vegetables & salads, yoghurt, cheese and milk or other dairy products.

- Swabs taken off hands are normally tested for TMA (Total Microbial Activity). It is recommended that where product handling is significant and the final product is prone to contamination from handling, testing for E. coli, Coliforms, and Staphylococcus also be done where a sink is not practical. Hand swab results will be expressed as the cfu (colony forming units)/area swabbed, as it is difficult to swab a 10cm² area on a hand as you would swab in the case of a flat surface. It is important that areas between the fingers and around the nails also be included when the swab is taken, as these are the areas that are mostly neglected during hand washing and disinfection.

### Guidelines for interpretation of swab results

The standards available include:

<table>
<thead>
<tr>
<th>Health Act (Act 63, 1977)</th>
<th>SABS 049</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt; 100 cfu/cm² (no more than 100 bacteria/cm²)</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>1-15 cfu / 100 mm²</td>
<td>Satisfactory</td>
</tr>
<tr>
<td>16-25 cfu / 100 mm²</td>
<td>Fairly Satisfactory</td>
</tr>
<tr>
<td>&gt; 25 cfu / 100 mm²</td>
<td>Unsatisfactory</td>
</tr>
<tr>
<td>Comments: 1000 mm² – &gt;10 cm²</td>
<td></td>
</tr>
</tbody>
</table>

Swift’s recommendations:

<table>
<thead>
<tr>
<th>POINTS</th>
<th>BACTERIAL COUNT</th>
<th>COMMENTS</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>&lt;10 cfu / 10 cm²</td>
<td>Excellent</td>
</tr>
<tr>
<td>4</td>
<td>10-70 cfu / 10 cm²</td>
<td>Good</td>
</tr>
<tr>
<td>3</td>
<td>71-99 cfu / 10 cm²</td>
<td>Acceptable</td>
</tr>
<tr>
<td>2</td>
<td>100-1000 cfu / 10 cm²</td>
<td>Unsatisfactory, requires attention</td>
</tr>
<tr>
<td>1</td>
<td>&gt;1000 cfu / 10 cm²</td>
<td>Unsatisfactory, requires immediate attention</td>
</tr>
</tbody>
</table>

### In conclusion

Microbiological testing must be considered a management system and not just a laboratory procedure. The sampling plan and protocols are as important as the testing method – no level of laboratory sophistication will overcome an inadequate sampling plan and protocol.

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We often receive welcome feedback from our clients about the content of previous articles featured in our newsletter, as well as requests for topics to be featured in future. In this last issue of our newsletter for 2005, we have therefore decided to let our readers dictate the topics of our two main articles.

The first article focuses on the various regulatory standards relating to cleaning chemicals, disinfectants, and detergent-disinfectants currently in use in the food and beverage industry in South Africa. In our “focus on….” article our guest writer discusses some of the most important requirements of the relevant SABS standards which manufacturers must comply to if they claim that their product is registered in terms of Act 29 of 1993.

The second article deals with the use of swabs to verify and validate cleaning and disinfection procedures. Swift receives frequent requests for assistance with implementing programs to measure and monitor the efficacy of these procedures. The simplest and most effective technique to use is the swab technique but, as our article shows, the accompanying sampling plan and protocol are as important as the technique used.

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**Staff News**

**Noor showing off our zooty little Kangoo!**

The continued dynamic growth of the company has enabled Swift to create 7 new posts during the last six months!

In the laboratory we appointed 2 additional laboratory technicians, another microbiologist, and a second sample registrar. This increased the staff complement in our laboratory to 18 (9 qualified microbiologists, 4 laboratory technicians, 2 laboratory assistants, 2 sample registrars, and 1 in-service student).

Our Cape Town clients have by now met our additional driver and seen our second sample collection vehicle on the roads around Cape Town – you cannot miss the Swift branding on our zooty little Kangoo!

Our ever-growing client base in Cape Town has further necessitated the appointment of 2 additional technical consultants. Maria van der Merwe, who has a Consumer Science and Microbiology background, joined the Marketing & Technical Liaison Department, and Jason Nyman joined our Quality Management Systems Department as trainer and technical specialist.

