



“Visualization” of hygiene with an ATP Swab Test in food service facilities:

Enhancement of cross-sectional hygiene management and hygiene awareness in multiple facilities

This is a summary of a lecture given by Ms. Toshiko Yamase, Hamanako Eden no Sono, at the 106th Lumitester Seminar held by Kikkoman Biochemifa Company at Nagoya Congress Center on August 22. Lumitester is the name of the ATP Swab Test device of Kikkoman Biochemifa Company.

Ms. Yamase is certified as a managerial dietician, clinical dietician, and long-term care support specialist, and works for Hamanako Eden no Sono, a senior residence with nursing care operated by Seirei Social Welfare Community, as well as for a care facility for persons with disability, an elderly welfare facility, an elderly nursing home, a nursery school, and Seirei Mikatahara General Hospital, which are operated by the Community. In addition, Ms. Yamase is a part-time instructor at Tokoha University. (Editorial Desk)

Outline of the organization and activities of Seirei Social Welfare Community

I will first introduce the activities of Seirei Social Welfare Community, to which I belong. The major activities of the Community include (1) healthcare (hospitals, clinics, hospices), (2) medical care (health promotion, medical checkups, comprehensive medical examinations, disease prevention, working environment evaluation, etc.), (3) social welfare (elderly nursing homes, care facilities for persons with disability, shelters, free or low-cost medical care, child-care, senior residences), and (4) nursing care (senior care homes, day care, home nursing stations, home-visit nursing care, etc.). Through these activities, the Community provides comprehensive human services (Figure 1).

The Community was founded in 1930 as a clinic for patients with tuberculosis in an age in which this condition was feared as a fatal disease. The original activity of the Community was started by several young people to help patients with tuberculosis, and this policy has been inherited in development of other activities. For example, checkup for tuberculosis started as a pre-

Toshiko YAMASE

Hamanako Eden no Sono, Seirei Social Welfare Community



Figure 1: Major activities of Seirei Social Welfare Community



Figure 2: Logo of Seirei Social Welfare Community

ventive measure and has been developed into the Seirei Health Care Division, which now operates a comprehensive program that includes lifestyle disease prevention, comprehensive medical examination, industrial health and safety, and health promotion. As of July 2016, the Community operates residential facilities covered by nursing-care insurance, at-home service, elderly residence (145 facilities and 295 businesses) in Tokyo and seven prefectures in Japan.

The basic principle of the Community is “Love Thy Neighbor” based on the spirit of the Christian faith. In Chapter 13 of John’s Evangel, it is said that Jesus Christ stood up at the table of the Last Supper, took off his gown, wrapped a towel around his waist, and filled a basin with water to wash the feet of his pupils. Washing of others’ feet was a role of slaves in those days, and Jesus Christ showed his compassion through this behavior. “Seirei” in the name of Seirei Social Welfare Community originates from the words, “God’s holy slave.” The external double circles of the logo (Figure 2) show the basin. The internal triple circles symbolize the tasks of the Community (medicine, education, welfare), while the cross in the center shows the Christian faith, suggesting the belief that all activities begin from inside the church.

In the north of Hamamatsu City, the birthplace of Seirei Social Welfare Community, there is a general medical and welfare zone



Figure 3: Seirei Welfare Town located in the north of Hamamatsu City

called “Seirei Welfare Town,” where medical, welfare, and educational organizations are located. In this zone, facilities such as Seirei Mikatahara General Hospital, Seirei Hospice, Seirei Prevention and Detection Center, Hamanako Eden no Sono, Jujinosono, Seirei Christopher University, and a church are located (Figure 3). Seirei Mikatahara Hospital, in which the first hospice ward was established in Japan, was the first in the nation to use “patient-oriented treatment” and “terminal care”. Jujinosono was established about 50 years ago as the first specialized elderly nursing home to prepare for a future vision of Japan in 2025, when so-called “baby

boomers” would become old-old people. Hamanako Eden no Sono was established about 40 years ago as the first fee-based home for elderly people in Japan, and has been operated until today with the assumption of an increase in healthy elderly people, rather than bedridden elderly people.

