

## **Auditing Small Food Industry**

**Pornpen Panjapiyakul**

**Faculty of Biotechnology, Assumption University**

### **Abstract**

*The external auditing was conducted by the Faculty of Biotechnology, Assumption University in the fresh food department in all branches of Tops Supermarket in Thailand on five food categories, namely: bakery, fruit and vegetable, meat and poultry, seafood, and delicatessen. The auditing procedure followed the methodology formulated by FDA's Food Establishment Inspection Guidelines. This consists of examining 15 categories related to food hygiene. The results of auditing were reported in three levels of performance of all branches of Tops Supermarket. Level 1 - meets good hygienic condition in management and personnel supervision, food characteristics, food labeling, number and capacities of equipment. Level 2 - requires slight improvement on contamination from consumers, limiting the number of organisms of public health concern through temperature and time control, design, construction, and cleaning of equipment and utensils. Level 3 - requires better hygienic practice with respect to personal hygiene, protection from employee contamination, sanitization, maintenance and operation of equipment, and utensil cleaning.*

**Keywords:** Auditing, food inspection, hygienic condition, hygienic practice, sanitization, personal hygiene, sanitary training, good manufacturing practice.

### **Introduction**

Tops Supermarket, a retail supermarket, has a total of 36 branches in Thailand with 25 in Bangkok and 11 for the rest of the country (3 in the North, 3 in the South, 2 in the Northeast, and 3 in the East). It is divided into two main departments, Fresh Food and Convenience departments. The former consists of five sections, namely: (i) Bakery, (ii) Fruit and Vegetable, (iii) Meat and Poultry, (iv) Seafood, and (v) Delicatessen sections.

The management of Tops Supermarket has realized the importance of Good Manufacturing Practice (GMP). They would very much like to take all preventive measures to correct any improper procedure and poor hygienic condition, starting from the sanitary training to educating the food handlers. In order to adopt the GMP

approach, the Tops Supermarket have contracted the Biotechnology Faculty, AU, to undertake auditing of the fresh food department of all of its branches. The next step is to ensure that all procedures learned by workers are implemented on the daily basis. An audition was designed to detect any critical step need to be corrected.

After audition the following actions were taken:

(i) Inform the hygienic condition to the branch's manager on each item and helps him/her to manage the branch under GMP.

(ii) Inform the true hygienic condition to the head office so that the company could take action promptly and properly.

### **Equipment**

The equipment used in this auditing consists of the following:

- (i) Thermocouple
- (ii) pH paper
- (iii) Swab Test (sterile cotton bud and NA media)
- (iv) Flashlight
- (v) Sanitizer test kits
- (vi) Lab coat
- (vii) Cap or net
- (viii) Camera
- (ix) Auditing form

### Auditing Procedure

The auditing consisted of the following steps:

- I. Auditing had been carried out once a month, for three consecutive months in every branch.
- II. Each auditing had been done randomly and the manager of each branch will not be informed about the auditing schedule.
- III. The duration of auditing was about 3 hrs.
- IV. Auditing was started from Bakery section and followed by Fruit and Vegetables, Meat and Poultry, Seafood and lastly Delicatessen section.
- V. Auditor inspected section by section, including display shelf, working areas, and the hygienic condition of the workers, etc. Auditor scored the hygienic condition as follows:

4	=	Very good
3	=	Good
2	=	Adequate
1	=	Must improve
0	=	Do not apply

The inspection procedure consisted of these following items:

1. Management and personnel supervision
  - Assignment of responsibility
  - Demonstration of knowledge
  - Duties of person in charge
2. Personal cleanliness

- Hand and arms such as clean condition, cleaning procedure, frequency for washing hand, sanitizing agent, fingernail maintenance, jewelry prohibition, and outer clothing cleanliness.
- Others such as boots / apron / groves / and clothing cleanliness

3. Hygienic practice
  - Eating, drinking at work
  - Discharge of eye, nose, mouth
  - Hair restraint effectiveness
  - Animal handling prohibition
4. Contamination from consumers
  - Food display
  - Condiments protection
  - Self-service operation
5. Limiting organisms of public health concerning temperature and time control
  - Frozen food
  - Slaking
  - Thawing
  - Cooling
  - Cooling methods
6. Food Characteristics
  - Safe
  - Unadulterated
  - Honestly presented
7. Protect from contamination
  - Contamination from employee hands
  - Contamination from consumer tampering
  - Separation of food
  - Container identification
  - Uncertified additives
  - Fruit and vegetable washing procedure
  - Food with direct contact with water or ice
  - Food storage
  - Hot holding
  - Cold holding

