

NEED-TO-KNOW CRITERIA

Biological Industrial Waste Treatment Operator

A Need-to-Know Guide when preparing for the:

ABC Biological Industrial Waste Treatment Operator Certification Exam



Superior Water Starts Here™

of Certification

Before You Dive In...

What is the Need-to-Know Criteria?

This ABC Biological Industrial Waste Treatment Operator Need-to-Know Criteria was developed to assist operators in understanding the content that will be covered in the ABC Biological Industrial Waste Treatment Operator exam. A methodical and comprehensive international investigation was conducted to determine the most significant job tasks performed by biological industrial waste treatment operators. The content covered on the exam represents the job tasks identified through this research as essential operator competencies, and is not limited to the practices of your system/facility. The following pages organize these job tasks into Core Competency Job Areas, and identify how much of the test is devoted to each area.

Is this Need-to-Know Criteria relevant to MY exam?

WPI offers a variety of standardized and customized exam services. This document is reflective only of the ABC Biological Industrial Waste Treatment Operator exam; older editions of the standardized exam and various customized exams are also administered by various certification programs. Please contact your certifying authority to determine whether they have implemented this exam for your program.

Exam Preparation Resources

Visit **gowpi.org** to access the formula/conversion table administered with this exam, a list of approved references, information on purchasing study guides available from partner organizations, and more.

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ABC Biological Industrial Waste Treatment Operator

Introduction

As part of the development of its certification exams, Water Professionals International (WPI) conducted a job analysis of industrial waste treatment operators during 2001 and 2002. The purpose of the job analysis was to identify the essential job tasks performed by industrial waste treatment operators and the capabilities required to competently perform these job tasks. The results of this job analysis provided WPI with the foundation for the development of new industrial waste treatment certification exams.

The ABC Biological Industrial Waste Treatment Operator Need-to-Know Criteria was developed from the results of WPI's industrial waste treatment operator job analysis. The information in this document reflects the essential job tasks performed by operators, and their requisite capabilities. This document is intended to be used by certification programs and trainers to help prepare operators for certification.

How the Job Analysis was Conducted *Subject Matter Expert Committee*

A Subject Matter Expert (SME) Committee was formed to provide technical assistance in the development of the industrial waste treatment operator job analysis. The SME committee developed a list of the important job tasks performed by both physical/chemical and biological industrial waste treatment operators. The SMEs verified the technical accuracy, clarity, and comprehensiveness of the job tasks, and identified the capabilities (e.g., knowledge, skills, and abilities) required to perform them. Identification of capabilities was done on a task-by-task basis, so that a link was established between each task statement and requisite capability.

Task Inventory

A task inventory was developed from the data collected during the committee meeting. The inventory included 8-point rating scales for frequency of performance and seriousness of inadequate or incorrect performance. These two rating scales were used because they provide useful information (i.e., how critical each task is, and how frequently each task is performed) pertaining to certification. The task inventory also included a background information section where demographic data such as gender, age, ethnic origin, educational level, work experience, and certification level were collected. Space was provided at the end of the inventory for operators to list any important tasks performed on their jobs that were not included on the inventory, and to make general comments.

The task inventory was sent to 381 industrial waste treatment operators throughout the United States and Canada—83 out of the 381 inventories mailed were returned, for a response rate of 21.8%. Of the respondents, 44.3% worked at physical/chemical industrial waste treatment plants, 34.4% worked at biological industrial waste treatment plants, and 21.3% worked at both physical/chemical and biological industrial waste treatment plants.

ABC Biological Industrial Waste Treatment Operator

Results

The mean, standard deviation and the percentage of respondents performing each task statement were computed. The mean was used to determine the importance of items, and the standard deviation was used to identify items with a wide variation in responses. The percentage of respondents performing each task statement was used to identify tasks and capabilities commonly performed by operators throughout the United States and Canada. The analysis was run separately for physical/chemical and biological industrial waste treatment operators in order to accurately determine what tasks would be covered on each exam.

A criticality value of 2 (mean seriousness rating) + mean frequency rating was calculated for each item on the inventory. This formula gives extra weight to the seriousness rating in determining critical items and was appropriate because it emphasized the purpose of certification—to provide competent operators.

