

- a. will always consist of an exact explanation of the outbreak occurrence
- b. will more closely explain the cause of the outbreak occurrence
- c. will never progress beyond a preliminary estimate of the cause
- d. hypotheses are theories and, as such, can never have any degree of reliance

Answer Key – Module 7 – Foodborne Illness Investigations

1. b
2. b
3. c
4. d
5. b
6. c
7. a
8. c
9. a
10. b
11. d
12. c
13. d
14. b
15. d
16. d
17. d
18. d
19. c
20. b

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Module 8 – Introduction to HACCP

Pass/Fail: The trainee must obtain a minimum score of 80% on the quiz for this module

Suggested Topics for Discussion Upon Completion of the Reading and Video Assignments:

- a. Discuss the role of HACCP in your department's food safety program.
- b. Review of the types of establishments in the jurisdiction that have operating HACCP plans.
- c. Discuss your department's policy/procedures for using HACCP techniques as an integral part of the routine inspection process (see Procedures for Field Standardization of Local Health Department Trainers)
- d. Discuss how your department uses HACCP principles in the review of plans and specifications for new and remodeled food service establishments.
- e. Discuss how your department uses HACCP principles in the investigation of foodborne illness outbreaks.
- f. Take the trainee on a tour of an establishment in your jurisdiction that has an approved HACCP food safety system. Review the records and other documentation of the establishment's HACCP system. Interview management and the employees to determine how the system is operating.

Discussion Topic Outline for the Video "What is HACCP"

- I. History
 - a. Prevention system vs reactive system
 - b. The focus of HACCP is foodborne illness prevention
- II. Seven Principles of HACCP
 - a. Hazard analysis
 - b. Critical control points
 - c. Establish critical limits
 - d. Monitoring the process
 - e. Corrective action
 - f. Record Keeping
 - g. Verification
- III. HACCP

- a. Is at the cutting edge of food safety
- b. Is very effective when applied to the receiving, storage, preparation, and service components of a food service operation.

Discussion Topic Outline for the Video “Critical Control Points in Retail Food Protection”

- I. Definition and Overview
 - a. Is the step controllable
 - b. CCP’s being controlled for public health reasons
 - c. Flow
 - d. Only a few CCPs
- II. Making chicken soup & salad – what’s critical?
 - a. CCPs for cook and serve
 - b. CCPs for cook/chill
 - c. CCPs for never cooked
 - d. CCPs in a grocery store
- III. Summary

Discussion Topic Outline for the Video – “Managing Food Safety”

- I. The team approach
 - a. Trained and knowledgeable staff
 - b. Food safety plays a role in decision making
 - c. Management as well as line employees have food safety responsibilities

Module # 8 – Introduction to HACCP Quiz

1. List the 7 steps of HACCP
 - A.
 - B.
 - C.
 - D.
 - E.
 - F.
 - G.

2. HACCP is a combination of (select all that applies)
 - A. Effective communication skills
 - B. Understanding processes and science
 - C. Risk evaluation and control
 - D. Team approach

3. The word “Hazard” in the context of HACCP means:
 - A. Any biological, chemical, or physical property that may cause an unacceptable consumer health risk.
 - B. Any point in a specific food preparation procedure at which control can be applied to prevent, eliminate, or reduce a food safety risk to acceptable levels.
 - C. Unsafe conditions such as slippery floors, cracks in the sidewalk, blind driveway entrance, etc
 - D. One or more standard that must be met to insure that a CCP effectively prevents, eliminates, or reduces a food safety risk.

4. The word “Risk” in the HACCP context means: The probability of an undesirable event that would result in an illness or death.
 - A. True
 - B. False

5. During the product flow evaluation, you identify a step that does not reduce the likelihood of a hazard to an acceptable level and no possibility exists for future control of the hazard. This particular step is a critical control point.
 - A. True
 - B. False

