

**Massachusetts  
Public Health Inspector Training  
(MA PHIT)  
Food Certificate Program  
Day 1, Session 4  
Inspection Equipment**

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**Inspection Equipment**

**Learning Objectives**

- List proper food inspection equipment
- Categorize equipment as required or optional
- Explain proper use and care of equipment



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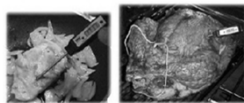
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**Equipment—Use and Care**

- **Proper inspection equipment and the knowledge of how to use and care for the equipment is necessary for an inspector to be able to identify food safety hazards which could lead to foodborne illness.**



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### Inspection Equipment List

- Official identification
- Necessary forms (MA FEIR), regulations, guides
- Professional Appearance
  - Proper attire and shoes
  - Lab coat or protective or identifying clothing
  - Head cover

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### Inspection Equipment List, *cont.*

- Adequate temperature measuring devices
- Alcohol swabs
- Chemical test kits
- Flashlight
- Black light



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### Optional Inspection Equipment

- Measuring device for distances, time
- Light meter
- pH meter
- Water activity meter
- Camera
- Communications equipment



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### Types of Temperature Measuring Devices

- Bimetal bayonet (dial)
- Bimetal digital
- Thermistor
- Thermocouple
- Infrared
- Dataloggers
- Time-temperature indicators
- Maximum registering

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### Bimetal



- Thermometers come in many different styles and are made by many different manufacturers.
- Sanitize before you use it!

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### Bimetal Dial Thermometer



- Most common type of thermometer
- Measures temperature through a metal stem (about 2 inches from tip)
- Calibration nut just below the dial

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### Digital



- Measures temperature through metal tip at the end
- Easy to read
- Temperature calibration is set at factory

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### Digital Thermometer



- There are many types of digital thermometers

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### Thermistor



- Digital
- Measures temperature in thin foods
- High output and fast response at low cost

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## Thermocouple



- Measures temperature electrically through a sensor in the tip
- Temperature calibration can be adjusted manually
- Interchangeable temperature probes
- Monitors the temperature of thin products such as hamburgers

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## Thermocouple Probes



- Various probes for:
  - Surface
  - Insertion/immersion
  - Ambient

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## Infrared



- Measures surface temperatures of foods from a variety of distances
- This type of thermometer is intended only for measuring surface temperatures of food
- It should not be used to verify critical internal temperatures

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### Time-Temperature Indicators



- Appearance changes if threshold is reached
- Single-use disposable thermometer
- Comes in several types (t-strips, tapes, adhesive patches)

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### Maximum Registering



- Used to record the maximum temperature reached in a product or place
- It will hold the maximum temperature to which it is exposed

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### Data Loggers



- Devices which record temperature over time
- May be either analog, or digital type
- Many data loggers are used in connection with a computer

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### When and How to Calibrate Thermometers

- Before their first use
- At regular intervals
- If dropped
- If used to measure extreme temperatures
- Whenever accuracy is in question
- Whenever enforcement action is anticipated



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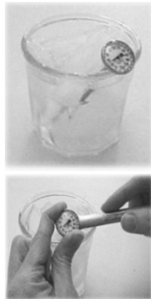
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### Calibrating Thermometers

- Insert thermometer probe into a cup of water and crushed ice
- Be sure dipole is completely immersed in the water
- Wait 3 minutes
- Thermometer should read 32°F. If the thermometer does not read 32°F, turn the adjustment nut on the back of the reading dial until the dial reads 32°F.
- Wait 3 more minutes to verify correct adjustment



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### Review

**Type**

1. Heat Sensitive Tape
2. Infrared Thermometer
3. Data Logger
4. Bi-metal stem
5. Max. Registering
6. Thermocouple

**Match to Item**

- Thin meat patty
- High temp dishmachine
- Food with bone
- Delivery truck (cold)
- Walk-in cooler
- Container beef stew

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### Light Meter



- Portable light meters are necessary to measure the level of illumination in food areas.

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### pH Meter

- The pH measurement checks the hydrogen ion concentration of the food.
- The pH instrument consists of a meter and a suitable electrode probe.

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### pH Measurements

- Manufacturer's calibration instructions should be followed.
- The calibration procedure must take into consideration the expected pH range of the food.
- A 2-point calibration using standard buffers of 4.0 and 7.0 is most common.
- When measuring the pH of a food, the measurement must be representative of the whole.

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### Stop Watch & Tape Measure



- Time, as well as temperature and concentration, are significant in the evaluation of warewashing operations.
- Tape measures may also be useful

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### Pressure Gauge

- The hot water rinse pressure of mechanical warewashing machines is an important factor.
- To measure line pressure, it is prudent to request the establishment personnel connect the pressure gauge.

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### Water Activity meter

- A water activity meter may be used to determine the food's available water or aW

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### Flashlight/ultraviolet light



- A bright flashlight and an ultraviolet light (black light) can be used to identify physical evidence of insect and rodent infestation.

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### Types of Sanitization

- High temperature
- Chemical
  - Types?

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### Chemical sanitizer Test Kits

- Chlorine
- Iodine
- Quaternary ammonia



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### Camera



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### Cell Phone or Communication Device



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### Personal Computers



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### Additional Equipment Needs

- Fully equipped kit for investigating foodborne illness and sampling suspect foods

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### Documentation

- Equipment, or means to support the record keeping system that can collect, analyze, retain and report pertinent information

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### Questions?

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