CORE COMPETENCY JOB AREAS

The SME committee reviewed the results of the operator survey to identify the most important and commonly performed job tasks and capabilities for biological industrial waste treatment operators. The essential tasks and capabilities that were identified through this process are called the core competencies. The core competencies are clustered into six job areas:



Biological Treatment Processes – monitor, evaluate, and adjust treatment processes



Laboratory Analysis – collect samples, perform laboratory analysis, and interpret analysis



Operate Support Equipment – operate equipment such as chemical feeders and pumps



Evaluate and Maintain Support Equipment – evaluate operation of equipment, perform diagnostic, preventive, and corrective maintenance



Administrative Duties – perform administrative duties, establish recordkeeping system, and record information



Safety and Emergency Preparedness – establish safety programs and emergency plans, perform safety procedures, and respond to emergencies

Because the results reflect only those tasks with a high criticality value, some frequently performed tasks will be missing from the results. For example, a task may be performed every day, but if the potential seriousness of inadequate or incorrect performance is negligible, the task will not appear in the results. Because the purpose of certification is to protect the public, it was not reasonable to include tasks of negligible seriousness.

Biological Industrial Waste Treatment Operator Certification Need-to-Know Criteria

ABC Biological Industrial Waste Treatment Operator Certification Exams

The ABC Biological Industrial Waste Treatment Operator exams evaluate an operator's knowledge of tasks related to the operation of biological industrial waste treatment plants. The content of each exam was determined by the Subject Matter Expert committee, based on the results of the job analysis. To successfully pass a WPI exam, an operator must demonstrate knowledge of the core competencies in this document. Because certificates may be used to work in various-sized treatment plants, the exams may include technologies that are not used in each treatment plant, but are commonly used in many treatment plants.

Four levels of certification exams are offered by WPI, with Class I being the lowest level and Class IV the highest level. Each exam consists of 100 multiple-choice questions. Each exam's specifications are based on a weighting of the job analysis results so that they reflect the criticality of tasks performed on the job. The specifications list the percentage of questions on the exam that fall under each job duty. For example, the ABC Class I Biological Industrial Waste Treatment Operator exam consists of 47 questions relating to the job duty "Biological Treatment Processes" and its associated tasks and capabilities. The list of core competencies for each job area are on the following pages.

EXAM SPECIFICATIONS

CORE COMPETENCY JOB AREA	CLASS I	CLASS II	CLASS III	CLASS IV
BIOLOGICAL TREATMENT PROCESSES	47%	48%	45%	50%
LABORATORY ANALYSIS	5%	5%	9%	10%
OPERATE SUPPORT EQUIPMENT	15%	14%	13%	7%
EVALUATE AND MAINTAIN SUPPORT EQUIPMENT	15%	15%	15%	15%
ADMINISTRATIVE DUTIES	8%	8%	8%	8%
SAFETY AND EMERGENCY PREPAREDNESS	10%	10%	10%	10%



Biological Treatment Process

Monitor Treatment Processes (check process, record data)	Class I	Class II	Class III	Class IV
Grease removal	х	х	х	х
Plant pumping of main flow	х	х	х	х
Screening	х	х	х	х
Flow equalization	х	х	х	х
Sedimentation/clarification	х	х	х	х
Dissolved air flotation	х	х	х	х
Coagulation/flocculation	х	х	х	х
Activated sludge with secondary clarifiers	х	х	х	х
Stabilization ponds with aeration	х	х	х	х
Sequencing batch reactors		х	х	х
Trickling filters	х	х	х	х
Polishing ponds for advanced waste treatment	х	х	х	х
Chemical/physical advanced waste treatment following secondary		х	х	х
Biological or chemical/biological advanced waste treatment		х	х	х
pH adjustment	х	х	х	х
Oil removal	х	х	х	х
Oil separation	х	х	х	х
Chemical pre-treatment (except chlorination, enzymes)		х	х	х
Solids conditioning	x	x	x	х
Solids thickening	х	x	x	х
Anaerobic digestion of solids		х	х	х
Aerobic digestion of solids	х	x	х	х
Sludge drying	x	x	x	х
Mechanical dewatering	x	x	х	х
Solids reduction (including incineration, wet oxidation)		х	х	х
Solids composting	x	х	х	х
Post aeration	х	x	х	х
Land disposal-evaporation	x	x	х	х
Subsurface disposal	x	x	х	х
Biological or chemical scrubbers for odor control		x	x	х
Disinfection	x	x	х	х
Supervisory Control and Data Acquisition (SCADA) systems	х	х	х	х
Evaluate Treatment Processes (review data, make decision)	Class I	Class II	Class III	Class IV
Grease removal	х	х	х	х
Plant pumping of main flow	х	х	х	х
Screening	х	х	х	х
Flow equalization	х	х	х	х
Sedimentation/clarification	х	х	х	х
Dissolved air flotation		х	х	х
Coagulation/flocculation		х	х	х
Activated sludge with secondary clarifiers		х	х	х
Stabilization ponds with aeration	х	х	х	х
Sequencing batch reactors		х	х	х
Trickling filters		х	х	х
Polishing ponds for advanced waste treatment		х	х	х