- Ready-to-eat food dating
- Ready-to-eat food disposition
- Pest controlling equipment
- Temperature
- FIFO
- Thermometer

8. Food ID / Presentation / Labeling

accurate representation

- Standards of identity
- Honestly presented
- Food labels
- Other forms of information

9. Design and construction

- Durability and strength of equipment and utensils, and temperature measuring devices
- Cleanability of food contact surfaces, temperature measuring devices, sink, cutting board, refrigerator, ventilation hood system, and proper material used for food display

10. Numbers and capacities of equipment and utensils

- Cooling / heating / holding capacities
- Ventilation hood systems
- Utensil for consumer self-service
- Temperature measuring devices

11. Maintenance and operation of equipment and utensils

- Good repair and proper adjustment
- Ventilation hoods drip prevention
- Cutting surface
- Nonfood-contact surfaces

12. Cleaning of equipment and utensils

- Food-contact surface and utensil
- Cooking and baking equipment
- Non food-contact surface
- Floor

- Drainage system
- Cool storage room
- Street vender

13. Sanitation of equipment and utensils

- Proper method of sanitation
- Unused equipment/utensil

14. Design, construction and installation

- Floors
- Walls
- Ceiling
- Angles between walls, between walls and floors, and between walls and ceilings
- Changing facilities
- Controlling pests
- Unnecessary items and litter
- Light bulbs and fixtures suspended over food materials
- Food display
- Toilets
- Food display shelf

15. Disinfection

- Detergent
- Sanitizer
- 15.3 Bucket
- Brush
- Others

VI. After auditing, the auditor reported the result to the branch manager or the person-in-charge. Corrective measures for items scoring below 2 were recommended.

VII. The report was sent to the head office one week after auditing. Comments and suggestions for improvement were also included in the report.

