ENGINEERS REGISTRATION BOARD

PRACTICAL TRAINING GUIDELINES FOR CHEMICAL AND PROCESS/BIOCHEMICAL ENGINEERS

A: INTRODUCTION

(a) Subject to the contents of these practical training guidelines, every trainee in the Chemical & Process or Biochemical engineering discipline shall complete training in the types of works specified for a minimum period of three years or as specified in the Engineers Registration Board Regulations 1999.

(b) In the case of research workers and other specialists, where the nature of work renders it impracticable to adhere to the requirements set out in the contents of these practical guidelines, the Board shall evaluate each individual's case separately having due regard to the practical training approved for the time being by the Board.

(c) The main thrust for professional and technician engineer trainees is as follows:-

(i) Professional engineers:-

The main thrust is on knowledge, understanding subject matters, analysis and methods. Professional engineers must have analytical capabilities, adaptability to varying situations, ability to identify, rectify and design solutions, management capabilities, power and communication skills, adherence to the professional ethics and conduct as specified in the Engineers Registration Board Regulations 1999 and as amended from time to time.

(ii) Technician engineers:-

The main thrust is on know-how of subject matters. Technician engineers must have independent judgement within the field, top class engineering applications, development of cost effective systems and safe procedures, applications of appropriate mathematics, science and related subjects, team and resource management.

B: CONTENTS OF PRACTICAL TRAINING

(a) General Workshop Practice:

Every trainee shall work under the supervision of a registered professional Chemical & Process or Biochemical engineer for a minimum period of 6 months or as determined by the Board in accordance with the Engineers Registration Regulations during which time knowledge and experience should be acquired in most of the following areas:

- Casting and foundry work including pattern making
- Bench work
- Machine shop practice i.e drilling, shaping, turning, milling, grinding etc.
- Welding both gas and electric
- Electrical workshop (activities such as wiring electrical repairs)
- Simple repair of process equipment e.g. pumps motors etc
- Plumbing

(b) Process Plant Work

Every trainee shall work under the supervision of a registered professional Chemical & Process or Biochemical engineer for a minimum period of two years or as determined by the Board in accordance with the Engineers Registration Regulations during which time knowledge and experience should be acquired in most of the following areas:

(i) Process flowsheeting and drawing

- This should involve the preparation of detailed flowsheets and engineering drawings

(ii) Plant Operation

Aspects to be considered in this sub-paragraph include:
- Troubleshooting, to identify and resolve operational problems of a technical nature;
- The collection of measured data and the preparation of mass and energy balances;
- Plant maintenance and preparation of planned maintenance and schedules;
- Inspection and resultant maintenance

(iii) Quality management

Aspects to be covered under this sub-paragraph should include:-
- Familiarization with the relevant test procedures and standards
- Conducting tests on raw materials, intermediates and finished products with appropriate laboratory practice;
- Formulate, implement and monitoring of quality control procedures

(iv) Commissioning of New equipment and Plant

- Installation
- Start up
- Operational and test data
- Performance and evaluation

(c) Plant and equipment design

Every trainee shall work under the supervision of a registered professional Chemical & Process or Biochemical engineer for a minimum period of 6 months or as determined by the Board in accordance with the Engineers Registration Regulations during which time knowledge and experience should be acquired in most of the following areas:

- Preparation of preliminary plant design and equipment specification
- Simple equipment design
- Preparation of cost estimates
- Evaluation of tenders

(d) General management

Every trainee shall work under the supervision of a registered professional Chemical & Process or Biochemical engineer for a minimum period of 6 months or as determined by the Board in accordance with the Engineers Registration Regulations during which time knowledge and experience should be acquired in most of the following areas:

(1) Plant Management

Aspects to be covered under this sub-paragraph should include:-
- Organizations of labour work schedules, stock control etc.
- Production planning and process optimization
- Costing and management accounting
- Manufacture/hire/buy decisions
- Communication skills

(2) Environmental Management

Aspects to be covered under this sub-paragraph should include:-

- Air pollution prevention and control
- Water pollution, prevention and control
- Solid waste management
- Environmental impact/risk assessments