Biological Treatment Process

Evaluate Treatment Processes (review data, make decision)	Class I	Class II	Class III	Class IV
Chemical/physical advanced waste treatment following secondary		х	х	х
Biological or chemical/biological advanced waste treatment				
pH adjustment		х	х	х
Oil removal	х	х	х	х
Oil separation	х	х	х	х
Chemical pre-treatment (except chlorination, enzymes)		х	х	х
Solids conditioning		х	х	х
Solids thickening		х	х	х
Anaerobic digestion of solids		х	х	х
Aerobic digestion of solids		х	х	х
Sludge drying	х	х	х	х
Mechanical dewatering		х	х	х
Solids reduction (including incineration, wet oxidation)			х	х
Solids composting		х	х	х
Post aeration	х	х	х	х
Land disposal-evaporation			х	х
Subsurface disposal		х	х	х
Biological or chemical scrubbers for odor control		х	х	х
Disinfection		х	х	х
Supervisory Control and Data Acquisition (SCADA) systems		х	х	х
Adjust Treatment Processes (make correction)	Class I	Class II	Class III	Class IV
Grease removal		х	х	х
Plant pumping of main flow		х	х	х
Screening	x	х	х	х
Flow equalization		х	x	х
Sedimentation/clarification		х	x	х
1				
Dissolved air flotation		х	х	х
Dissolved air flotation Coagulation/flocculation		x x	x x	x x
Coagulation/flocculation	х	х	х	х
Coagulation/flocculation Activated sludge with secondary clarifiers	х	x x	x x	x x
Coagulation/flocculation Activated sludge with secondary clarifiers Stabilization ponds with aeration	х	x x x	x x x	x x x
Coagulation/flocculation Activated sludge with secondary clarifiers Stabilization ponds with aeration Sequencing batch reactors	х	x x x x	x x x	x x x x
Coagulation/flocculation Activated sludge with secondary clarifiers Stabilization ponds with aeration Sequencing batch reactors Trickling filters	х	x x x x	x x x x	x x x x
Coagulation/flocculation Activated sludge with secondary clarifiers Stabilization ponds with aeration Sequencing batch reactors Trickling filters Polishing ponds for advanced waste treatment	х	x x x x x	x x x x x	x x x x x
Coagulation/flocculation Activated sludge with secondary clarifiers Stabilization ponds with aeration Sequencing batch reactors Trickling filters Polishing ponds for advanced waste treatment Chemical/physical advanced waste treatment following secondary	х	x x x x x x x	x x x x x x x	x x x x x x x
Coagulation/flocculation Activated sludge with secondary clarifiers Stabilization ponds with aeration Sequencing batch reactors Trickling filters Polishing ponds for advanced waste treatment Chemical/physical advanced waste treatment following secondary Biological or chemical/biological advanced waste treatment	x	x x x x x x x	x x x x x x x	x x x x x x x
Coagulation/flocculation Activated sludge with secondary clarifiers Stabilization ponds with aeration Sequencing batch reactors Trickling filters Polishing ponds for advanced waste treatment Chemical/physical advanced waste treatment following secondary Biological or chemical/biological advanced waste treatment pH adjustment		x x x x x x x	x x x x x x x	x x x x x x x
Coagulation/flocculation Activated sludge with secondary clarifiers Stabilization ponds with aeration Sequencing batch reactors Trickling filters Polishing ponds for advanced waste treatment Chemical/physical advanced waste treatment following secondary Biological or chemical/biological advanced waste treatment pH adjustment Oil removal Oil separation Chemical pre-treatment (except chlorination, enzymes)	х	x x x x x x x x x x x x x x x	x x x x x x x x	x x x x x x x x x x x x
