1.5.4 Calibration of Monitoring Devices

The SALSA Requirement:

"Environment monitoring devices, such as temperature monitoring equipment and process control devices such as weighing equipment identified as essential for legality and food safety shall be calibrated to ensure accuracy within agreed parameters at a pre-determined frequency."

About this SALSA Requirement:

The objective of this Requirement is to ensure that where control of temperature, weight or other parameters e.g. pH, gas/salt/sugar concentration, vacuum etc., is essential for legality or product safety, the equipment used to measure them is accurate when calibrated against internationally recognised standards.

Calibration means the testing and adjustment of equipment by the manufacturer or qualified agent who normally provides a certificate as evidence of the work performed. Verification means internal routines to cross-check equipment against other suitable equipment or standards which are recognised to be suitably accurate e.g. melting ice and boiling water for thermometers, weights for scales etc.

Tools

- A list of all equipment essential for legality & food safety in your company e.g. thermometers, scales, pH meters etc
- A calibration & verification procedure (what needs to be calibrated/verified; when, how and the action to take if problems are found)
- Calibration & verification record sheets.
- For Temperature: Calibrated hand-held probes, gauges, chart recorders, data loggers etc
- Calibrated weighing scales *or* calibrated weights that you can use to verify the accuracy of weighing equipment
- Calibration gases if using a gas-analyser for MAP applications
- Calibrated pressure/vacuum gauges if pressure-cooking or vacuum-packing
- pH buffer solutions to verify the accuracy of pH meters used to measure acidity
- Salt or sugar solutions of known concentration, to verify and record the accuracy of refractometers
- Staff who are trained in your calibration and verification procedures

Tips

- ✓ Your HACCP plan will help you determine which items need to be calibrated
- ✓ Don't assume instrument accuracy!
- ✓ Calibration can be expensive. It can be more cost-effective to have one instrument calibrated, then use it to verify the accuracy of others e.g. have one thermometer calibrated annually and use it to check the accuracy of other thermometers (keep records!)
- ✓ Keep records of all calibration and verification, including external certificates
- ✓ For weighing equipment, buy a set of calibrated weights and use to verify and record the accuracy of all your scales
- ✓ For pH meters, buy 'standard' buffer solutions and use them to verify and record pH meter accuracy
- ✓ Make sure any new equipment is calibrated before you introduce it into production
- ✓ Record staff training as evidence they understand and are competent to undertake verification activities

Additional resources:

See **Tools & Tips** for: 2.1.2-2.1.9 (HACCP) and 1.1.1 Training records.

What do I need to do to show I comply with this Requirement?

Make sure you have certificates of calibration for critical process measuring & monitoring equipment. Ensure all the certificates reference the calibration company's own certified equipment, or other link to National Standards such as their UKAS Certificate No. If using one calibrated instrument/set of weights to verify the accuracy of other equipment, remember to send the calibrated instrument/weights for re-calibration annually. Specify any tolerances between the calibrated device and other equipment e.g. ±0.5°C on all record forms, and keep records of all verification checks. Ensure staff are trained in your process.

What does a Check Sheet look like?

The example below is the type of procedure/record that might be used where a calibrated thermometer is used to verify the accuracy of other thermometers each month.

THERMOMETER VERIFICATION PROCEDURE & RECORD SHEET

SCOPE All hand-held probes

Testing frequency/Corrective Action procedure: Monthly. Responsibility of Supervisor.

Accuracy of all probes in use will be verified using the certified calibrated master probe. Any thermometer that has a difference of more than 0.5°C to the master probe in iced or boiling water must be taken out of use immediately for repair, and the user/department provided with an alternative probe that is known to be accurate. The Supervisor will arrange for the master probe to be returned to the manufacturer for annual calibration.

Method: Place all probes into boiling water and then iced water. Record readings. If a probe varies from the reading of the master probe by more than 0.5°C do not use and inform supervisor.

IW = Iced Water BW = Boiling Water

Date	Master Thermometer: Tempcon S/No 4904161980		No 1 Hand-held thermometer T20: 185814		No 2 Hand-held thermometer Ebro 15010898		No 3 Hand-held thermometer Ebro 15014278		Comments / Supervisor Signature
	IW	BW	IW	BW	IW	BW	IW	BW	
23/03/15	0.1°C	100.1°C	0.0°C	99.8°C	0.4°C	99.7°C	0.5°C	100.3°C	Fred
20/04/15	0.2°C	100.3°C	-0.1°C	99.8°C	0.2°C	99'9°C	0.5°C	99.9°C	Fred

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How can I use this example in my business?

The example above is an extract from a typical check sheet that would meet the Requirement adequately. You will need to decide the best layout for calibration and verification of accuracy records in your own business. Don't forget to put a note in your diary to complete regular e.g. weekly or monthly checks, and a reminder for when to send calibrated equipment/weights for external calibration.