**Note:**

Bangkok = Branches in Bangkok

Other province = Branches in the rest of the country

B = Bakery section - B1\*, B2\*, and B3\*

F = Fruit and Vegetables section - F1, F2, and F3

M = Meat and Poultry section - M1, M2, and M3

S = Seafood section - S1, S2, and S3

D = Delicatessen section - D1, D2, and D3

\* 1 = The first audition, \* 2 = The second audition

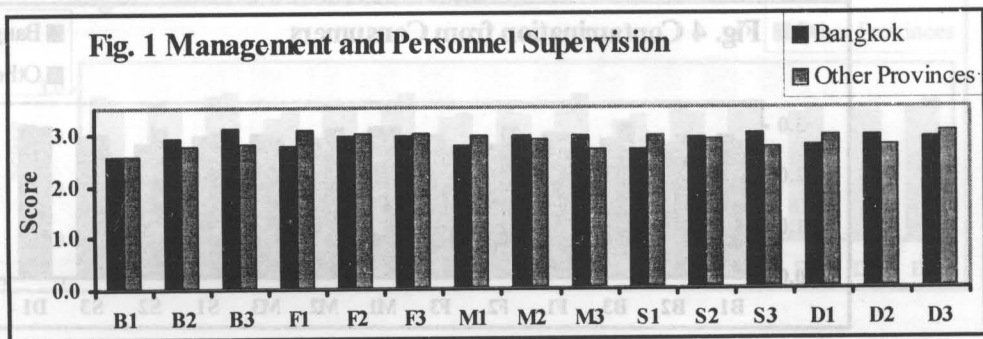
\* 3 = The third audition

## Results and Discussion

### Management and personnel supervision

In general, the management system of the supermarket was considered very good,

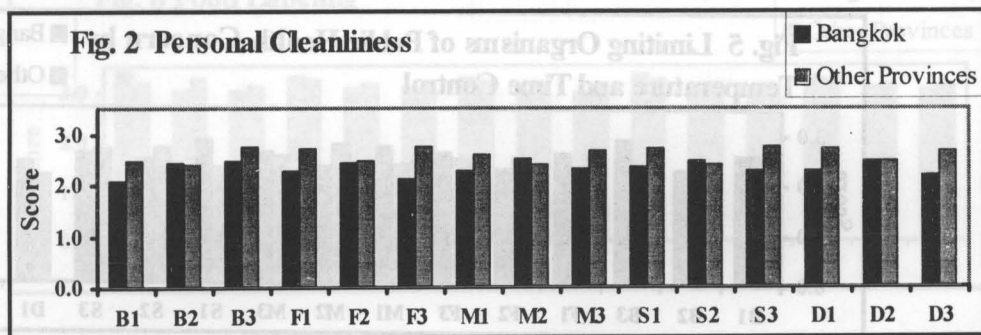
receiving a score of 3. After auditing, all branches in Bangkok had made further improvement. Nevertheless it was noticed that some branches in the provinces had shown some inconsistency in this category (Fig.1).



### Personal Cleanliness

On the whole the personal cleanliness was found to be adequate to good. It was observed that before auditing the workers did not feel comfortable to wear the uniform or

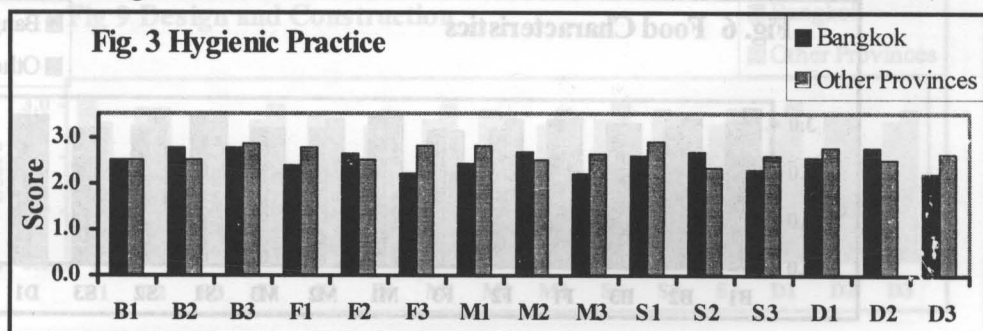
suitable protection on duty. This included even the supervisor. After the audit most of the branches had shown further improvement, receiving higher scores. However, a few branches, especially in Bangkok, may need to be improved (Fig. 2).



### Hygienic practice

Average hygienic condition in all branches was found to be adequate to good. The branches in Bangkok need to be

improved when compared with the provincial branches. Behaviors that could result in contamination of food were observed in the workers such as eating or drinking during work, inadequate hair covering, etc. (Fig. 3)

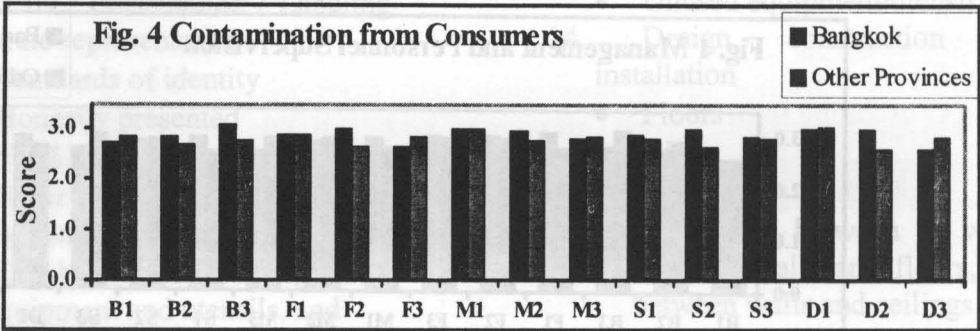




Contamination from consumers

The contamination from consumers in the provincial branches was higher than in the Bangkok branches. The customers were not aware of cross-contamination of one food item