Coagulation/flocculation Activated sludge with secondary clarifiers Stabilization ponds with aeration Sequencing batch reactors Trickling filters Polishing ponds for advanced waste treatment Chemical/physical advanced waste treatment following secondary Biological or chemical/biological advanced waste treatment pH adjustment Oil removal Oil separation	х	x x x x x x x x x x x x x x x x x	x x x x x x x x x x x x x x x x x	x x x x x x x x x x x x x x
Coagulation/flocculation Activated sludge with secondary clarifiers Stabilization ponds with aeration Sequencing batch reactors Trickling filters Polishing ponds for advanced waste treatment Chemical/physical advanced waste treatment following secondary Biological or chemical/biological advanced waste treatment pH adjustment Oil removal Oil separation Chemical pre-treatment (except chlorination, enzymes) Solids conditioning Solids thickening	х	x x x x x x x x x x x x x x x x x x	x x x x x x x x x x x x x x x	x x x x x x x x x x x x x x x x
Coagulation/flocculation Activated sludge with secondary clarifiers Stabilization ponds with aeration Sequencing batch reactors Trickling filters Polishing ponds for advanced waste treatment Chemical/physical advanced waste treatment following secondary Biological or chemical/biological advanced waste treatment pH adjustment Oil removal Oil separation Chemical pre-treatment (except chlorination, enzymes) Solids conditioning Solids thickening Anaerobic digestion of solids	х	x x x x x x x x x x x x x x x x x	x x x x x x x x x x x x x x x x x	x x x x x x x x x x x x x x x x x
Coagulation/flocculation Activated sludge with secondary clarifiers Stabilization ponds with aeration Sequencing batch reactors Trickling filters Polishing ponds for advanced waste treatment Chemical/physical advanced waste treatment following secondary Biological or chemical/biological advanced waste treatment pH adjustment Oil removal Oil separation Chemical pre-treatment (except chlorination, enzymes) Solids conditioning Solids thickening	х	x x x x x x x x x x x x x x x x x x	x x x x x x x x x x x x x x x x x x x	x x x x x x x x x x x x x x x x x x x
Coagulation/flocculation Activated sludge with secondary clarifiers Stabilization ponds with aeration Sequencing batch reactors Trickling filters Polishing ponds for advanced waste treatment Chemical/physical advanced waste treatment following secondary Biological or chemical/biological advanced waste treatment pH adjustment Oil removal Oil separation Chemical pre-treatment (except chlorination, enzymes) Solids conditioning Solids thickening Anaerobic digestion of solids	х	x x x x x x x x x x x x x x x x x x x	x x x x x x x x x x x x x x x x x x x	x x x x x x x x x x x x x x x x x x x



Biological Treatment Process

Adjust Treatment Processes (make correction)	Class I	Class II	Class III	Class IV
Solids composting		х	х	х
Post aeration		х	х	х
Land disposal-evaporation			х	х
Subsurface disposal		х	х	х
Biological or chemical scrubbers for odor control		х	х	х
Disinfection	х	х	х	х
Supervisory Control and Data Acquisition (SCADA) systems		х	х	х
Chemical Addition	Class I	Class II	Class III	Class IV
Add dry chemicals	х	х	х	х
Add liquid chemicals	х	х	х	х
Add gaseous chemicals	х	х	х	х

REQUIRED CAPABILITIES:

Knowledge of amphoteric material

Knowledge of chemical properties

Knowledge of computer operation

Knowledge of general chemistry and biology

Knowledge of general electrical and

mechanical principles

Knowledge of hydraulic principles

Knowledge of normal characteristics of wastewater (e.g., color, flow pattern)

Knowledge of normal chemical range

Knowledge of Personal Protective Equipment

Knowledge of physical science

Knowledge of primary, secondary, and tertiary

treatment processes

Knowledge of principles of measurement

Knowledge of programmable logic controllers

Knowledge of proper application, handling,

and storage of chemicals

Knowledge of proper lifting procedures

Knowledge of regulations

Knowledge of safety issues related to specific processes

Knowledge of wastewater treatment concepts and

design parameters

Ability to adjust chemical feed rates and flow patterns

Ability to calculate dosage rates

Ability to calibrate equipment

Ability to communicate verbally and in writing

Ability to confirm chemical strength

Ability to diagnose/troubleshoot process units

Ability to discriminate between normal and

abnormal conditions

Ability to evaluate and adjust process units

Ability to interpret Safety Data Sheets (SDSs)

Ability to maintain processes in normal

operating conditions

Ability to perform basic math and process

control calculations

Ability to perform physical measurements

Ability to prepare and measure chemicals



Laboratory Analysis

Collect Samples	Class I	Class II	Class III	Class IV
Alkalinity	х	х	х	х
Ammonia		х	х	х
Biochemical oxygen demand	х	х	х	х
Chemical oxygen demand		х	х	х
Chlorine residual	х	х	х	х
Coliform	х	х	х	х
Color	х	х	х	х
Conductivity	х	х	х	х
Dissolved oxygen	х	х	х	х
Kjeldahl nitrogen		х	х	х
Metals (sludge) (e.g., arsenic, barium, etc.)	х	х	х	х
Microscopic exam	х	х	х	х
Nitrate		х	х	х
Nitrite		х	x	х
Oil and grease	х	х	х	х
Oxidation-reduction potential	х	х	х	х
рН	х	х	х	х
Phosphorus		х	х	х
Priority pollutants	х	х	х	х
Settleable solids	х	х	х	х
Sulfate	х	х	х	х
Sulfide	х	х	x	х
Temperature	х	х	х	х
Total dissolved solids	х	х	x	х
Total organic carbon	х	х	х	х
Total suspended solids	х	х	х	х
Toxicity	х	х	х	х
Turbidity	х	х	х	х
Volatile suspended solids	х	х	х	х
Perform Laboratory Analysis	Class I	Class II	Class III	Class IV
Alkalinity		х	х	х
Ammonia			х	х
Biochemical oxygen demand		х	х	х
Chemical oxygen demand			х	х
Chlorine residual	х	х	х	х
Coliform		х	х	х
Color	х	х	х	х
Conductivity	х	х	х	х
Dissolved oxygen	х	х	х	х
Kjeldahl nitrogen			х	х
Microscopic exam		х	х	х
Nitrate			х	х
Nitrite			х	х
Oil and grease			х	х
Oxidation-reduction potential	х	х	х	х
				-



Laboratory Analysis

Perform Laboratory Analysis	Class I	Class II	Class III	Class IV
рН	х	х	х	х
Phosphorus			x	х
Settleable solids	х	х	х	х
Temperature	х	х	х	х
Total dissolved solids		х	х	х
Total suspended solids		х	х	х
Turbidity	х	х	х	х
Volatile suspended solids		х	х	х
Interpret Analysis	Class I	Class II	Class III	Class IV
Alkalinity		х	х	х
Ammonia		х	х	х
Biochemical oxygen demand		х	х	х
Chemical oxygen demand		х	х	х
Chlorine residual	х	х	х	х
Coliform	х	х	х	х
Color	x	х	х	х
Conductivity	х	х	х	х
Dissolved oxygen	х	х	х	х
Kjeldahl nitrogen			х	х
Metals (sludge) (e.g., arsenic, barium, etc.)			х	х
Microscopic exam		х	х	х
Nitrate		х	х	х
Nitrite		х	х	х
Oil and grease		х	х	х
Oxidation-reduction potential		х	х	х
рН	x	х	х	х
Phosphorus		х	х	х
Priority pollutants			х	х
Settleable solids	x	х	x	х
Sulfate			x	х
Sulfide			х	х
Temperature	х	х	х	х
Total dissolved solids		х	х	х
Total organic carbon		х	х	х
Total suspended solids		х	х	х
Toxicity		х	х	х
Turbidity		х	х	х
Volatile suspended solids		х	х	х