Figure 4 shows the distribution of facilities of Seirei Social Welfare Community throughout Japan. Food service is provided to people of different generations and with various physical conditions, including children, elderly people, those with a disease or disability, and healthy persons. Based on my experience in food service as a managerial dietician, I recognize that both nutrition and hygiene management are extremely important activities. Delicious food and safe food under good hygiene management are essential to earn high trust from users.

In this report, I will mainly show the approaches of Seirei Social Welfare Community to promote hygiene management and I will discuss examples of how this is achieved using the ATP Swab Test (hereinafter referred to as the ATP test).

Promoting improvement of on-site hygiene management through the Hygiene Management Committee and hygiene advisors

(1) Activities of the Hygiene Management Committee

Regarding food safety and hygiene management, the Community considers that greater effects will be obtained by performing borderless activities among facilities and departments. Thus, the Seirei Nutritional Section Hygiene Management Committee was established more than 20 years ago. At present, the Hygiene

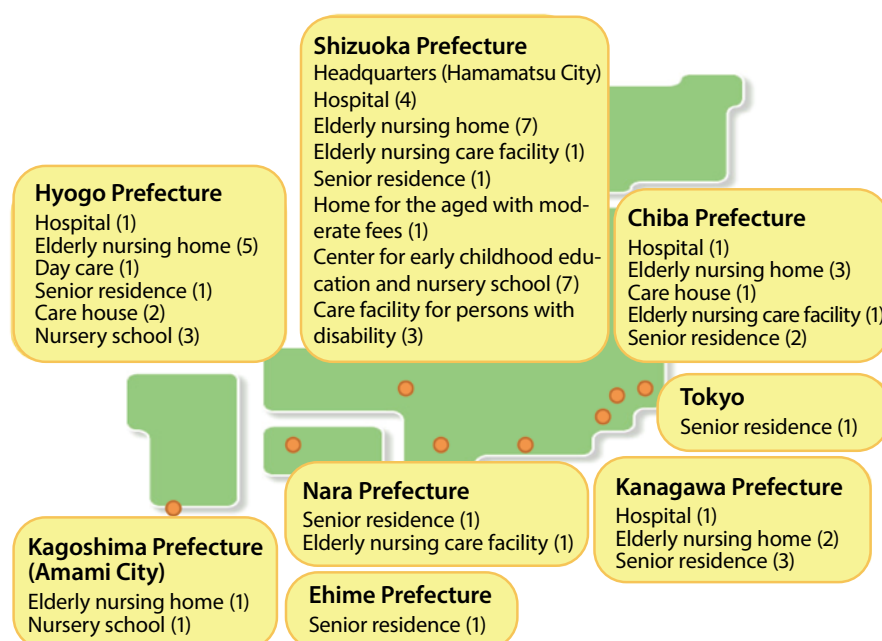


Figure 4: Food services in Tokyo and 7 prefectures

Management Committee consists of representatives of individual regional business divisions in Hamamatsu, Kanto, and Kansai (Hamamatsu: 9, Kanto: 5, and Kansai: 3), and holds a regular meeting every month in Hamamatsu City.

The most important tasks of the Hygiene Management Committee include preparation and revision of the Voluntary Hygiene Management Manual of the Seirei Nutritional Section and promotion of its use at individual work sites. In addition, the committee performs activities including a voluntary hygiene management check (annual inspection for individual facilities by a hygiene advisor), educational activities for knowledge and awareness of food sanitation (sharing hygiene management-related information, holding workshops for enhancement of hygiene-related knowledge, preparation of information distribution tools, such as publication of the Hygiene Management Committee Newsletter), and semiannual bacteriological testing.

(2) Activities of hygiene advisors

I would like to introduce the activities of hygiene advisors, who play a role in internal checks and audits of hygiene management in kitchens, through the following three actions:

- (1) Evaluation of hygiene management using a voluntary hygiene management checklist and ATP tests to examine cleanliness in kitchens.
- (2) Identification of inappropriate points at individual work sites, and provision of instructions and advice on improvement.
- (3) Promotion of uniform awareness of hygiene management among workers, and increasing the level of hygiene management.

In inspections based on the original voluntary hygiene management checklist of Seirei Social Welfare Community (50 items for hygiene management, 13 items for record management), visual checks and ATP tests are performed for hygiene management. The results are used to provide instructions and advice (details of the checklist and ATP test are given below).