6. HACCP is designed to replace sanitation and good manufacturing practices.
- A. True
 - B. False
7. A food service establishment operator PURCHASES ground beef patties from an approved supplier. The food is not examined for quality during the RECEIVING step. The raw ground beef is STORED in the walk-in cooler above ready to eat food. The ground beef patties are COOKED to order on the grill and SERVED immediately. List the step(s) that are considered to be critical for serving a safe ground beef patty.
-
8. A restaurant is cooking a large beef round, holding it under heat lamps, and serving portions on a customer order basis. Leftovers are sliced, placed in a 2 inch metal pan, and placed in a blast chiller. During the risk analysis process, the HACCP team identified *C. perfringens* as a possible microbial hazard that could be a problem with leftover cooked beef items. You determine _____ to be the CCP to control the identified hazard.
- A. Employee hygiene
 - B. Rapid cooling to prevent germination of spore-forming *C. perfringens*
 - C. Initial raw meat cooking temperature of 130 F for 121 minutes
 - D. Obtaining pathogen free meat from an approved source.
9. A restaurant serves raw oysters in the shell to its customers. Which of the following would be considered to be critical control points? (more than one may apply)
- A. Approved source
 - B. Cold holding
 - C. Insect/rodent control
 - D. Approved water supply
10. A restaurant prepares fried rice. Rice is cooked, cooled, stored cold, mixed and heated for next day service. The risk analysis process determined that *B. cereus* is a concern as a possible microbial hazard. You determine _____ to be the CCP to control the identified hazard.
- A. Cooking the raw rice to 165 F
 - B. Reheating the cooked rice mixture to 165 F
 - C. Cooling & cold holding the cooked rice
 - D. Employee health

11. A restaurant has a large salad bar offering fresh fruit and vegetables. The risk analysis process determined Norwalk and Hepatitis A viruses to be possible microbial hazards. You determine the following choice(s) to be essential for minimizing the hazard (more than 1 may apply) _____
- A. Employee health and hygiene
 - B. Washing / sanitizing fruits and vegetables
 - C. Commercial source
 - D. Storing fruits and vegetables below 45 degrees
12. A process that is used to determine if any raw or partially cooked foods are served; the types of potentially hazardous foods; if any food items require advanced preparation; and what types of foods may be offered as specials or seasonal items is called:
- A. An interrogation
 - B. A menu review
 - C. A flow chart
 - D. Verification
13. Classic HACCP focuses upon each individual menu item. Michigan's modified HACCP focuses upon the critical processes in use by the establishment.
- A. True
 - B. False
14. All but one of the following are part of the modified HACCP team conference approach.
- A. Determine management's policies & procedures
 - B. Determine if employees understand and carry out management's policies
 - C. Develop a flow chart for each menu item
 - D. Prepare a food safety improvement plan
15. All but one of the following are keys to success in implementing HACCP
- A. Trained staff
 - B. Enthusiastic operators
 - C. Frequent short follow-up visits
 - D. Making certain the operator follows the health department's food safety plan
16. HACCP can not occur in a facility that is otherwise poorly managed.
- A. True
 - B. False
17. The routine inspection is the only effective approach for assuring food safety.

- A. True
- B. False

18. Verification means:

- A. Monitoring critical control points
- B. Recording monitoring observations
- C. Taking steps to make certain that the HACCP process is working properly
- D. Confirming the names of the HACCP team members

19. A critical violation is the same as a critical control point

- A. True
- B. False

20. A HACCP based inspection focuses upon structural and equipment issues.

- A. True
- B. False

Answer Key to the Introduction to HACCP Quiz

1. Identify the Hazards, Identify the CCPs, Establish preventative measures with critical limits, Establish procedures to monitor each CCP, Establish corrective action, Establish effective record keeping system, Establish procedures to verify the HACCP system is working correctly.
2. A,B,C,D
3. A
4. A
5. B
6. B
7. COOKING
8. B
9. A,B
10. C
11. A,B
12. B
13. A
14. C
15. D
16. A
17. B
18. C
19. B
20. B

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Module 9 –Introduction to Food Labeling

Pass/Fail: The trainee must obtain a score of 80% on the quiz for this module

Suggested topics for discussion:

1. Discuss how the sanitarian can use his/her knowledge of labeling to determine if a food product requires any special handling (i.e. refrigeration) for food safety.
2. Discuss the provisions of the food code that relate to labeling
 - a. 3-201.11 Compliance with Food Law
 - b. 3-202.17 Shucked shellfish packaging and identification
 - c. 3-202.18 Shellstock identification
 - d. 3-602.11 Food Labels
3. Contact the local MDA regional office and make arrangements for the trainee to meet with a staff labeling expert. Visit a grocery store where many labeled products are stored for the purpose of helping the trainee become comfortable with reading labels and determining precautions for handling food products safely in accordance with the labeling requirements.
4. Review the FDA web site "A Food Labeling Guide"