REQUIRED CAPABILITIES:

Knowledge of chain of custody procedures

Knowledge of chemical properties

Knowledge of EPA approved analytical methods

Knowledge of general chemistry and biology

Knowledge of laboratory equipment and procedures

Knowledge of normal characteristics of wastewater

Knowledge of physical science

Knowledge of principles of measurement

Knowledge of proper chemical handling and storage

Knowledge of quality control/quality assurance practices

assurance practices

Knowledge of safety regulations

Knowledge of sample preservation

Knowledge of sampling procedures

Ability to calibrate instruments

Ability to collect representative samples

Ability to follow written procedures

Ability to interpret Safety Data Sheets (SDSs)

Ability to operate automatic samplers

Ability to perform laboratory calculations

Ability to recognize abnormal analytical results



Support Equipment	Class I	Class II	Class III	Class IV
Blowers and compressors	х	х	х	х
Chemical feeders	Х	х	х	х
Computers	Х	х	х	х
Drives	Х	х	х	х
Electronic testing equipment (e.g., volt meters)		х	х	х
Flow measurement devices	Х	х	х	х
Generators		х	х	х
Hand tools	Х	х	х	х
Instrumentation	Х	х	х	х
Measuring and control systems	Х	х	х	х
Motors	х	х	х	х
Pneumatic equipment	Х	х	х	х
Power tools	Х	х	х	х
Pumps	Х	х	х	х
Valves	Х	х	х	х

REQUIRED CAPABILITIES:

Knowledge of backflow prevention devices

Knowledge of function of tools

Knowledge of general electrical & mechanical principles

Knowledge of hydraulic principles

Knowledge of pipes

Knowledge of plumbing

Knowledge of pneumatics

Knowledge of regulations

Knowledge of safety regulations

Knowledge of startup and shutdown procedures

Knowledge of wastewater treatment concepts

Ability to evaluate and adjust equipment



Evaluate and Maintain Support Equipment

Required Evaluations	Class I	Class II	Class III	Class IV
Check speed of equipment	х	х	х	х
Inspect equipment for abnormal conditions	х	х	х	х
Measure head loss	х	х	х	х
Measure temperature of equipment	х	х	х	х
Read charts	х	х	х	х
Read meters	х	х	х	х
Read pressure gauges	х	х	х	х
Perform diagnostic and preventive maintenance on:	Class I	Class II	Class III	Class IV
Blowers and compressors	х	х	х	х
Chemical feeders	х	х	х	х
Drives	х	х	х	х
Instrumentation	х	х	х	х
Motors	х	х	х	х
Pumps	х	х	х	х
Valves	х	х	х	х
Perform corrective maintenance on:	Class I	Class II	Class III	Class IV
Chemical feeders	х	х	х	х
Drives	х	х	х	х
Instrumentation	х	х	х	х
Motors	х	х	х	х
Pumps	х	х	х	х
Valves	х	х	х	х

REQUIRED CAPABILITIES:

