Industrial Waste Treatment, Volume 1
A—Introduction, Safety, Waste Monitoring, and Preliminary Treatment
California State University, Sacramento
(4.2 Continuing Education Units)

COURSE DESCRIPTION

This course is designed to train operators in the practical aspects of operating and maintaining industrial wastewater treatment facilities emphasizing safe practices and procedures. Information is presented on waste discharges from industrial processes, pollution prevention, and regulatory requirements; safety programs and practices, protective equipment, and workplace hazards; industrial waste monitoring programs and practices, including flow measurement; and the safe and effective operation and maintenance of the equalization, screening, and pH adjustment for preliminary treatment of industrial wastestreams.

COURSE OUTLINE

This course presents an overview of industrial waste treatment facilities and safety programs and trains industrial wastewater treatment facility operators to safely and efficiently monitor industrial waste and operate and maintain preliminary treatment processes and equipment.

Chapter 1, Introduction to Industrial Waste Treatment

Learning Objectives

1. Explain the role industrial waste treatment facilities and operators play in protecting public health, municipal collection and treatment facilities, and the environment.
2. List the types of industrial waste discharged, how they are measured, and their effects on wastewater collection and treatment systems and other water uses.
3. Explain the difference between pollution prevention and waste treatment.
4. Identify federal, state or provincial, and local pretreatment regulations that apply to your industry.

The main purposes of this chapter are to give an overview of industrial waste treatment facilities and to present information on waste discharges and their sources, pollution prevention, industrial wastestream variables, regulatory requirements, and the operator's role in industrial waste treatment.

Chapter 2, Treatment Facility Safety

Learning Objectives

1. Identify the types of hazards you may encounter operating an industrial wastewater treatment facility.
2. Recognize unsafe conditions and know how to correct them whenever they develop.
3. Identify protective equipment and its importance.
4. Recognize why a commitment to safety serves operators and the facility.

The main purpose of this chapter is to train operators in recognizing and correcting hazards in industrial wastewater treatment facilities as well as preventing accidents through implementing safe practices.

Chapter 3, Industrial Waste Monitoring

Learning Objectives

1. Develop and implement an industrial waste monitoring program.

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2. Understand the legality and authority of regulatory agencies to implement pretreatment program.
3. Safely collect, preserve, and test samples while maintaining a chain of custody.
4. Explain the importance of flow monitoring.
5. Describe the operation of open-channel and closed-pipe flow measurement devices.

The main purpose of this chapter is to train operators in developing and implementing industrial waste monitoring programs, including flow monitoring, that maintain regulatory compliance.

Chapter 4, Preliminary Treatment

Learning Objectives

1. Understand the importance of preliminary treatment and the differences between methods.
2. Explain the purpose and importance of equalizing basins.
3. Describe the benefits of different types of screens.
4. Analyze pH chemistry to successfully control treatment processes at an industrial wastewater treatment facility.

The main purpose of this chapter is to train operators in the safe and effective operation and maintenance of preliminary treatment processes at industrial wastewater treatment facilities.

TIME ASSIGNMENT

Text pages: The content from the training manual used in this course, *Industrial Waste Treatment*, Volume 1, includes 366 pages. The average word count on a page from the training manual is 525 words. The training manual used for this course contains text, tables, graphs, illustrations, math example problems, section questions, and chapter review questions to enhance the presentation of information and the student learning experience. The course is designed for students to spend the same amount of time reading the tables, graphs, and illustrations as they spend reading the equivalent amount of related chapter text. Therefore, each page is assumed to contain the equivalent of 525 words. The average reading speed is 130 words per minute; therefore, each page is projected to require four minutes of student time for each reading.

Math example problems: The course contains 26 math example problems. The projected average time to solve each math problem is 3 minutes.

Section questions: The course contains 222 section questions, located in the "Check Your Understanding" sections integrated throughout the chapter text. These questions enable students to self-assess their understanding of a section's material before proceeding to the next section. The projected average response time is 2 minutes per question.

Chapter review questions: The course contains 135 review questions, located in the "Chapter Review" at the end of each chapter. Question types include fill-in, multiple choice, and matching. The projected average response time is 2 minutes per question.

Objective test questions: The course contains 130 test questions. There is 1 objective test per chapter. The projected average response time is 2 minutes per question.

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Course component	Number of component units		Minutes required to complete component unit		Total time assignment for component
Text pages	366	×	4	=	1,464
Math example problems	26	×	3	=	78
Section questions	222	×	2	=	444
Chapter review questions	135	×	2	=	270
Objective test questions	130	×	2	=	260
					2,516 minutes
					41.9 hours

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