The increased workload in the Hygiene Department led to the appointment of a national Hygiene Coordinator, who schedules appointments and handles customer liaison for our team of Hygiene Consultants.

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**Vacancies**

Swift currently has two vacancies: one in Gauteng and the other in Cape Town.

**For further information contact:**

Swift’s marketing department or send an e-mail to info@swift.co.za.

Cape Town (021) 689 9344 • Pretoria (012) 349 2334 • www.swift.co.za

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**Competition…**

One lucky reader will win a **BASIC HYGIENE AWARENESS TRAINING COURSE** for his/her company. The prize includes a 4-hour training course for 15 people, presented on-site at the client’s premises.

To enter, please send your name, company name, contact details, together with the answer to the question below, to us at 021 689 6863 or enter via our web-site.

**Question:** At what temperature must swabs be stored or kept during transport to the laboratory?

**Closing date for entries:** 31 December 2005

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**Basic Hygiene Awareness Training Course for 15 People**

The most reliable, affordable solution for microbiological defence.
The various standards relating to cleaning chemicals, disinfectants and detergent-disinfectants currently in use in the food and beverage industries in Africa often cause confusion among users and manufacturers alike.

Firstly, we have legislation in place (Standards Act, 1993: Act 29 of 1993) which requires manufacturers to comply with specific codes of standards set by the South African Standards SABS 1828, 1827, 1825, etc. These SABS codes of standards specify general requirements for cleaning chemicals and disinfectants intended for use in the food industry.

In addition, the Agricultural Products Standards Act (Act 119 of 1990) specifies requirements for cleaning chemicals, detergent-disinfectants and disinfectants for use in organic production of foodstuffs, and Act 36 of 1947 (The fertilizers, Farm Feeds, Agricultural Remedies and Disinfectants) specifies requirements for products used on animals intended for human consumption.

In this discussion I am going to focus on some of the most important requirements of the SABS standards relevant to Act 29 of 1993. If a product is registered under Act 29 of 1993, it also means that the product complies with the requirements of the relevant SABS standards.

Let’s look at some of the requirements of these SABS standards:

1. Raw materials of cleaning chemicals, disinfectants and detergent-disinfectants must be of such a nature that they do not cause discoloration or odors, color or flavor to foodstuffs or processing plants.

2. Cleaning chemicals, after a storage period of 12 months in the original container at 25°C ± 5°C in the case of a liquid, may not show any separation of thickening and solids must remain homogeneous.

3. SABS 1828 and 1853 also require a documented quality system from the manufacturer that must contain (but is not limited to) the following:
   - a procedure for product manufacture,
   - specifications for raw materials and finished products,
   - raw material tests,
   - a procedure for foreseen packaging and labeling,
   - storage of the finished products.

4. Labelling requirements:
   Any product labeled as “Dangerous Goods” must contain the relevant United Nations number and proper name. Labels must also contain the following – indication of whether the product is a cleaning chemical, disinfectant or detergent disinfectant and the type.

5. The purpose for which the product is claimed to be suitable and that the product is suitable for a food processing plant.

6. Recommendations for use, hazard warnings if relevant, certification standards by a relevant authority and certification marks.

7. If applicable, the expiry date, manufacturer’s name or trademark, batch identification, whether the product is required to be rinsed from food surfaces after use and the appropriate instruction for storage of the product.

CONCLUSION

The government has passed legislation requiring manufacturers to adopt the relevant SABS standards. These codes of standards are separated into cleaning chemicals (SABS 1828), detergent-disinfectants and disinfectants (SABS 1853). Any manufacturer that does not comply with these codes of standards is then in violation of Act 29 of 1993. Therefore if any product is registered under Act 29 of 1993, it also means that the product complies with the requirements of the relevant SABS standard. The SABS codes of standards specify significantly more than I have discussed in this article. The following codes can be used as a source of reference for additional information:

- SABS 0228: The identification and classification of dangerous substances and goods.
- SABS 0229: Packaging of dangerous goods for road and rail transportation in South Africa.
- SABS ISO 11044-1: Safety data sheet for chemical products.
- SABS 47: Coal tar types and tar pitch.
- SABS 636: Disinfectants based on quaternary ammonium compounds.
- SABS 639: Detergent-disinfectants based on quaternary ammonium compounds.
- SABS 643: Disinfectants based on stabilized chlorine compounds.
- SABS 1032: Detergent-disinfectants based on stabilized inorganic chlorine compounds.
- SABS 1081: Detergent-disinfectants based on iodophors.
- SABS 700: Detergent-disinfectants based on organic halogen compounds (other than iodine compounds).
- SABS 1196: Disinfectants based on organic halogen compounds.
- SABS 1615: Disinfectants based on glutaraldehyde.
- SABS 1616: Detergent-disinfectants based on glutaraldehyde.

Cleaning chemicals, after a storage period of 12 months in the original container at 25°C ± 5°C in the case of a liquid, may not show any separation of thickening and solids must remain homogeneous. These standards have received many requests recently to assist clients with the implementation of monitoring programmes for the cleaning and disinfection of food/product contact surfaces.

The simplest and most effective way to measure the efficacy of a cleaning process is with the swab technique. Effective cleaning and disinfection can be monitored by swabbing and this method is also an important aspect of the overallergic monitoring. The area re-swabbed after the implementation of the corrective action should be reused for problem-solving purposes. Another important aspect of a swab programme is to follow it up with a corrective action plan. When high bacterial growth is detected on certain areas, the cause should be investigated and the area re-swabbed after the implementation of the corrective action.

2. Materials needed for swabbing

- Sterile plastic swabs are supplied by Swift or can be bought at any supplier of microbiological materials. Swabs should be dipped in a neutralizing agent before use. This is necessary to eliminate the effects of residual disinfectants on the surface being swabbed. Swabs provided by Swift have already been dipped in this neutralizing agent.
- A permanent marker is necessary to label swabs.
- A polyethylene or other insulated container is required for the collection of swabs. Frozen ice packs are needed to keep samples cool below 5°C.

3. Swabbing procedure

The SABS method 763 is followed for the microbiological monitoring of surfaces with the swab technique. Any person taking a swab should first clean and disinfect their hands. The following steps are based on the SABS 763 method:

- A sterile swab is opened in a neutralizing agent.
- A neutralizing agent is added before use.
- The swab is transported to the laboratory. A word of caution: equipment construction and maintenance may not only make it difficult to clean, but also to swab. Because easily accessed areas normally don’t cause cleaning problems, swabs must be taken in hard to reach areas to find potential problems. Much time is usually spent swabbing areas such as floors and drains, but attention should also be given to elevated areas from which condensate or collected dust could drip or fall onto equipment, raw materials or packaging materials.

4. Transporting and Storing of Samples

Samples should be transported to the laboratory as soon as possible. Best practice is to have the samples tested within 24 hours of being taken. Samples should be transported at a temperature of between 0-5°C.

It is important that all information regarding sample identification, date of sampling, as well as any other relevant information which could affect interpretation of the results, accompany the samples to the laboratory.

5. Tests Required

Many questions arise regarding the bacterial analysis to be done on the swabs submitted to a laboratory. Because the swab technique is used to verify the effectiveness of cleaning and disinfection of surfaces, it is important to determine the total microbial load on these surfaces.

- To determine the bacterial load of a surface, a Total Viable Count (TVC) is determined. This should be done on the swabs. The effectiveness of the cleaning can be rated according to certain guidelines, by using the TMA test.

- Tests for environmental microorganisms can also be done on swabs. Normally when a product is prone to contamination from environmental microorganisms, it is recommended that the swabs also be tested specifically for these bacteria or yeast & moulds.

- Listeria tests are normally recommended for swabs from factories processing ready-to-eat products in a chilled environment. A specific Listeria monitoring plan is recommended for these factories i.e. including a strain for serotyping in the swabbing schedule for the month. Should Listeria be detected in the drain, it normally serves as an indication that Listeria could be present in the factory. Environmental monitoring is recommended for premises processing the following products: red meat, fish, poultry, ...