The words “instructions and advice” may sound somewhat high-handed to colleagues in the Community, even though we work in different facilities. In reality, we manage a problem by thinking together about the reason for poor hygiene when unfavorable results are obtained from a visual check or ATP test at a site. We propose changes and share information on how good hygiene can be maintained using successful approaches from another similar-scale facility.

(3) Manual and checklist for voluntary hygiene management

The voluntary hygiene management checklist used by hygiene



Photograph 1: Visit to a facility by 3 hygiene advisors
Two of the advisors perform checks based on the voluntary hygiene management checklist.

advisors refers to (1) kitchen equipment, (2) refrigerators/freezer, (3) tableware/cooking tools, (4) hand washing, (5) bathroom, (6) waste, (7) raw material, (8) cooking and processing, (9) personal hygiene, and (10) recording. The checklist items were selected based on the Voluntary Hygiene Management Manual of the Seirei Nutritional Section. This manual is compatible with the Sanitary Management of Large Scale Cooking Facilities manual of the Ministry of Health, Labour and Welfare, but has stricter standards than this manual.

Three hygiene advisors visit a facility. Two check the facility using the voluntary hygiene management checklist (**Photograph 1**), while one performs ATP tests.

In the voluntary hygiene management check, the advisors visually check 50 hygiene items and 13 recording items with workers at individual sites. The check is normally performed during work time. However, a visit at the busiest time can cause problems and the check is performed at a good time to evaluate daily hygiene without interfering with normal work. At Hamanako Eden no Sono, it requires 1 to 1.5 hours to complete the check because close to 50 items have to be checked, despite the relatively small size of the facility (approx. 600 meals per day).

The check is performed without advance notice to the workers at the site (although advance notice is provided to the manager of the facility) because such visits without advance notice enable observation of actual daily situations.

As an instructor of hygiene advisors, I suggest that it is likely to be effective to check what is not included on the checklist (although it is definitely important to check the items on the list). For example, appropriate use of a headwear is included in the list, but it may be better to also check the situation in which the headwear is stored.

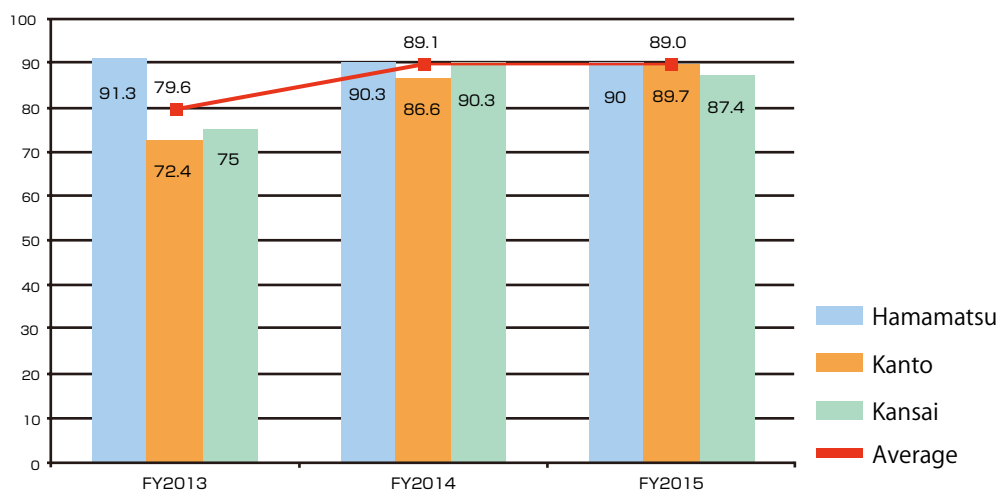
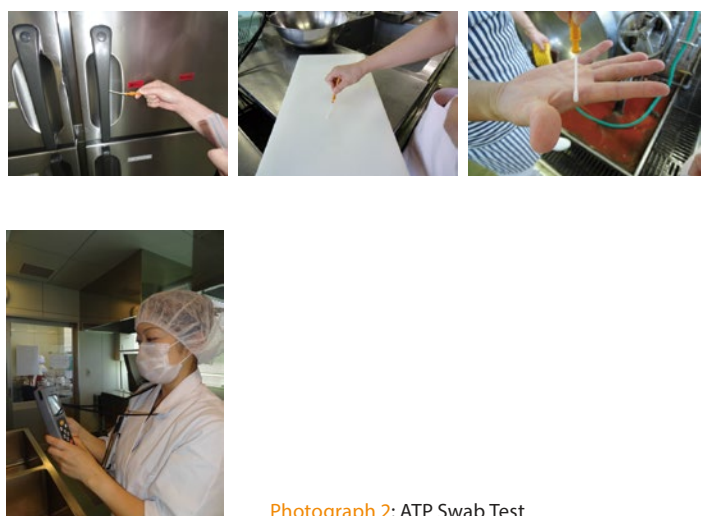


