

SECTION VIII

RETORTING

GMP 8.1 The equipment and procedures used, the process time and temperature and the records maintained shall be approved by the competent authority

REASON

This is necessary to ensure adequate commercial sterilization of canned tuna, and adequate record keeping in case of process deviation or product recalls.

NOTE : In order to comply to minimum standards for processing Low Acid Canned Food :

- 1) The tuna cannery needs to be equipped with:
 - a) retorts properly installed and controls including
 - i) mercury-in-glass thermometers,
 - ii) pressure guages,
 - iii) steam spreaders,
 - iv) venting valves,
 - v) bleeders, and
 - vi) automatic temperature recorders, and
 - b) a steam supply at a sufficient pressure and quantity to ensure uninterrupted sterilization of all products in all retorts. The steam header pressure must maintain a minimum pressure of 90 p.s.i. during maximum utilization, and
 - c) an accurate wall clock positioned in such a manner that it is clearly visible from the retort operator's station, and

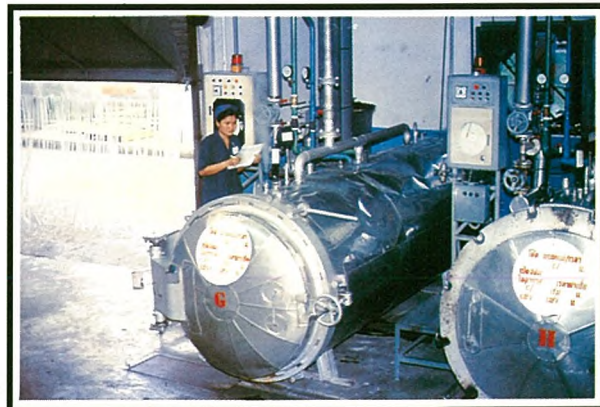
- 2) The tuna cannery is operated in accordance with recognized National and International procedures such as those described in:
 - *Canadian Code of practice for Low-Acid and Acidified Low-Acid Canned Foods,*
 - *The Canadian Food Processing Association: Canned Foods Thermal Processing and Container Evaluation,*
 - *Codex Alimentarius Commission: Recommended International Code of Hygienic Practice for Low-Acid and Acidified Low-Acid Canned Foods,*
 - *Codex Alimentarius Commission: Recommended International Code of Practice for Canned Fish,*
 - *National Canners Association: Processes for Low-Acid Canned Foods in Metal Containers Bulletin 26-L, and*
- 3) All retort operators have successfully completed a recognized Retort Operators Course, and have a Certificate/Diploma therefrom, and
- 4) Time and temperature submissions including information listed below, for each product, can size and style of pack have been submitted to verification by the competent authority and
 - a) Scheduled processes shall be established by qualified persons having expert knowledge of thermal processing requirements for low-acid foods in hermetically sealed containers and having adequate facilities for making such determinations. The type, range, and combination of variations encountered in commercial production shall be adequately considered in establishing the scheduled process. Critical factors that may affect the scheduled process, e.g. minimum headspace, consistency, maximum fill-in weights, ingredients, process times, temperatures, etc., shall be specified in the scheduled process, and
 - b) Acceptable scientific methods of establishing heat sterilization processes shall include, when necessary, but shall not be limited to, microbial thermal death time data,



Retort area



Retort equipment



Retort monitoring

Clock



Heat sensitive indicator is used to ensure that cans passed heat processing, and will not mix with un-retorted lot

Retort Operator



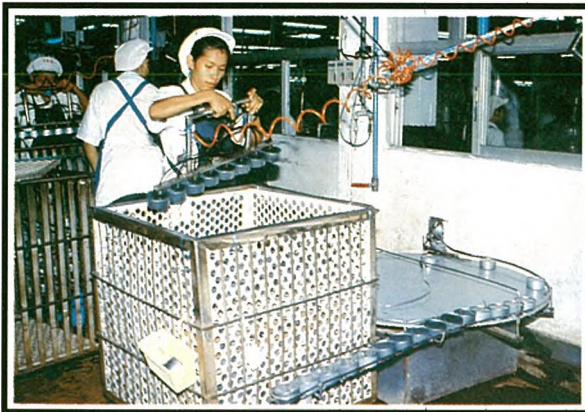
process calculations based on product heat penetration data, and data from inoculated packs. Calculations shall be performed according to procedures recognized by the competent authority. If incubation tests are necessary for process confirmation, they shall include containers from test trials and a number of containers from each of four or more actual commercial production runs during the period of instituting the process, and

- c) Complete records covering all aspects of the establishment of the process and associated incubation tests shall be prepared and shall be permanently retained by the organization making the determination and shall be subject to inspection, and
- 5) Accurate retort records, available for inspection, shall be maintained at all times, and shall include the following information and be kept for a period of not less than 5 years,
- a. Product, including packing medium,
 - b. Date of processing,
 - c. Name of retort operator,
 - d. Retort number,
 - e. Product processed,
 - f. Can size and type
 - g. Code and approximate number of cans,
 - h. Initial temperature,
 - i. Venting schedule, time steam on, time and temperature vent closed,
 - j. Clock time at start of cook, i.e. when processing (sterilization) temperature is reached.
 - k. Temperatures from mercury thermometer and recording thermometer and pressure gauge readings at start of cook,
 - l. Clock time at end of cook,
 - m. Length of time of cook,
 - n. Cooling method and time cooling started and ended and can temperature at end of cooling, and
 - o. Residual chlorine level in cooling water (**GMP 9.3**)

GMP 8.2 The time between seaming the first can of the lot to retorting shall not exceed 2 hours. However, any delay beyond one hour must be treated as a process deviation and the time of cook adjusted to compensate for the increase in microbial load.

REASON

Spoilage of canned fish in sealed containers can occur quickly at cannery temperatures, particularly in temperate and warmer weather conditions. Even very slight spoilage becomes quite noticeable because any odorous gases produced will be retained in the container and will consequently result in souring, off-flavour and loss of vacuum. Also, it is necessary to limit and control the conditions which permit the growth of staphylococci and the production of toxins, which are not destroyed by the heat normally applied during heat processing.



First can of first basket is taken for temperature measurement

Loading of cans

