



THE CHEMICAL ENGINEERING MAJOR

Waste Water Treatment & Environmental Protection

Waste Water Treatment & Environmental Protection

Course Description

The quality of groundwater used cannot be compromised any longer and the servicing requirements of on-site sewage disposal systems cannot be ignored. With limited funds available to you - the private owner or regulatory agency that has responsibility for inspection, the task of on-site sewage treatment and disposal is becoming very difficult.

The Training Course will Highlight?

Industrial wastewater dischargers face a variety of enforcement actions if they are not in compliance with the USA Clean Water Act. This is the case if the discharger is a direct industrial discharger, or is an indirect discharger into a Publicly Owned Treatment Works (POTW). This course covers the regulations that affect the management of industrial wastewater permitting, effluent guidelines, and associated issues.

Course Objectives

By the end of this course delegates will be able to:

This course will cover all aspects of sewage and industrial waste treatment process. It will cover planning, design, construction, operations and maintenance of the modern sewage and effluent treatment plants. Further, this course will cover all aspects of Environmental Protection in Industrial Plants .

With limited funds available to the owners we believe this course will help you to install an effective system. You will learn numerous tips and tricks throughout the course to make it very practical and relevant to your applications

Who Should Attend?

- Environmental managers, engineers and environmental professionals
- Operations, maintenance, inspection and project managers, supervisors and engineers
- Plant, Mechanical, Maintenance and Design engineers, technicians and staff
- Municipal planners & engineers
- Laboratory Staff
- Anyone responsible for managing and operating sewage treatment facilities
- Anyone involved with making decisions about the discharge of any industrial pollutants into water should attend this course. The course provides the tools needed to determine compliance with the requirements of their job. The course is designed for industrial wastewater compliance managers and supervisors

Course Outline:

Day I

- Registration and Coffee Welcome, Introduction, Workshop Preview, Learning Outcomes and the Assessment Method Wastewater Sampling and Testing
- Selected parameters in wastewater treatment
- pH, DO, T
- Suspended solids
- Fat, oil and grease (FOG)
- Biochemical oxygen demand (BOD), and chemical oxygen demand (COD)
- Total Kjeldahl Nitrogen (TKN) and ammonia
- Total phosphorous
- Nitrate and nitrite
- Residual chlorine
- Sampling and testing for small plants
- Industrial Wastewater Treatment - Pretreatment and Primary Treatment
- Microbiology fundamentals in wastewater treatment
- Pretreatment : equalization flow, pH
- Primary treatment: solids removal
- Industrial Wastewater Treatment - Secondary Treatment
- Bioreactors
- Aeration concepts and types of aerators
- Types of treatment processes: activated sludge treatment, rotating biological contactors and trickling filters, fluidized bed bioreactors
- Rudimentary technologies: septic tanks and lagoons/stabilization ponds
- Adjournment

Day 2

- Industrial Wastewater Treatment - Tertiary Treatment
- Biological nutrient removal
- Nitrogen removal
- Phosphorus removal: chemical phosphorous removal , coagulation and flocculation concepts, biological phosphorous removal • Filtration fundamentals
- Membranes
- Disinfection fundamentals
- Advanced Wastewater Treatment - Reverse Osmosis (RO)
- Applications of membrane technologies
- RO principles
- RO applications
- Advanced Wastewater Treatment - Ion Exchange
- Ion exchange principles
- Ion exchange applications
- Ion exchange issues Advanced Wastewater Treatment – Advanced Oxidation
- The case of pharmaceuticals and endocrine disruptors in wastewater Adjournment

Day 3

- Advanced Wastewater Treatment – Disinfection Processes
- Chlorination
- Ozonation
- Membranes as pathogen removers
- Ultraviolet and peroxide/ultraviolet processing
- Sludge Treatment
- Aerobic treatment (ATAD processes)
- Anaerobic digestion
- Characteristics of Effluents
- Chlorine/ammonia discharge requirements
- Discharge into Receiving Systems
- Potential impacts of effluent discharge into receiving water bodies
- Infraguide Best Practices
- Adjournment

Day 4

- Practical Exercises Related to Centralized and Decentralized Wastewater Treatment Plants
- Conventional wastewater treatment
- Advanced wastewater treatment

Day 5

- Environmental Management of Industrial Waste Water Treatment
- Introduction to ISO 14001 (Environmental Management System) and what it can and cannot do
- The elements of ISO 14001 and its relationship with ISO 9001 (Quality Management System)
- Some typical Hazardous Waste Regulations and the need for harmonization
- Life Cycle Management of Industrial Waste Water treatment
- The importance of documentation in Waste Water treatment