Figure 5: Average data from voluntary hygiene management checks in the last 3 years



Photograph 2: ATP Swab Test

(4) Evaluation method and criteria based on the checklist

As mentioned above, the voluntary hygiene management checklist consists of 50 items. Each item is evaluated on a scale of 0 to 2 (2 points: sufficient, 1 point: partial improvement required, and 0 points: improvement required), and the highest possible score is 100 points.

Evaluation criteria are also prepared based on concrete rating standards, so that every hygiene advisor can evaluate in the same way. For example, there is an item to check “whether work is performed in clearly divided areas, unclean, semi-clean, and clean areas, and such divisions are clearly shown in the drawing of the kitchen.” The item is evaluated as 2 points: “divisions by color and time are clear, with a clear drawing of the kitchen,” 1 point: “the flow of food materials is one-way although divisions are not clear, or divisions are clear although no drawing of the kitchen is available,” and 0 points: “division and flow are not uniform, with no drawing of the kitchen.” The item “cleanliness of the inner wall, ceiling and piping” is evaluated as 2 points: “no dust, oil spots and fungus observed,” 1 point: “cleaning performed based on a regular

cleaning plan, but some contamination observed,” and 0 points: “contamination observed despite a cleaning plan, or no regular plan for cleaning.”

These checklist and evaluation criteria have been revised several times. When the Sanitary Management of Large Scale Cooking Facilities manual was revised, our manual and checklist were also reviewed and revised.

(5) Results of a voluntary hygiene management check (example)

Average data from voluntary hygiene management checks in the past three years are shown in Figure 5. In FY2013, the average scores in Kanto (72.4) and Kansai (75.0) were lower than those in Hamamatsu (91.3). This may be due to differences in activities of the Hygiene Management Committee in the individual areas and in hygiene awareness of workers among facilities. Therefore, I participated in Hygiene Management Committee meetings in Kanto and Kansai, and visited facilities in these areas to provide education and advice and to share information on hygiene management. Through these activities, awareness of hygiene was gradually increased in Kanto and Kansai, and the differences in scores in FY2014 and FY2015 between the areas was decreased.

During the time I have checked facilities around the nation as a hygiene advisor, I have found a tendency for facilities with a correct understanding of the purpose of hygiene management to have higher scores, whereas facilities with insufficient knowledge have difficulty in increasing their scores. However, an increase in score is not really our goal. The original purpose of the voluntary hygiene management check is to encourage workers to have knowledge about hygiene management, and to change their awareness of hygiene management. Ideally, scores are increased as a result of a change in awareness of hygiene among workers.

Regarding items with low scores on the voluntary hygiene management checklist in FY2015, the average scores for, “devices

(mixer, food cutter, etc.) are always cleaned and sterilized to maintain their cleanliness” was 1.11 points (Hamamatsu: 1.18, Kansai: 1.50, and Kanto: 0.64). This item was evaluated by visual check and ATP test. Even though cleaning and sterilization were performed using appropriate procedures and cleanliness was confirmed in a visual check, the score was 0 if the results of the ATP test were higher than the benchmark value. In addition, for the item, “sponges are always cleaned by sterilization using a fungicide,” the average score was 1.09 (Hamamatsu: 1.33, Kansai: 1.13, and Kanto: 0.82).

Regarding preservation of records, the average score for the item, “table of bacteria tests for suppliers” was 0.90 (out of 1), and that for “table of bacteriological tests for raw materials” was 0.88 (out of 1), suggesting a need for improvement.