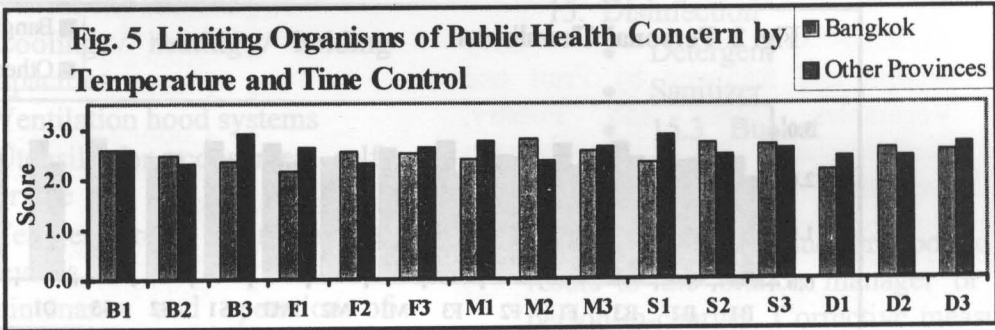
with another, for example using the same forceps for different foods. Some branches with very high customer traffic might be too busy to pay attention on the display or providing insufficient forceps for the customers (Fig. 4).



Limiting organisms of public health concern by temperature and time control

The time and temperature control systems were quite good in most of the branches. In a few branches which obtained low score, it was found that the importance

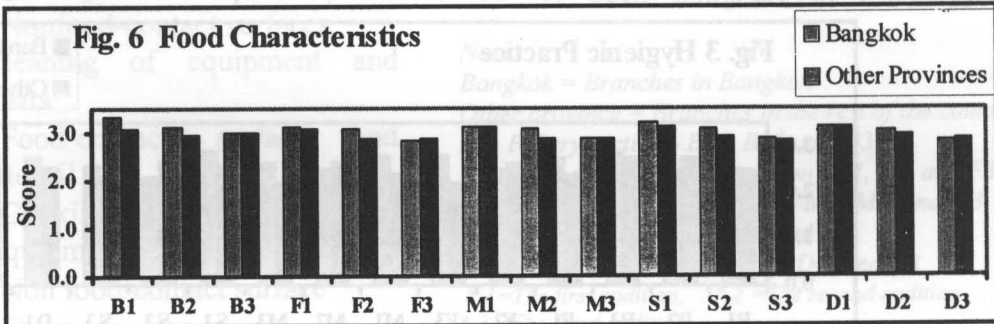
of the management of the thawed products and the cooled products were not completely understood by the workers. Mishandling of raw material that could lead to cross contamination like immersing the unpacked frozen poultry/meat directly in the water, was reported (Fig.5).



Food Characteristics

The food characteristics in the Bangkok branches were slightly better than

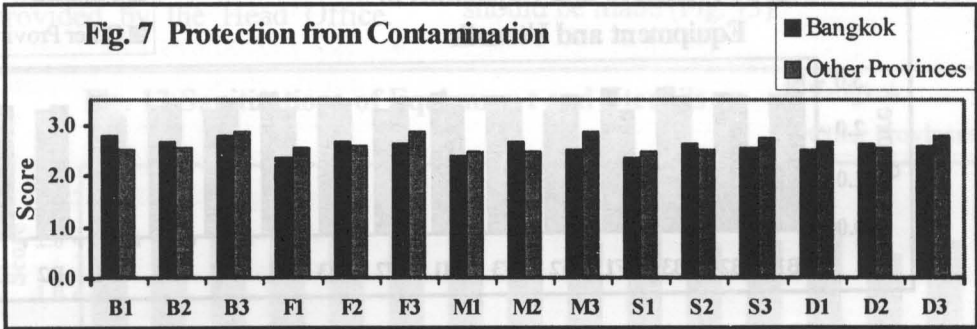
in the provincial branches. Only one incidence of improper use of plastic on acidic food was reported. In general, food characteristics were very good. (Fig.6)



Protection from contamination

The protection from employee contamination was adequate to good in all

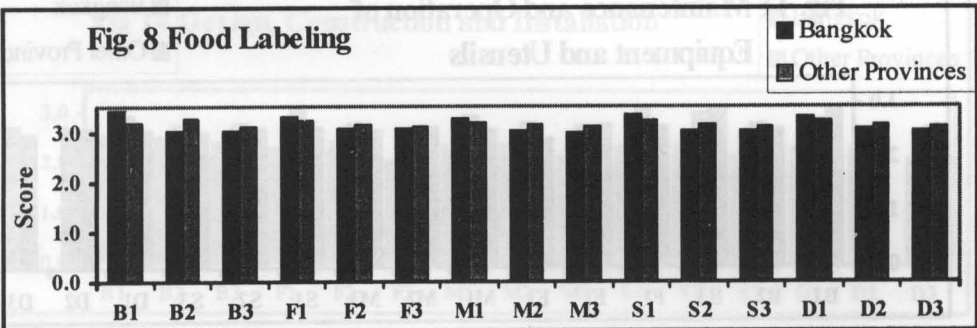
branches. Before auditing, the workers were lacking in the knowledge of sanitation. After the audit, they had shown some improvement (Fig.7).



