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Canada

14.1 OBJECTIVE OF ACTIVITY

Processed egg inspectors need to have, at their disposal, all of the equipment necessary to perform their duties. The equipment must be properly maintained and calibrated and must operate accurately. It is the responsibility of the inspector to operate their equipment according to the manufacturer's instructions and to perform tests as required to verify that the equipment is functioning properly.

14.2 REFERENCES

Processed Egg Regulations

14.3 REQUIRED EQUIPMENT

Inspectors require the following list of equipment and supplies. This equipment must be issued to the Inspectors before they undertake specific Inspection tasks.

- ¬ Air flow testing device
- ¬ Calculator
- ¬ Candling Light
- ¬ Chlorine Test Strips
- ¬ Disposable coveralls and foot coverings (dryer inspections)
- ¬ Environmental Sampling Kits
- ¬ Flashlight
- ¬ Footwear (waterproof)
- ¬ Hair Nets/Beard Nets
- ¬ Hearing Protection
- ¬ Ice Packs
- ¬ Inspection Manual and Acts & Regulations (CAP, F&D, CP&L, Processed Egg Regulations)
- ¬ Inspection Documents (identified in other sections of this manual)
- ¬ Inspection Stamps
- ¬ Lab Coats, White Pants and White Shirts (no pockets)
- ¬ Latex gloves
- ¬ Log Book (lab sampling)
- ¬ Marking Pen (waterproof, permanent)
- ¬ Masking Tape
- ¬ pH Test Papers (BDH 8-10)
- ¬ Respirator or Mask (dryer inspections)
- ¬ Sample Cups and Bags (plastic)
- ¬ Seals - CFIA
- ¬ Stainless Steel Scoop (for taking samples)
- ¬ Stop Watch
- ¬ Styrofoam Cooler or boxes to ship samples
- ¬ Thermometer - short stem
- ¬ Thermometer - long stem - 2 foot
- ¬ Tin Snips - for cutting seals

The Inspector should also have access to the following:

- ¬ Containers/constant water bath (for testing pasteurizer controls)
- ¬ Drill (powerful enough to drill through solid frozen egg product)
- ¬ Drill Bit (rust resistant and long enough to reach the center of the frozen egg product container)
- ¬ Setra Scale with Certified Check Weights (net weight verification)
- ¬ Light Meter
- ¬ Certified Thermometer (also referred to as a Reference thermometer)

14.4 LIST OF EQUIPMENT REQUIRING TESTING AND/OR CALIBRATION TO ENSURE PROPER PERATION

- ¬ Scale and check weights (weights used with Setra scale to be certified)
- ¬ Thermometers (reference thermometer to be certified)
- ¬ pH test strips or pH meter
- ¬ Chlorine Test Strips
- ¬ Light Meter (certified)

14.4.1 Setra Scale Verification

The Setra scale is used by the inspector to perform net weight verifications on finished products. To ensure the inspector's results are accurate the inspector should operate, maintain and calibrate it as per manufacturer's instructions. These instructions must be made available at all times for inspection and audit purposes.

The most common scale used by the CFIA to conduct net weight verifications on retail products is the Setra Model 12000C which has a manual and includes calibration procedures, available at the following website: Setra website.

14.4.2 Check Weights

Check weights used with the Setra scale are to be certified on an annual basis to which a certificate of calibration is issued and used to verify this.

The certified check weights are used to verify that the scale is operating as designed and will support the inspector's findings.

Prior to using the Setra scale the inspector must ensure the check weights have been calibrated within the past year.

14.4.3 Thermometers

Thermometers, which are not certified, are to be verified for accuracy on a quarterly basis.

14.4.3.1 *Calibration Procedures to ensure accuracy of thermometers used to measure pasteurizer controls and storage conditions*

When: All thermometers, not subject to certification, should be verified quarterly. New thermometers should also be verified before they are used, unless it is a certified thermometer.

*Reference thermometers are to be certified as per manufacturer's instructions at which time the provider of this service is to issue a certificate of calibration.

Tolerance: The difference between the inspector's thermometer and the certified thermometer should fall within ± 0.5°C (1.0°F)

How: Accuracy verification will be performed at two different temperatures by placing the certified and inspector's thermometer(s) into the middle of an agitated water bath at approximate temperatures (4 Celsius and 65 Celsius). Let the thermometer readings stabilize and record the temperature shown on each. Repeat this procedure at the other water bath temperature.