Knowledge of facility operation and maintenance

Knowledge of general electrical and mechanical principles

Knowledge of hydraulic principles

Knowledge of internal combustion engines

Knowledge of lubricant and fluid characteristics

Knowledge of pneumatics

Knowledge of predictive maintenance

Knowledge of process control instrumentation

Knowledge of safety regulations

Knowledge of startup and shutdown procedures

Ability to adjust equipment

Ability to calibrate equipment

Ability to differentiate between preventive and corrective maintenance

Ability to discriminate between normal and abnormal conditions

Ability to record information and report findings

Ability to troubleshoot and perform general maintenance



Administrative Duties

Perform Administrative Duties	Class I	Class II	Class III	Class IV
Administer compliance, safety, and security program	х	х	х	х
Develop budget	х	х	х	х
Develop operation and maintenance plan	х	х	х	х
Evaluate employee performance	х	х	х	х
Evaluate laboratory data for quality control/quality assurance	х	х	х	х
Hire and discharge employees	х	х	х	х
Maintain records	х	х	х	х
Perform workplace safety evaluation	х	х	х	х
Plan and organize work activities	х	х	х	х
Record and evaluate data	х	х	х	х
Report noncompliance	х	х	х	х
Respond to public complaints	х	х	х	х
Supervise employee work activities	х	х	х	х
Write reports (e.g., federal, internal, state)	х	х	х	х
Establish recordkeeping system and record information:	Class I	Class II	Class III	Class IV
Facility operation	х	х	х	х
Financial	х	х	х	х
Laboratory	х	х	х	х
Maintenance	х	х	х	х
Permit compliance	х	х	х	х
Personnel	х	х	х	х

REQUIRED CAPABILITIES:

Knowledge of computer operation

Knowledge of facility operation and maintenance

Knowledge of function of recordkeeping system

Knowledge of legal liability

Knowledge of local codes and ordinances

Knowledge of monitoring and reporting requirements

Knowledge of principles of general communication

Knowledge of recordkeeping policies

Knowledge of regulations for direct and indirect dischargers

Ability to accurately transcribe data

Ability to communicate verbally and in writing

Ability to determine what information needs to be recorded

Ability to evaluate facility performance

Ability to follow written procedures

Ability to interpret data

Ability to organize information

Ability to perform basic math

Ability to review reports



Safety and Emergency Preparedness

Establish safety programs and perform safety procedures for:	Class I	Class II	Class III	Class IV
Blood borne pathogens	х	х	х	х
Chemical hazard communication	x	х	х	х
Confined space entry	х	х	х	х
Electrical grounding	х	х	х	х
Fire	х	х	х	х
First aid	х	х	х	х
Infectious diseases	х	х	х	х
Lifting	х	х	х	х
Lock-out/tag-out	х	х	х	х
Personal hygiene	х	х	х	х
Personal Protective Equipment	х	х	х	х
Respiratory protection	х	х	х	х
Slips, trips, and falls	х	х	х	х
Establish emergency plans and respond to emergencies for:	Class I	Class II	Class III	Class IV
Civil disorder	х	х	х	х
Facility upset	х	х	х	х
Hazardous waste	х	х	х	х
Natural disasters	х	х	х	х
Power disruption	х	х	х	х
Spill response	х	х	х	х

REQUIRED CAPABILITIES:

Knowledge of emergency plans

Knowledge of potential causes & impact of disasters on facility

Knowledge of safety regulations

Ability to assess likelihood of disaster occurring

Ability to communicate verbally and in writing

Ability to coordinate emergency response with organizations

Ability to follow written procedures

Ability to identify potential safety hazards

Ability to recognize unsafe work conditions

Ability to select and operate safety equipment

References

The following are approved as reference sources for the ABC Biological Industrial Waste Treatment Operator examinations. Operators should use the latest editions of these reference sources to prepare for the exam.

California State University, Sacramento (CSUS) Foundation, Office of Water Programs

- Industrial Waste Treatment, Volumes I and II
- Operation of Wastewater Treatment Plants, Volumes I and II
- Manage for Success
- Advanced Waste Treatment
- Treatment of Metal Wastestreams
- Pretreatment Facility Inspection

To order, contact: Office of Water Programs

California State University, Sacramento

6000 | Street

Sacramento, CA 95819-6025 Website: www.owp.csus.edu

Phone: (916) 278-6142 Fax: (916) 278-5959

E-mail: wateroffice@csus.edu

Water Environment Federation

- Operation of Municipal Wastewater Treatment Plants, Manual of Practice No. 11
- Industrial Wastewater Management, Treatment, and Disposal, Manual of Practice FD-3

To order, contact: Water Environment Federation

601 Wythe Street

Alexandria, VA 22314-1994

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Operators must also be knowledgeable about federal and state/provincial regulations that apply to industrial dischargers. Most of the US federal regulations that apply to industrial dischargers are found in the *Code of Federal Regulations*, Title 40 (www.govinfo.gov).





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