

Introduction to Basic Microbiology (*in Soft Drinks Manufacture*)

Why attend:

This is a two-day laboratory-based workshop held in conjunction with Reading Scientific Services Limited (RSSL).

Aimed at the soft drinks, fruit juice and bottled water sectors, by attending this course staff new to microbiology, or with a limited background in this field, will be provided with an introduction to spoilage, pathogenic and beneficial microorganisms of significance to the soft drinks industry.

Delegates will understand what is involved in the microbiological examination of samples, the significance of laboratory results and what action may be necessary to control the growth of particular organisms. They will acquire skills to perform routine tests from practical exercises undertaken within fully equipped laboratories, guided by highly skilled staff. In addition, they will know how to undertake simple troubleshooting when problems occur.

A series of short lectures, together with comprehensive notes covering aspects of soft drinks microbiology, will ensure that delegates understand the theory behind the practical, and have essential information for future reference.

The course is highly interactive, full of exercises and workshops and presented in a relaxed and informal style.

Tutor

Gill Palmer, Principal Consultant, Palmer & Randall Ltd
(<http://www.rssl.com/Training/tutors/tutordetails.aspx?TutorID=Z2lsbC5wYWxtZXJAcHJhb2ZmaWNlMnNvbQ%3d%3d>)

Course Content:

Nature of Microorganisms:

Yeasts, bacteria, moulds, others (eg *Cryptosporidium*, *Giardia*, viruses, protozoa, amoeba)

Use of Microorganisms:

Fermentation
Preservative effect
Flavour and aroma development

Good microbiological quality

Nature of microbiological hazards in soft drinks:

Hazards created by microorganisms.

Practical session:

Looking at microorganisms under the microscope (pre-stained) – bacteria, moulds and yeasts.

The study of microorganisms:

Which ones can be studied?

Microbial growth curve:

Factors affecting microbial growth

Intrinsic factors – nutrients, pH, redox potential, water activity, antimicrobial

Extrinsic factors – humidity, temperature, gas atmosphere

Implicit factors – specific growth rate, synergism, antagonism, commensalism

Explicit factors – processing (packaging, irradiation, pasteurization, emulsification, sterile filtration)

Introduction to microbiological techniques:

Basic methods: isolation/enumeration/detection/identification

Aseptic technique

Loops, wires, pipettes etc

Media – liquid, semi-solid, solid

Incubation times and temperatures

Types of media

Microbiological techniques:

Distribution of micro-organisms

Obtaining and handling samples

Sampling plans

General methods of isolation

Membrane filtration

Agar pour plate procedure

Spread plates

Spiral plates

Calculation of results

Rapid methods

Practical session:

Inoculating liquids, inoculating slopes, streaking plates, selective and diagnostic broths, selection and diagnostic agars, serial dilutions, pour plate, membrane filtration and colony count.

Culture media and methods of isolation and identification:

Bacteria

Moulds

Yeasts

Confirmatory tests:

Microscopy: setting up a microscope; Gram stain; lactophenol cotton blue

Other tests: catalase, oxidase, motility, API

Practical session:

Looking at results from previous practical sessions; use of microscope; Gram stain, lactophenol cotton blue stain, catalase, oxidase, API.

Preservatives and preservative resistant organisms:

Preservatives in soft drinks (mode of action) – relative effectiveness against specific organisms

Problem organisms

Preservative resistant yeast

Alicyclobacillus acidoterrestris

Lactic acid bacteria

Cryptosporidium

Factors affecting choice of preservative systems

Notes:

1. RSSL offers a wide range of top-quality training courses specifically for the food sector and has developed an outstanding reputation within the industry. RSSL has been running the BSDA course 'Introduction to Basic Microbiology', which is specific to the needs of the soft drinks industry since 2000.