Corrective Action: Any thermometers outside of the tolerance should be re calibrated and rechecked to verify accuracy if possible. If it cannot be calibrated then it should be discarded and replaced.

Records: Records should show the temperature of each water bath & each thermometer and their respective difference. In addition the record should show any corrective actions taken, date, identification for thermometers, name of person performing test and his or her signature.

14.4.3.2 *Storage and Handling of Thermometers*

- If a mercury in glass thermometer is used as the reference thermometer,
  - Keep in an upright position when in storage or use.
  - Before using check for any air bubbles, cracks or other incorrect functioning.
- All thermometers are to be protected from rough handling
- Do not store thermometers in a vehicle where they could be exposed to extremes in temperature. It is preferred that they are stored at room temperature.
- A Mercury in glass thermometer is not to be used by inspectors in food production areas of a plant.

14.4.4 pH Paper (BDH 8-10) & Chlorine Test Strips

During the washing of eggs, the pH of the wash water is important in controlling the growth of Salmonella. To ensure inspectors are obtaining an accurate reading, they should follow instructions regarding usage, storage and where applicable, the expiry date for these strips. Where a standardized pH solution is not readily available to inspectors for verifying the viability of the pH papers, it is necessary to ensure they are stored properly and discarded after its expiry date.

Chlorine concentration is important in the reduction of microorganisms on the egg's shell before breaking. To ensure inspectors are obtaining accurate readings from their pH paper or test strips they should follow instructions regarding usage, storage, and where applicable, the expiry date.

When the expiry date exists and is only on the master container of test strips the inspector must transfer that information to the individual containers.

14.4.4.1 Electronic pH meters

See appendix II, *Generic Operating and Quality Assurance Measures for an Electronic pH Measuring Devise*. Such equipment must be operated, handled and stored as per manufacturer's instructions.

14.4.5 Light meters

There are a number of different light meters used by inspectors and often these are used across other commodities. It is the inspector's responsibility to ensure that the light meter is working properly, operated and maintained as per manufacturer's instructions.

Before using a light meter the inspector must review the most recent certificate of calibration to ensure it has been calibrated within the time frame of the manufacturer's recommendation.

14.5 USE OF EQUIPMENT OWNED AND MAINTAINED BY THE PLANT OPERATOR

When CFIA inspectors are verifying pasteurizer controls, it is always performed jointly with plant

personnel and is becoming common place to use equipment owned and maintained by the plant operator. Because some of this equipment is used to take measurements, which will be recorded on a report for CFIA inspection purposes, the inspector must make sure the equipment is subject to the same standards for verification and certification as identified in this section.

If the inspector cannot ensure the equipment used to take these measurements is to CFIA standards, the inspector must use their own equipment for taking these measurements.

14.6 CERTIFIED EQUIPMENT

For all equipment which is certified (Setra check weights, light meter and reference thermometer) a record of its certification should be available to verify they have been certified within the past year for the Setra scale check weights and as per manufacturer's instructions for the certified light meter and reference thermometer at which time the provider of this service is to issue a certificate of calibration.

14.7 RECORDS

Verification tests and any adjustments required are to be recorded for audit purposes. See Appendix I for an example of an Equipment Calibration Report for Eggs and Egg Products.

When two or more pieces of the same equipment are used the potential exists where the equipment may miss scheduled verification or calibration OR equipment that was intended to be discarded is placed back into use by mistake. To prevent such occurrences inspectors must provide their equipment with positive identification and record it on all records associated with verification and calibration.