(6) Use of the ATP test

Hygiene advisors perform ATP tests together with visual checks

based on the checklist. Swab tests are performed at 5 sites: (1) hands after washing, (2) cutting boards in storage, (3) handles of knives, (4) handles (back side) of refrigerators, and (5) blades of mixers (**Photograph 2**).

Site (1) was selected because the possibility of secondary contamination is highest at sites with food handling. A Sanitation Standard Operating Procedure (SSOP) was prepared for hand washing. In the hygiene check, workers are asked to perform hand washing as usual. If the SSOP is not observed, points are taken off the score. An ATP test is then performed, and 0 points are given if the benchmark value is not achieved. In the ATP test, areas such as the palm and areas between fingers, which may remain dirty, are swabbed especially carefully. In the hygiene check, strict procedures are performed so that all workers will understand that the hands are especially important in hygiene management. When

Test Items	Methods and Conditions	RLU Benchmark Value	Countermeasures for Sites with RLU ≥ Benchmark Value
① Tap water	Use device for running water from a frequently used tap	0 - 30 RLU	Leave tap running for a while after cleaning for re-examination
② Hands	Test dry hands after washing and spraying with alcohol 1) Examine the palm of the dominant hand by swabbing back and forth 5 times each in horizontal and vertical directions. 2) Examine the sides of all fingers. 3) Examine between fingers and nails. These procedures are performed in this order for about 3 workers.	≤1,500 RLU	Re-clean and re-examine Confirm cleaning method and injury to fingers
③ Cutting board	Test cutting boards stored in a sterilization box (boards used for cooked foods) 1) Examine a 10×10 cm central area by swabbing back and forth 5 times each in horizontal and vertical directions.	≤500 RLU	Re-clean and re-examine Confirm cleaning method and damage to board
④ Knife	Test knives stored in a sterilization box (knives for cooked foods) 1) Examine knife handle by swabbing back and forth 3 times for its 4 surfaces. 2) Examine area surrounding the joint of the blade and handle.	≤1000 RLU	Re-clean and re-examine Confirm cleaning method
⑤ Handle of refrigerator	Test frequently used handles for opening and closing the door 1) Examine entire area of back of the handle by swabbing 5 times in a horizontal direction. 2) Base area of the handle	≤2000 RLU	Re-clean and re-examine Confirm cleaning method
⑥ Blades of mixer	Test mixers for cooked foods 1) Examine blades by swabbing back and forth 5 times 2) Examine the back of the blade by swabbing back and forth 5 times 3) Examine the base area of the blade	≤500 RLU	Re-clean and re-examine Confirm cleaning method
⑥ Bowl (if mixers are not used in the facility)	Test cleaned bowls of diameter 20-30 cm 1) Examine a 10×10 cm central bottom area by swabbing back and forth 5 times in horizontal and vertical directions. 2) Examine entire inside of bowl upper edge	≤200 RLU	Re-clean and re-examine Confirm cleaning/storage method

Note: Swabbing should be performed with some intensity so that the swab bows (approx. 10 cm square).

Reference benchmark values	Devices with flat surfaces that are easily cleaned	≤200 RLU
	Devices with irregular surfaces that are difficult to clean	≤500-1000 RLU

Table 1: ATP test manual

we perform an ATP test on hands in a facility with many workers, we sometimes select new workers for the test to check whether hygiene education is being performed appropriately.

For site (2), we select cutting boards that should be especially clean, such as those used for cooked foods, among the many cutting boards in a facility.

Site (3) is known as a “blind site in hygiene management.” Hygiene management is sufficient for the edge of a knife in most facilities, but unexpectedly not for the handle in many cases. In addition, in facilities in which insufficient hand washing is suggested in (1), values for knife handles tend to be high. Thus, (1) and (3) may be related sites in hygiene management.

At site (4), tests are performed for refrigerators in which food is stored. This is an important item in hygiene management because many workers may touch these refrigerators. Furthermore, the “back side” of a refrigerator handle is also known as a blind site in hygiene management.

Site (5) is used for preparation of dysphagia diets and especially high cleanliness is required. In addition, since a mixer structure is often complex, contamination may remain, and thus mixers are chosen as ATP test sites. In facilities that do not use mixers, tests are performed for bowls.