Introduction to Food Labeling Quiz

- 1) NLEA stands for the Nutrition Labeling & Education Act of 1994. TRUE or FALSE
- 2) Labeling regulations allow a fat free claim on foods with less than .5 grams of fat per serving. TRUE or FALSE
- 3) A health claim on a label characterizes the relationship of any nutrient or other substance in food to a disease or health-related condition. TRUE or FALSE
- 4) A food is low in sodium if it has less than 140 mg of sodium. TRUE or FALSE
- 5) “Lean” and “Extra Lean” can be used to describe the fat content of meat, poultry, seafood, and baby food. TRUE or FALSE
- 6) Which group of food should be labeled “Refrigerated for Quality”?
Group A Group B Group C
- 7) Which group of foods should be labeled “Important Must Be Refrigerated to Maintain Safety”?
Group A Group B Group C
- 8) Which of the following products is exempt from Food Labeling Regulations?
Eggs Milk Medical Foods
- 9) What is the recommended Daily Value for Protein?
20 grams 50 grams 65 grams
- 10) Which if the following food(s) are commonly known to cause serious allergenic responses?
Shellfish peanuts both
- 11) The “Principle Display Panel” is the portion of the package that is most likely to be seen by the consumer at the time of purchase. TRUE or FALSE
- 12) The “Statement of Identity” is the common or usual name of the food. TRUE or FALSE
- 13) All but one of the following must appear on the statement of identity:
 - a) Artificial flavorings
 - b) Artificial sweeteners
 - c) Form of the food (i.e. whole, sliced, diced)

d) Cooking instructions

- 14) A food product made from more than one ingredient must contain an “Ingredient List” TRUE or FALSE
- 15) It is not necessary to place the name and address of a responsible party on the label. TRUE or FALSE
- 16) A “Sell By Date” is only recommended to be placed on the label for perishable foods. TRUE or FALSE
- 17) Persons planning to wholesale processed meat products are subject to USDA jurisdiction and labeling standards. TRUE or FALSE
- 18) It is not necessary for packaged food to have a code to enable positive lot identification if the name and address of the responsible party is clearly displayed on the label. TRUE or FALSE
- 19) The size of the print type on a label is not regulated. TRUE or FALSE
- 20) All certified colors must be listed in the ingredient statement by their common name. TRUE or FALSE

Answer Key for Introduction to Food Labeling Quiz

1. F
2. T
3. T
4. T
5. F
6. Group C
7. Group A
8. Medical Foods
9. 50 grams
10. both
11. T
12. T
13. D
14. T
15. F
16. F
17. T
18. F
19. F
20. T

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Module 10 – Michigan's Food Laws & Regulations

Pass/Fail: There is no quiz for this module

Suggested Discussion Topics:

- A. Review the 1999 Food Code with the trainee. Use the "Preface" as a guide to discuss:
 - Nature and extent of foodborne illness in the U.S.
 - The history of the code, purpose, and authority
 - Public health and consumer expectations
 - Advantage of uniform standards
 - The Food Code as a HACCP model
 - Information to assist the user
 - The Code revision process
- B. Have the trainee complete the exercise in the "Michigan's 1999 Food Code Self-Study Familiarization Guide".
- C. Use the "1999 Food Code Train the Trainer" CD to provide a chapter by chapter overview of the Food Code.
- D. Note how the Code is a tool that is used to implement and enforce the food safety principles learned in the other modules of this training program.
- E. Review Michigan's Food Law 2000. Include in the discussion:
 - Jurisdictional Issues
 - Review the sections of the code that apply to food service
 - Review licensing procedures.
 - Powers and duties of the local health department
 - Review the types of food service establishments to be licensed and inspected by the local health department (fixed, temporary, special events, mobile industrial caterer)

Discussion Topics for the Video: "The Food Code"

- I. The Inspection Process
 - a. Person in charge
 - b. Question and answer dialogue and open ended questions
 - c. Food flows

- d. Exclusion/restriction of sick employees
- e. Personal hygiene and handwashing

II. Shellfish and their Source

- a. Quality of seafood
- b. Requirements for documenting source
- c. Interstate Certified Shellfish Shippers List
- d. Identification tags for shellstock found at retail level
- e. Ninety day retention of shellstock tags and shucked shellfish