14.8 USEFUL LINKS RELATED TO CALIBRATION SERVICES

Canada
ARCHIVED - http://www.nrc-cnrc.gc.ca/eng/services/inms/calibration-services/policies.html

USA
http://www.ts.nist.gov/MeasurementServices/Calibrations/

Appendix I - Quarterly Equipment Tests/Checks

Inspector's Name: _____ **Date:** _____

Certified Test Weights

Serial #: _____ Date last certified: _____

Lightmeter

Serial #: _____ Date last certified: _____

Certified Thermometer

Serial #: _____ Date last certified: _____

pH paper

Serial #: _____ Date last certified: _____

Thermometer accuracy

	Hot	Cold
Certified thermometer	_____	_____
Regular thermometer	_____	_____

Corrective action: _____

Follow Up: _____

Inspector's or designate's signature: _____

Appendix II - Generic Operating Procedures and Quality Assurance Measures for a pH Meter

OPERATING PROCEDURE

(i) Standardization of each meter is performed regularly for accuracy and linearity using commercially prepared NIST traceable buffers by following the manufacturer's instructions. The frequency of these checks will vary with usage but should occur at least once each day the instrument is used. Each time the machine is calibrated, record and file.

(ii) Standardization is performed as follows:

(a) Turn pH meter on by touching the screen, and selecting pH from the start-up menu

(b) Immerse the electrode and a thermometer in pH 7 buffer. Lower the rubber sleeve on the electrode to expose the filling hole.

(c) The temperature will automatically set to ambient temperature, provided the automatic temperature control (ATC) probe is attached. This temperature will be displayed in the appropriate box at the bottom of the screen.

(d) Select **std** from the pH menu options.

(e) Select **clear** to remove previous standards from the memory.

(f) Select **std** again. pH meter will beep once the standard has stabilized and been read.

(g) Remove the electrode from the buffer and rinse thoroughly with distilled water.

(h) Do not wipe the electrode dry as this will cause interference from static electricity.

(i) Immerse the electrode in the second buffer, either 4 or 10 depending on the expected pH of your sample.

(j) Select **std** from the pH menu options.

(k) Do not select clear, as this will remove the pH 7 buffer that has just been standardized. Select **std** again. The pH meter will beep once the standard has stabilized and been read. Once both buffers have been read, the slope will appear in the appropriate box at the bottom of the screen.

(l) Record the slope and temperature measurement on the appropriate worksheet. If the slope does not fall between 92 and 102%, repeat the standardization steps above. If the slope is still not in this range, clean the electrode as described in the maintenance procedures. If this fails to remedy the problem, obtain a new electrode before proceeding.

(m) Remove the electrode from the buffer and rinse with distilled water.

(n) Fresh buffer is used each time the meter is standardized. Never pour buffer solutions back into the bottle.

(iii) Quality Assurance is performed as follows:

(a) Any manipulations to the meter (electrode change, servicing, etc.) are recorded.

(b) Daily standardization is recorded and filed.

(iv) Determine unknown pH values as follows:

(a) Rinse the electrode in distilled water. Lower the rubber sleeve on the electrode to expose the hole.

(b) Determine the pH by the appropriate method

(c) Immerse the electrode in the sample. For flat-bottomed electrodes, ensure adequate contact is made with the agar.

(d) Select **meas** from the pH menu options.

(e) Read the pH measurement from display once it has stabilized (pH meter will beep).

(f) Remove the electrode from the sample and rinse with distilled water. Between buffers and samples, rinse the electrodes well with distilled water to prevent carry-over of solution.

(v) For media testing, one pH measurement is sufficient.

(vi) After use, replace the rubber sleeve over electrode filling hole. Store the electrode with its tip in electrode storage solution to prevent damage.

(vii) To turn pH meter off, choose stdby.

MAINTENANCE PROCEDURE

(i) Weekly - inspect the electrode for scratches, cracks, salt crystal build-up, or membrane/junction deposits. Rinse off any salt build-up with distilled water, and remove any membrane/junction deposits as directed in cleaning procedures below.

(ii) Monthly - drain reference chamber, flush it with fresh filling solution and refill the chamber. Record that this procedure has been performed.

(iii) Semi-annually - clean by soaking in 0.1 M HCL for half an hour. Drain and refill the reference chamber and soak the electrode in storage solution for at least one hour.

(iv) Removal of Membrane/Junction Deposits (as required).

(a) Protein - soak in 1% pepsin in 0.1 M HCL, for 15 minutes.

(b) Inorganic - soak in 0.1 M tetrasodium EDTA solution for 15 minutes.

(c) Grease and oil - rinse with mild detergent or methanol solution.

After any of these cleaning procedures, rinse the electrode thoroughly with distilled water. Drain and refill the reference chamber and soak the electrode in storage solution for at least one hour.