Table 1 shows the manual for the ATP test. First, tap water is measured as a standard for the test. Then, hands, cutting boards, handles of knives, handles (back side) of refrigerators, and blades of mixers are checked. The manual includes detailed explanations of test sites, and notes such as swabbing should be performed with some intensity such that the swab bows. Benchmark values are those recommended by Kikkoman Biochemifa.

(7) Results of ATP tests ①: Example of measured values

Table 2 shows results of ATP tests in 2015, and **Figure 6** shows a graphical representation of the same results. The mean value for

	Minimum	Maximum	Average	Benchmark
Hands	17	19,178	2,241	≥1,500
Cutting board	7	37,348	2,814	≥500
Handle of knife	53	34,188	7,527	≥100
Handle of refrigerator	203	122,699	18,785	≥2,000
Mixer	19	137,663	12,462	≥500

Table 2: Benchmark value and measured data in the ATP test (average) ①

hands was 2,241 RLU (minimum: 17 RLU, maximum: 19,178 RLU). This was higher than the benchmark value (1,500 RLU*), but was not so bad. However, while some facilities had low values, there were also facilities with extremely high values compared to the benchmark value, and thus improvement is required for such facilities.

At other sites, mean values were generally higher than the benchmark values. The values for cutting boards, handles of knives, handles of refrigerators, and mixers were about 5.6, 7.5, 9.4, and 24.9 times higher than the benchmark values, respectively (**Table 2, Figure 6**).

Sites for ATP tests are selected because they (1) are difficult to clean and contamination may easily remain (mixers, etc.), (2) may cause expansion of secondary contamination (hands etc.), and (3) have high frequency contact with food materials (cutting boards, etc.). I believe that an approach to decrease test values in individual facilities will stimulate discussion of hygiene management and the need for a review of cleaning procedures.

* RLU: Relative Light Unit (unit specific to the ATP test)

(8) Discussion of the results of ATP tests

① Cutting boards

Even cutting boards that look clean can become scratched after long-term continuous use, and contamination in such scratches is difficult to remove, even with careful cleaning using the SSOP. This results in high values on an ATP test. In such cases, replacement of the cutting board may be recommended. Thus, the results of ATP tests can be used not only to confirm hygiene management, but also to determine the appropriate time for replacement of cooking tools. In addition, since bacteria may attach inside scratches on a cutting board, I sometimes explain the risk of invisible bacteria to the manager of a facility. High RLU values on a cutting board may also be caused by poor management of sponges and dusters

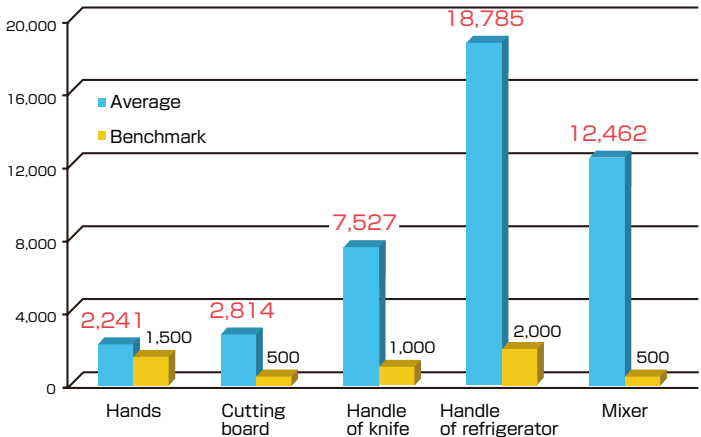


Figure 6: Benchmark value and measured data in the ATP test (average) ②

used in cleaning.

② Handles of refrigerators

The back side of a refrigerator handle is a site that is difficult to clean. When a hygiene advisor asks a worker to clean a handle as normal during a visit to a facility, cleaning may actually be performed with more detergent and water due to the presence of the hygiene advisor. However, water spattering on the floor is not cleaned. To maintain a dry floor in a kitchen is a basic task. Thus, observation of cleaning of the handle of a refrigerator can allow assessment of general knowledge and awareness of hygiene management, such as maintenance of a dry floor.

