



TECHNICAL ASSISTANCE TO BUILD FOOD SAFETY
CAPACITY
FOR THE FISHERIES SECTOR



TIBU IMPEX

Module 2

Water Quality Control Activities

Maintenance and calibration of production equipment

Outline



Water Quality Control Activities

Purpose of assuring water quality as a prerequisite of the FSMS

Chlorination procedures, Chlorine testing

Corrective actions and Record Keeping

Maintenance and calibration of production equipment

Procedure for calibrating thermometers and Scales

Record Keeping



Water Quality Control Activities

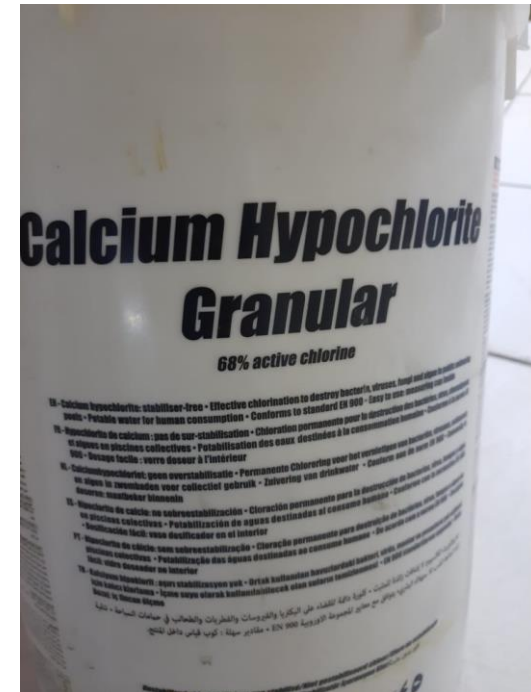
Water quality as a prerequisite of the FSMS

Importance of **ensuring water quality** is to guarantee the use of **safe water and ice** in order to **assure the quality and safety of the fish**

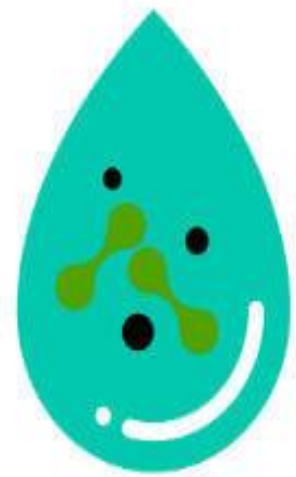
Water is sourced from the Guyana Water Inc.

Adequate water storage capacity(10,200 litres in 6 elevated PVC tanks)

Manual chlorination step is performed at the factory to guarantee microbiological safety



Water chlorination procedures



Contaminated water

Desinfecting



Disinfected water

Add a measured quantity of calcium hypochlorite granules to the water when the tanks are being filled

Allow the hypochlorite to act for at least 30 minutes

Residual effect of the chlorine

Procedure for water treatment for potabilisation for one tank

Tank volume = 1700 litres

1. Dissolve 35g of calcium hypochlorite granules in water, and add to the empty tank.
2. Fill tank with water and run the taps in the processing areas for **2 minutes**
3. Leave for 30 minutes
4. Run the tap for **2 minutes**
5. Check chlorine content of water from the tap
6. Between refilling tanks, check chlorine content of water daily

Chlorine testing procedure

- Take a **sample of water**. It may be:
 - Water from one of the taps in the processing unit (allow the water to run for approximately 1-2 minutes.)
 - Thawed ice
- Fill each cell to the line with the water to be tested
- Add 5 drops of the pH indicator solution to the pH cell
- Add 5 drops of the OTO 1 indicator solution to the CL cell
- Place a cover over both test cell openings and invert several times to mix.
- Immediately compare each test cell to its respective colour standards (pH 6.5 to 8.2) and Cl (0.3 – 3.0 ppm)
- **Target Cl level should be between 0.5 and 1ppm.**

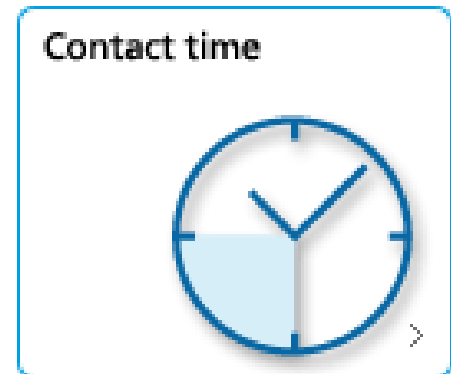


Corrective Actions

➔ If Cl is **less than 0.3 ppm**, then **increase amount** of calcium hypochlorite added to water tanks