III. Safe Food Handling Practices

- a. Temperature for receiving and holding refrigerated potentially hazardous foods
- b. Use of pasteurized products for any liquid, frozen, and dry egg or milk products
- c. Separation of raw versus ready-to-eat foods
- d. Temperatures for cooking, reheating, thawing, cooling
- e. Reduced oxygen packaging procedures

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Module 11 – Enforcement Procedures

Pass/Fail: The trainee must obtain a score of 80% on the quiz for this module

Suggested topics for discussion:

- a. Discuss the department's enforcement policy. Relate the communication skill module to voluntary compliance communication techniques. What specific actions does the department expect the sanitarian to take when, for example, noncritical, repeat noncritical violations, critical violations, repeat critical violations, and imminent health hazards are found?
- b. Discuss the department's internal administrative enforcement structure. Introduce the trainee to key people involved in the enforcement aspects of this program. Who provides oversight to make certain that staff is conducting inspections in a uniform manner? Who is responsible for making certain that enforcement is conducted uniformly? Who conducts office conferences, informal conferences, and hearings? Who can issue citations, civil fines and penalties?
- c. Discuss the individual forms that are available for Hold Orders, Stop Work Orders, Voluntary Food Destruction, Notice of Informal Conference, Notice of Hearing, etc. Who is responsible for issuing the notices. What type of internal authorization is necessary before a notice can be issued? Are there any department "form letters" that must accompany the various notices?
- d. Discuss the types of criminal enforcement mechanisms that are available. Who is authorized to bring cases to the prosecutor? When are warrants and injunctions appropriate?
- e. Allow the trainee to observe administrative and criminal enforcement proceedings.

Module 11 – Enforcement Procedures – Quiz

1. A “Chronic” violation is
 - a. A critical violation
 - b. A noncritical violation
 - c. Any violation that is corrected and then repeated on a frequent cycle
 - d. Any violation which requires immediate suspension of the license

2. “Compliance at the Time of an Inspection” means all but one of the following:
 - a. No imminent or substantial health hazards
 - b. Class I critical items are not present
 - c. Class II critical items are corrected according to correction schedules
 - d. Class I violations found are chronic

3. Which of the following is not an imminent hazard
 - a. Loss of electrical power
 - b. Loss of water supply
 - c. Failure to label chemicals properly
 - d. Severe vermin infestation

4. An office conference is held after the informal hearing. TRUE or FALSE

5. The appropriate enforcement action to be taken when an establishment is found to be operating without a license is:
 - a. Order to cease operation
 - b. Stop work order
 - c. Office conference
 - d. Hearing

6. The appropriate enforcement action to take when imminent hazards are found is
 - a. Order to cease operation immediately
 - b. Stop work order
 - c. Office conference
 - d. Hearing

7. The appropriate enforcement action to take when chronic unsanitary conditions are found is
 - a. Monetary civil penalties
 - b. Office Conference
 - c. Stop work order
 - d. A and B

8. The purpose of a formal hearing is to
 - a. Meet with the owner to explain the violations
 - b. Determine if there is sufficient evidence to mandate a compliance schedule
 - c. Determine if a license should be suspended or revoked.
 - d. Set a court date for arraignment of the operator

9. An informal hearing may be held for the following reasons:
 - a. Failure to comply with an order of the health officer
 - b. Interfering with the health officer
 - c. A written request from the licensee
 - d. All of the above

10. A decision of the Hearing Board can be appealed to the courts. TRUE or FALSE

11. A formal hearing is a casual unorganized discussion between the sanitarian and the operator. TRUE or FALSE

12. Food that is believed to be contaminated or unfit for human consumption can be removed from the food chain by:
 - a. A voluntary food destruction agreement
 - b. By placing a hold order on the food
 - c. Issuance of a stop work order
 - d. A and B

13. Food service establishment operators are required to report all but one of the following conditions to the department:
 - a. Fire
 - b. Flood
 - c. Explosion
 - d. Severe vermin infestation

14. A legal process to restrain or prevent the operation of a food service establishment is:
- Informal conference
 - Civil penalty / citation
 - Injunction
 - Warrant
15. When a food holder is issued, the operator has the right to:
- A Hearing
 - Compensation for the cost of the food
 - Give the food to charity
 - Reheat the food, hot hold, and serve
16. Food that is found to be putrified can be ordered to be immediately destroyed. TRUE or FALSE

Answer Key for Enforcement Procedures Quiz

1. c
2. d
3. c
4. FALSE
5. a
6. a
7. d
8. c
9. d
10. TRUE
11. FALSE
12. d
13. d
14. c
15. a
16. TRUE