③ Blades of mixers

A mixer is difficult to clean due to its complex structure. RLU values for mixers were originally thought to depend on the number of provided meals, but high RLU values for mixers are now considered to show a problem with the cleaning method. Therefore, at facilities with high values for mixers, I sometimes introduce cleaning methods used in facilities that have lower RLU values. However, it is not easy to establish correct cleaning rules. It is important for workers to be aware of how to remove food residues and wash mixers because of the difficulties of removing contamination and washing.

(9) Results of ATP tests ②: Example of acceptance rates

In the table of ATP test results, a hygiene advisor fills in measured data and a pass/fail rating in comparison with the benchmark value, using ○ and ×, respectively. When the result of the first test is “fail”, a second test is performed after re-cleaning.

I will discuss an example of a pass/fail situation in an ATP test in 2015 (50 facilities examined). The numbers of facilities that passed in the first test were 41 for hands (fail: 9), 33 for cutting boards (fail: 15, no test: 2), 26 for knife handles (fail: 22, no test: 2), 10 for refrigerator handles (fail: 40), and 13 for mixers (fail: 29, no test: 8).

For facilities that failed in the first test, a second ATP test was performed (see **Figure 7** for the test results). The acceptance rates in the second test were 78% for hands (22% were workers with rough hands that had higher values than the benchmark value ; therefore, countermeasures for hand care were required in hygiene management for hands , in addition to those for hand washing), 27% for cutting boards (15 facilities), 59% for knife handles (22 facilities), 22% for refrigerator handles (40 facilities), and 21% for mixers (29 facilities).

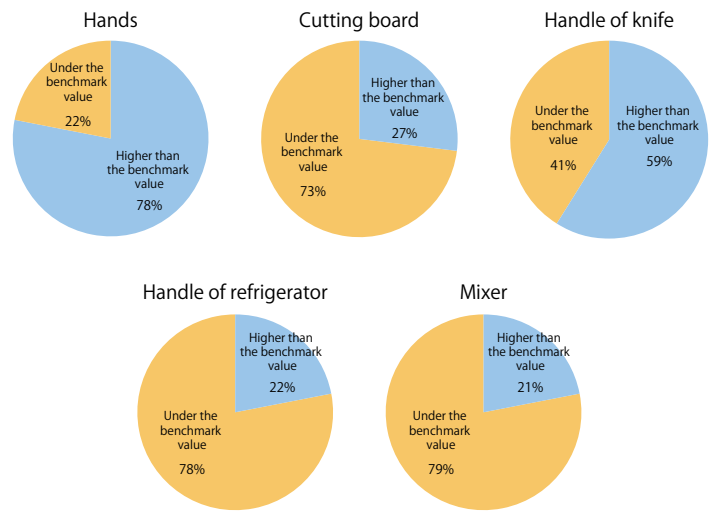


Figure 7: Acceptance rates of ATP test (second)

(10) Effects of ATP tests: Importance for hygiene education

Before introduction of the ATP test, visual inspection using the voluntary hygiene management checklist and a test for adhesive bacteria (colony test) were performed. However, there was no way of judging cleanliness when the visual appearance was clean. Therefore, differences in hygiene management among facilities could not be detected. In addition, it took several days to obtain the results of a colony test (because of cultivation), and thus it was difficult to understand the situation at the site on the day of sampling when the results were obtained.

Introduction of an ATP test has enabled digitalization and visualization of hygiene management. In addition, since the results of ATP tests can be obtained on site immediately after the test (within 10 seconds), we can perform activities for improvement, such as directions for re-cleaning. We can also increase understanding of the effects of re-cleaning by performing a second ATP test after re-cleaning and obtaining RLU values lower than the benchmark value . The feature of an ATP test of giving immediate numerical data is particularly important for education and training to improve awareness of hygiene management.

The ATP test provides important opportunities for understanding of hygiene management, including that sites that a large number of workers touch can be the cause of expansion of secondary contamination, that contamination may remain in devices with complicated structures, and that low RLU values can be obtained with correct cleaning performed according to the SSOP. This understanding is likely to result in establishment of better cleaning methods.