Food identification, labeling and presentation

The labeling was rated as very good in all branches. Tops Supermarket clearly

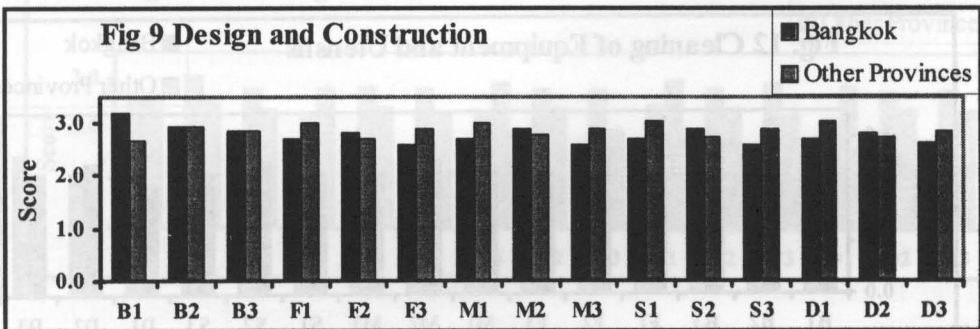
understood the importance of labeling and had emphasized on this point. Thus, the labels contained all necessary information such as price, weight, production date and expiration date as required by law (Fig. 8).



Design and construction

Overall design and construction of the facilities in the supermarket such as ventilation hood system, temperature measuring devices, etc.

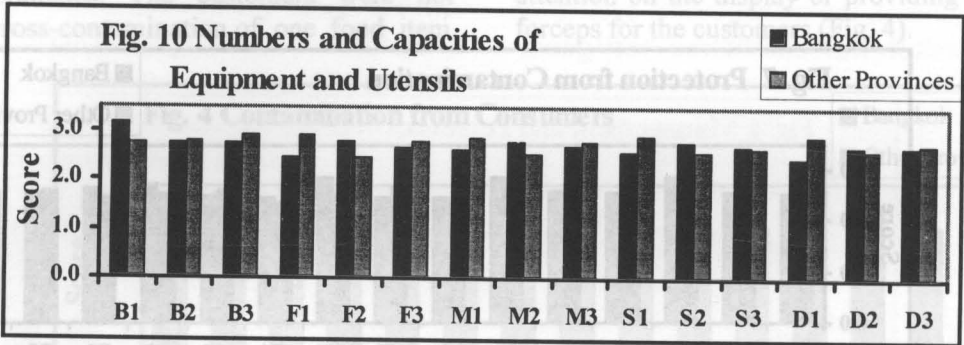
were fairly good, except for some branches that had long been established that might have incompatible layout suitable for the modern design of the supermarket. Report of some improvement in old facilities was filed (Fig. 9).



Numbers and capacities of equipment

Under this category, Tops Supermarket

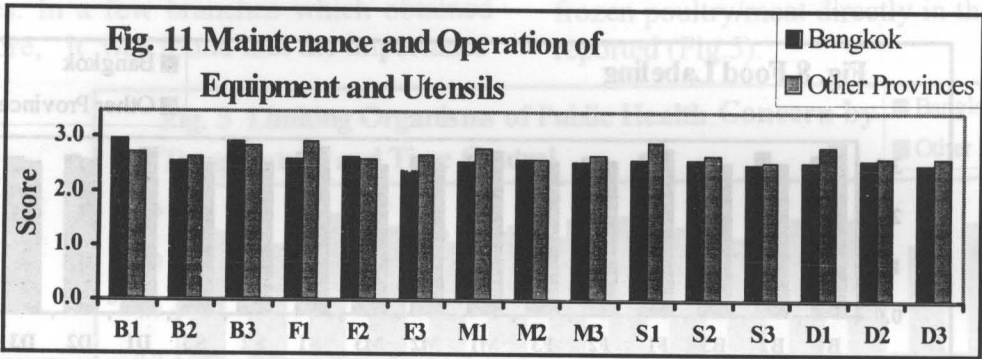
provided adequate amount of equipment with suitable capacity for all branches. It was rated very good (Fig. 10).