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Module 12 – Introduction to the Plan Review Process

Pass/Fail: The trainee must obtain a score of 80% on the quiz for this module

Suggested topics for discussion:

1. On the surface, this module appears very complex and highly technical. Explain to the trainee that the purpose of this module is to introduce the trainee to the plan review process and to provide a source of reference information. The trainee should read the module to understand the over-all plan review process and have an appreciation for the various disciplines involved and the technical skills that are necessary to conduct a professional plan review.
2. Introduce the trainee to your department's plan review specialist. Have him/her spend a day or two observing the plan review process.
3. Show the trainee how to use NSF, ETL, UL manuals and the internet to find equipment approval information.
4. Introduce the trainee to the local building, plumbing, mechanical, and electrical inspectors. Discuss how your department cooperates with the various building officials.
5. Allow the trainee to observe a pre-opening inspection.
6. Provide some examples of how the plan review process has caught problems on paper before they turned into expensive construction errors.
7. Introduce the trainee to the MDA plan review consultant.
8. Arrange for the trainee to spend a day with a private professional food service establishment consultant (architect, designer, equipment sales representative) for the purpose of understanding the challenges of developing a set of plans and specifications for a customer and submitting the final plans to the various governmental agencies for approval.

Module 12 – Introduction to the Plan Review Process – Quiz

1. Food establishment plan review is recognized as an important food program that allows:
 - a. Regulatory agencies to ensure that food establishments are built or renovated according to current regulations or rules.
 - b. Industry to establish an organized and efficient flow of food.
 - c. Regulatory agencies to eliminate code violations.
 - d. All of the above.

2. “Acceptable food equipment” means:
 - a. Any equipment designed for food.
 - b. Only equipment that is certified or classified for sanitation by an ANSI accredited certification program.
 - c. Equipment that is constructed in accordance with the Food Code.
 - d. Only equipment that is made from stainless steel.

3. The only time a plan review needs to be conducted for a food establishment is when it first opens. True or False

4. Food establishment applicants in need of plan review approval should submit the following to the regulatory authority for review:
 - a. A completed plan review application form.
 - b. Blueprints, equipment specification sheets, and site plan.
 - c. A proposed menu and written standard operating procedures (SOPs).
 - d. All of the above

5. Specific refrigeration needs should be based on all but one of the following:
 - a. The menu.
 - b. Age of guests to be served.
 - c. Frequency of delivery.
 - d. Number of meals.

6. It is advisable to design one area in the establishment to handle operations involving both raw and ready to eat products: True or False

7. A handwashing lavatory shall be located for convenient use by employees in:
 - a. The dumpster area
 - b. Dry storage room
 - c. Food preparation, food dispensing, warewashing, and toilet room areas
 - d. Chemical storage areas

8. Where non-municipal water supply and sewage disposal facilities are utilized, the location of the private facilities should be noted:
 - a. On the plans
 - b. Only at the actual site
 - c. On the license application
 - d. Filed with the Department of Public Works

9. The plan review process should focus on:
 - a. The flow of food through the establishment
 - b. The source and quality of the food
 - c. The preparation processes (i.e. cooking, cooling, holding, reheating)
 - d. All of the above

10. Whenever possible, equipment should be mounted on _____ to facilitate easy moving, cleaning, and provide a flexible operation.
 - a. Wooden blocks
 - b. Concrete
 - c. Approved castors & wheels
 - d. Bricks

11. Wheeled equipment should be provided with easily accessible _____ or the utility service lines should be flexible and of sufficient length to permit moving the equipment for cleaning.
 - a. Legs
 - b. Rollers
 - c. Quick disconnects
 - d. All of the above

12. It is recommended that the highest shelf for practical use is _____ feet and the lowest one should be _____ inches from the floor. Clearance between the shelves should be at least _____ inches.
- 7', 6", 15"
 - 3", 6", 9"
 - 6', 12", 20"
 - 12', 6", 15"
13. Hot water temperature shall be at least _____ for handwashing, _____ for mechanical warewashing, and _____ for sanitizing.
- 150, 110, 165
 - 110, 150 to 165, 165 to 180
 - 165, 150, 110
 - 110, 180, 150
14. One way to find the capacity in racks per hour for each make and model of warewashing machines is to refer to the _____
- Plans
 - Application form
 - Manufacturers specification sheets
 - None of the above
15. A recommended or acceptable storage location for working supplies of cleaners and sanitizers is on a wire shelf below the drainboard of a 3 compartment sink. True or False
16. Which of the following statements would NOT be considered an acceptable finish?
- Quarry tile on the kitchen floor
 - Wooden floor in kitchen
 - Commercial grade vinyl composition tile on the floor in the food prep and warewashing area.
 - Sealed concrete or commercial grade vinyl composition tile or sheets in the food storage area.
17. Dark colors are recommended for walls and ceilings. True or False
18. Toilet facilities shall be accessible and installed in accordance with the:
- Monroe doctrine
 - Americans with Disabilities Act
 - State and local laws
 - b & c