(11) Handling of inspection results (confirmation of improvement)

As mentioned above, hygiene advisors quantify cleanliness

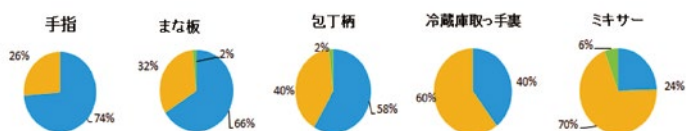


衛生委員会だより

第51号

平成26年度衛生アドバイザー報告

【ATP拭き取り検査結果】



冷蔵庫取っ手裏、ミキサーの数値は全体的に高い傾向にありました。今一度、各施設の日々の清掃状況（清掃の方法、洗剤の種類や濃度の確認、清掃に使用するダスター、スポンジの管理方法）をご確認下さい。

【得点が低かった項目】

①使用する機器や布巾、ダスターの管理方法の見直し・②個人衛生管理の徹底をお願いします。

項目番号	項目
20	機械（ミキサー、フードカッター等）類は常に洗浄殺菌を行い衛生的であるか。
22	まな板、包丁の保清、保管状態はよいか。殺菌灯の交換は、適切に行われているか。
23	スポンジは殺菌剤等を用いて消毒をし常に衛生的であるか。
24	台布巾は殺菌剤等を用いて消毒をし常に衛生的であるか。
28	SSCPまたはマニュアルに沿った適切な手洗いが必要な都度なされているか。
29	使用時には専用履物に履き替えているか。
30	帽子、三角巾、エプロンを脱いでから使用しているか。

Figure 8: ATP test results shown in the Newsletter from the Hygiene Management Committee, which is issued annually by the committee to improve awareness of hygiene management.

through visual checks and ATP tests, based on the voluntary hygiene management checklist, to provide instructions and advice for improvement of hygiene management. The advisors prepare a report to inform a facility of the inspection results. After receiving this report, the facility submits a plan for hygiene management improvement within one week, showing the details and timeline for improvement. Progress and results of the improvement plan are then submitted at the end of a fiscal year.

The results of ATP tests are used in an annual hygiene workshop. The results are also given in the Newsletter from the Hygiene Management Committee (Figure 8), which is issued several times a year. Other approaches have also been used to improve awareness of hygiene management through ATP tests.

Continuous improvement of hygiene management and development of hygiene advisors

The voluntary hygiene management checklist requires mainly visual checks. Addition of an ATP test allows invisible contamination to be detected, with achievement of greater hygiene education. Improved hygiene knowledge and awareness among workers will result in provision of safe and good-tasting meals and improved satisfaction of users. The system and manual for hygiene management is not “pie in the sky.” It is important to use the

system at work sites, and I am implementing a Plan-Do-Check-Act (PDCA) cycle for continuous improvement of hygiene management activities.

In the early period after introduction of the ATP test, many workers were unwilling to accept the test or were concerned about the visits of hygiene advisors. However, the purpose of the ATP test is now understood due to repeated tests for several years, and workers have developed ideas on effective use of the test results. For example, some workers give suggestions for bowls for cooked foods, handles of serving wagons, and cooking tables. Regarding cooking tables, an ATP test was requested to confirm cleanliness at the time of the switch from cooking to serving, which are performed on the same table. I was glad to hear these comments because it confirms increased awareness of hygiene management among the workers.

At present, ATP tests are performed for several of the 50 items in the voluntary hygiene management checklist. We are discussing an increase in test items for further improvement of hygiene education.

It is important to improve hygiene management awareness in all workers at sites handling food. Insufficient awareness of hygiene for only one worker may cause a serious food accident. To prevent this, I plan to continue to improve hygiene education. To achieve this, I believe that development of hygiene advisors in individual areas will be important to improve the accuracy of ATP test procedures.

Supplement: Use of ATP tests for infection management

I have shown examples of use of the ATP test in kitchens. In Hamanako Eden no Sono, ATP tests are also used in infection management. For example, when a worker with poorly washed hands after diaper changing touches the handle of a refrigerator, an infection may spread. The ATP test is effective for infection management at sites such as handles of refrigerators, and for the hands of nursing care staff.

kikkoman

Kikkoman Biochemifa Company

2-1-1, Nishi-shinbashi, Minato-ku, Tokyo 105-0003, Japan
Phone: +81-3-5521-5490 Fax: +81-3-5521-5498
E-mail: biochemifa@mail.kikkoman.co.jp
URL: <http://biochemifa.kikkoman.co.jp/e/>