Maintenance and operation of equipment and utensils

The maintenance and operation of equipment and utensils were considered to be adequate to good in most of the branches. Even though the chief or the staff might not pay much

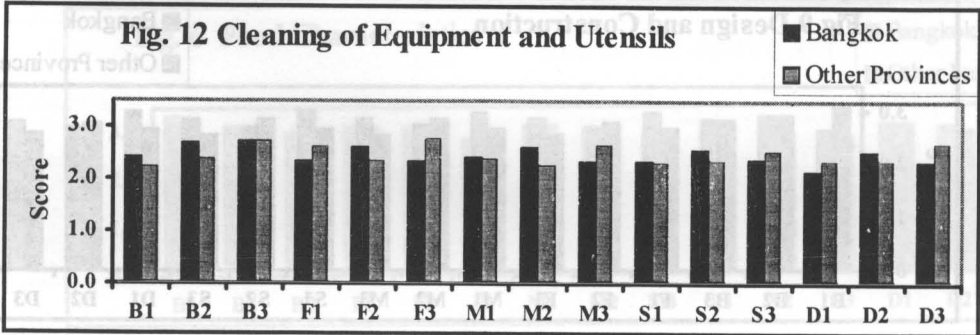
attention to hygiene, at first, and they always complained to be too busy working in their regular work and do not have time to give special effort for the sanitary improvement. However, in few branches improvement may be needed in the circulation and ventilation equipment (Fig. 11).



Cleaning of equipment and utensils

The cleaning of equipment and utensils was rated fairly adequate. Before the auditing, the rating was considered inadequate in many aspects, including regular

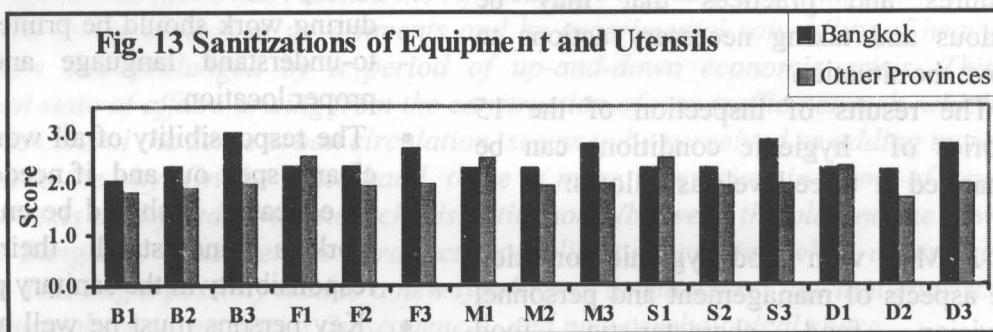
cleaning, abandoning of equipment and utensils for a long period of time before cleaning, and dirty walls, ceiling, floors, and angles. After auditing most of the branches had improved in accordance with the suggestions made (Fig.12).



## Sanitization of equipment and utensils

By and large, the sanitization of equipment and utensils in all branches were considered to be adequate. The sanitizing agents were provided by the Head Office.

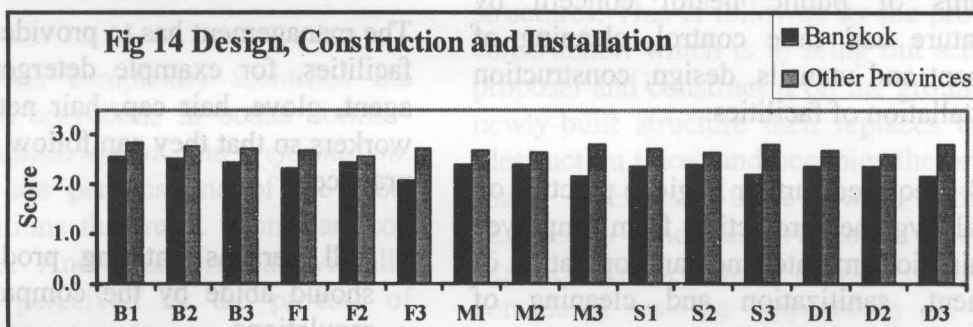
The Bangkok branches paid more attention to the proper use of sanitizing agents than the provincial branches. Under this category, it was recommended that improvement in most of the branches, especially in the provinces, should be made (Fig. 13).