19. Cross connections are acceptable between potable water supplies and nonpotable or questionable water supplies? True or False
20. Devices shall be installed to protect against backflow and back siphonage at all fixtures and equipment unless an _____ is provided
- Air gap
 - Atmospheric vacuum breaker
 - Hose bib
 - Quick disconnect
21. An _____ is a mechanical device which automatically air vents a pipeline to prevent backsiphonage.
- Air break
 - Atmospheric vacuum breaker
 - Air gap
 - Dual check valve
22. An _____ and an _____ are two types of indirect connections.
- Air gap
 - Atmospheric vacuum breaker
 - Air break
 - a & c
23. Effective air curtains or vestibules with self-closing doors must be provided to preclude the entry of insects at loading docks and delivery rooms. True or False
24. Lighting intensity at food establishments shall be:
- At least ____ foot candles at a surface where a food employee is working with food or with utensils or equipment such as knives, slicers, grinders, or saws where employee safety is a factor.
- At least ____ foot candles at a surface where food is provided for consumer self-service such as buffets and salad bars where fresh produce or packaged foods are sold or offered for consumption.
- A least ____ foot candles in walk-in refrigerator units and dry storage areas and in other areas and rooms during periods of cleaning.
- 20, 30, 50
 - 50, 20, 10
 - 10, 20, 50
 - 20, 50, 10

25. All new exhaust ventilation systems:
- a. Shall be constructed in accordance with state law
 - b. Shall have a ventilation balance report
 - c. Shall have a smoke test
 - d. All of the above
26. The water supply lines provided to mop sinks that are used for cleaning mops and for the disposal of mop water (or similar liquid waste), do NOT need to be properly protected against backsiphonage. True or False
27. Room or areas separate from food preparation, storage or service areas, and utensil washing and storage areas must be provided for employees who are required to change clothes in the establishment. True or False
28. Garbage and refuse containers, dumpsters, and compactor systems located outside shall be stored:
- a. On a dirt ground
 - b. On or above a smooth surface
 - c. In an area which promotes access to pests
 - d. On or above a smooth surface of nonabsorbent material

Answer Key for Plan Review Quiz

1. d
2. c
3. False
4. a
5. b
6. False
7. c
8. a
9. d
10. c
11. c
12. a
13. b
14. c
15. True
16. b
17. False
18. d
19. False
20. a
21. b
22. d
23. True
24. b
25. d
26. False
27. True
28. d

PLUMBING AND CROSS-CONNECTION CONTROL BACKFLOW PREVENTION QUIZ

- T or F 1. A cross-connection is a link or union between a potable water supply and any other system or apparatus through which a contaminant or pollutant may be transferred via some form of backflow into the drinking water system.
- T or F 2. Backflow is the reverse flow of water in a plumbing system.
- T or F 3. Backpressure is caused by a reduction in the system's pressure.
- T or F 4. Backpressure can occur through an indirect cross-connection between a system that is operated at a higher pressure than the potable water supply.
- T or F 5. The least reliable backflow preventer is the dual check valve.
- T or F 6. A pressure **vacuum breaker will protect against** back-siphonage, but it will not protect against backpressure.
- T or F 7. Atmospheric vacuum breakers must always be installed beyond the final control (shut off) valve.
- T or F 8. An air break is another term for air gap.
- T or F 9. A typical direct cross-connection is an ordinary hose.
- T or F 10. Hose bibb vacuum breakers are only approved for noncontinuous pressure situations.
- T or F 11. The best "fool proof" method of preventing backflow is the installation of the reduced pressure zone backflow preventer (RPZ).
- T or F 12. The pressure vacuum breaker must be installed at least 6 inches above the highest inlet down stream and conversely the atmospheric vacuum breaker must be installed at least 12 inches above the highest inlet or flood level rim down stream.
- T or F 13. A reduced pressure zone backflow preventer (RPZ), pressure vacuum breaker (PVB), double check value assembly, and a dual check valve with an intermediate atmospheric vent all require periodic testing to assure proper operation.
- T or F 14. A backflow device that has a vent to the atmosphere may not be installed in a pit.
- T or F 15. An inlet from a potable water supply that terminates in a pit would be considered a submerged inlet.
- T or F 16. The barometric loop is a very effective design of the plumbing system to protect against backpressure. The only limiting factor with its installation is that it requires at least a 35 foot vertical clearance in the facility.

