



Manufacturing Soft Drinks Today

SYLLABUS

1. Introduction to the Industry

History of soft drinks

Origins, early manufacture of artificially carbonated waters, fruit and juice based drinks, distribution, World War II and the SDI scheme, Post War developments (*incorporated into pre-course reading*)

The industry today

UK soft drinks market overview. The principal companies and brands. New innovations. (*incorporated into pre-course reading*)

2. Basic Microbiology

Basic microbiology theory/terminology. Microbiological quality and safety. Factors affecting microbial growth. Techniques to detect and identify micro organisms. Critical control points in manufacturing. Preservatives and problem organisms. Industry examples (*pre-course reading + course lecture*)

3. Water Treatment

Water types and sources. Water for soft drinks. Water and effluent charges. Minimising water costs. Water treatment processes (Coagulation, ion-exchange and reverse osmosis). Typical water analysis (*course lecture*)

4. Ingredients, Additives and Flavourings

Ingredients and additives

The main ingredients of soft drinks – sugars, fruit juice and additives – intense sweeteners, acids, preservatives and colours. Legislation pertaining to ingredients and additives (*course lecture*)

Flavourings

How we taste. Flavouring raw materials and substances. Developing and processing a flavour. How flavours are handled and the importance of this. Examples of formulations (*course lecture*)

5. **Production Preparation, Carbonation Practices, Filling and Filling Line Operations**

Overview of materials and services used in production. Syrup preparation, proportioning, stream blending. De-aeration, carbonation, pasteurisation and high pressure processing. Basics of production line operations. Bottle rinsing/washing. Principles of filling. Types of fillers – gravity, counterpressure and volumetric. Capping. Typical factory/production line layouts and plant use on lines (depalletisers, palletisers, labellers etc.) (*course lecture*)

6. **Functional Drinks**

Types of drinks on the market; specific drinks (probiotics/prebiotics, sports and energy drinks); health and nutritional claims; nutraceuticals, vitamins and minerals; herbs and botanicals; anti-oxidants; legislation pertaining to these types of beverages/drinks. (*course lecture*)

7. **Primary Packaging**

The objectives of primary packaging. Design and manufacture of soft drinks containers:

Glass, PET, HDPE, cans, cartons (Tetra Pak and Combibloc systems), cups and pouches. Advantages and disadvantages of different types of packaging. Closures and seals:

Basic principles in producing a good seal. Application of roll on aluminium/plastic closures and crowns. Push-pull closures (sports caps). Can sealing. Advantages and disadvantages of different types of closures.

Recycling of packaging (*course lecture*)

8. **Secondary Packaging**

Function of secondary packaging. Supply chain types and requirements. Pack styles and materials

Shrinkwrap, cases, trade ready display units, returnable crates - properties, advantages and disadvantages.

Pallet wrapping, stacking and labelling

Getting product to the customer; best practice, problem resolution.

(*course lecture*)

Syndicate Work

All presentations are teaching sessions where discussion is promoted and lively interaction takes place. To reinforce the information conveyed by each lecturer, some interactive exercises and syndicate work takes place during certain presentations.