## Design, construction and installation

On the whole, the design, construction and installation in all branches were fair. Most of the provincial branches were better than the Bangkok

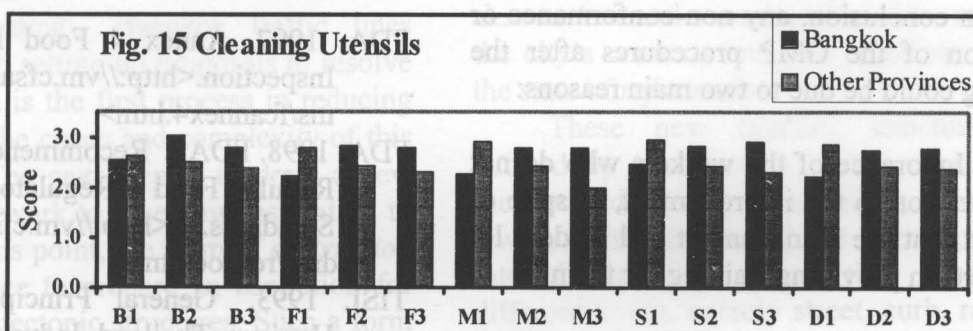
branches since they were newly established. Certain facilities were recommended for improvement, including providing of cloth-changing area and locker for the workers, and light bulb cover in the working area (Fig. 14).



## Cleaning utensils

In general, cleaning of utensils in all branches was fairly adequate. After auditing, the Bangkok branches had shown significant

improvement. On the other hand, the provincial branches had demonstrated little improvement in this category, even after the sanitization training (Fig. 15).





## Conclusion

The ultimate goal of the auditing is to prevent food-borne diseases due to food handling. Auditing is a primary tool that a regulatory agency has for detecting procedures and practices that may be hazardous and taking necessary actions to improve the situation

The results of inspection of the 15 categories of hygienic conditions can be summarized in three levels as follows:

*Level 1:* Meet with good hygienic condition in the aspects of management and personnel supervision, food characteristic, food labeling, number and capacities of equipment.

*Level 2:* Require slightly improvement on contamination from consumer, limiting organisms of public health concern by temperature and time control, cleaning of equipment and utensils, design, construction and installation of facilities.

*Level 3:* Required further hygiene practice on personal hygiene, protection from employee contamination, maintenance and operation of equipment, sanitization and cleaning of utensils.

## Suggestion for Hygienic Improvement

In conclusion, any non-conformance or violation of the GMP procedures after the training could be due to two main reasons:

1. Ignorance of the workers who do not pay attention to the improvement, in spite of the fact that the management had made a lot of efforts in providing training for them.

2. The management did not provide enough facilities for the workers to comply with the implementation of GMP.

Therefore the following suggestions are recommended to the management:

- A clear, easy-to-understand and simple-to-implement hygienic regulations should be established.
- All procedures that need to be followed during work should be printed in an easy-to-understand language and posted in proper location.
- The responsibility of all workers must be clearly spelt out and, if needed, they must be educated. It should be ensured that all workers understand their role and responsibility in the sanitary program.
- Key persons must be well aware of their responsibility and authority in order to collaborate and make decisions.
- If something goes wrong, the line of authority has to be well understood by the workers so that they can report properly.

The management has to provide all necessary facilities, for example detergent, sanitizing agent, glove, hair cap, hair net, etc. for the workers so that they can follow good sanitary practice.

- All persons entering production area should abide by the company's hygienic regulations.
- New personnel should be trained on personal hygiene and be informed of its importance.

## References

- FDA. 1997. Annex 4 Food Establishment Inspection. <<http://vm.cfsan.fda.gov/~dms/fcannex4.htm>>
- FDA. 1998. FDA's Recommended National Retail Food Regulatory Program Standards. <<http://vm.cfsan.fda.gov/~dms/ret-toc.html>>
- TISI. 1993. General Principles of Food Hygiene. Thailand Industrial Standard Institute, Ministry of Industry.