17. A garbage disposal typically has a submerged inlet that automatically provides water to the grinding process, when the unit is turned on. Usually this cross-connection is protected with an atmospheric vacuum breaker (AVB) that is installed at least 6 inches above the flood level rim of the fixture. Relative to the location of the electronic solenoid shut off valve, which one of the following is true?

- a. The shut off valve can be installed on either side of the AVB:
- b. The shut off valve must be installed on the down stream side of the AVB.
- c. The shut off valve must be installed on the supply side of the AVB.
- d. The shut off valve must be installed .on the supply side of the AVB and elevated at least 12 inches above the AVB. .

ANSWER KEY TO THE BACKFLOW PREVENTION QUIZ

1. **TRUE**, a cross-connection is any direct or indirect connection that could possibly join a potable and nonpotable or unknown source and the transfer of a contaminate or pollutant could occur via back-siphonage or backpressure.
2. **TRUE**, backflow is a reverse flow in the plumbing system that is opposite to the expected or intended direction. Backflow can be caused by backpressure or back-siphonage.
3. **FALSE**, backpressure can occur through a direct cross-connection (not indirect) when the "other" system's pressure exceeds that of the potable water supply. Flow will occur in the direction of lower pressure (least resistance), from higher pressure to lower pressure.
4. **FALSE**, backpressure can only influence a potable system via a direct connection. Remember, a direct connection can be subject to backpressure and back-siphonage. An indirect connection is only subject to back-siphonage.
5. **TRUE**, a dual check valve can not be tested and the unit is not vented to the atmosphere. Many times, but not always, a vented device will leak when one of the check valves fail.
6. **TRUE**, a PVB is approved for high hazard, continuous pressure and **NO POTENTIAL BACKPRESSURE**.
7. **TRUE**, all shut off valves must be installed on the supply side of the AVB, otherwise the device would be subjected to continuous pressure, which the device is not approved for.
8. **FALSE**, air gap is the vertical, unobstructed air space between the flood level rim of a fixture and the supply inlet. Air break is the vertical air space or separation between a waste line and floor drain or floor sink. Air breaks are installed to prevent sewage back-ups from entering food preparation equipment and sinks.
9. **FALSE**, a hose is a typical **INDIRECT** cross-connection, not a direct cross-connection.
10. **TRUE**, HBVB's are not approved for continuous pressure - water pressure on both side of the vacuum breaker for more than 12 hours.
11. **FALSE**, the RPZ is the "best" device available for high hazard, continuous pressure, backpressure, back-siphonage conditions. The device is testable and even protects the supply if the unit fails (check valves foul). The "fool proof" or most desirable method of preventing backflow is the "air gap". It is simple and nonmechanical.
12. **FALSE**, the PVB is to be installed at least 12 inches above the highest inlet down stream and conversely the AVB_ is 6 inches above the highest down stream inlet or flood level rim.

13. **FALSE**, the RPZ, PVB and double check valve assemblies can be tested. Dual check valves with intermediate atmospheric vents can not be tested.

14. **TRUE**, a vented backflow device submerged in a pit full of water could permit this nonpotable water to be drawn into the potable supply under back-siphonage conditions. Also, under static conditions the vent chamber could fill with the pit water and affect up stream or down stream under various water flow conditions.

15. **TRUE**, a submerged inlet is an inlet that terminates below the flood level rim of a fixture. If a situation necessitates a submerged inlet, then the cross-connection must be protected with an appropriate backflow device.

16. **FALSE**, the barometric loop only provides protection against back-siphonage. An absolute vacuum can only "pull" water up a column 33.9 feet, therefore, only backpressure can create adequate pressure to go up and over the column.

17. **C.**, all shut off devices must be on the supply side of the AVB and be accessible.