➔ If pH is **more than 8** then, then **increase amount of calcium hypochlorite added or extend contact time**



Microbiological testing of water

Microbiological analysis of the **process water and ice** should be undertaken **every six months** in a laboratory approved by the Competent Authority (Ministry of Health)

The test parameters to be monitored are:

- Coliforms: (Limit 20 colonies/ml)
- Faecal coliforms (E.coli): Limit 0 colonies/ml



If microbiological limits are exceeded, immediately clean and sanitise tanks and the entire water system, and re-test



Water Safety Record keeping

- Number each tank
- Number all taps/hoses
- Record all additions of hypochlorite (tank.no. amount added, date/time, name of operator)
- Check chlorine and pH daily at the point of use.
- Record all test results (chlorine and 6 monthly microbiological tests)
- Ensure the following are recorded for each sample (including nature, time and precise location of sample).
- If corrective actions are required, they should be recorded
- Use the following record sheets are used within this prerequisite:
 - Monthly maintenance report
 - Water Sanitation Record

Monthly Maintenance Checks record

Location	Observations/Shortcomings	Corrections	Worker Initials
Entrance hall			
Handwashing station			
Boots washing station			
Social room			
Toilet hall			
Office			
Freezer storage			
Blast freezer			
Waste disposal			
Waste bin storage			
Processing area			
Packaging area			
Storage crates area			
Water tanks			
DATE:		VERIFIED BY:	

Water sanitation record

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Calibration of measurement instruments

Procedure for calibrating thermometers

Calibration of thermometers is done **weekly**

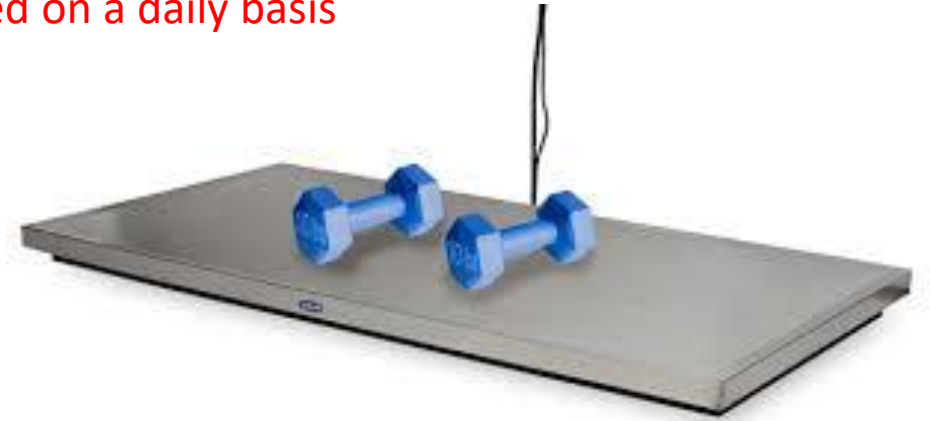
- A glass is filled with ice cubes, then top off with cold water.
- The water is stirred and let sit for 3 minutes
- It is then stirred again; the thermometer is then inserted into the glass, making sure not to touch the sides
- The **temperature should read 32°F (0°C)**. The difference is recorded and offset as appropriate.



Procedure for calibrating scales

Raw materials and products' scales **are checked on a daily basis**

1. Using a known weight, measure and record the scale's calibration weight.
2. Use multiple smaller weights for checking larger weight measurements if necessary.
3. Do a final check by measuring and recording 5 other weights over the range of the scale.



The scales are additionally calibrated and certified by the Guyana National Bureau of Standards annually

Corrective actions



- If any deviation from the expected range is encountered the **calibration procedure is repeated.**
- Should the reading still not be what is expected, the equipment should be adjusted (if there is a calibration mechanism).
- If not the equipment (scales or thermometer) should be **replaced.**
- The calibration procedure should be repeated on the new scales/thermometer.

Calibration Record Keeping

Date	Location	Serie number	Capacity	Weight Load	Weight difference	Calibrated by	Notes
Date	Instrument	Ref Therm.	°C Ice Slurry		Calibrated by	Notes or corrective actions	

Any questions?

