CWEA TECHNICAL CERTIFICATION PROGRAM

Environmental Compliance Inspector **Candidate** Handbook

ECI CERTIFICATION



Photos (I-r): CWEA, Sal Ochoa, Adobe, CWEA, Adobe, Kelly Sullivan, Adobe, and Kelly Sullivan

Environmental Compliance Inspector **Candidate** Handbook

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Congratulations on pursuing certification. Certification is a great way to demonstrate competency, show commitment to the profession, and help with job advancement.

This handbook contains information about California Water Environment Association's Technical Certification Program for certification candidates. Please read this entire handbook to become familiar with CWEA's certification policies and procedures. Certification candidates are responsible for knowing the contents of this handbook. Please contact the CWEA office at (510) 382-7800 with any questions.

All policies are subject to change. The most recent edition of this handbook can be downloaded for free on <u>Cert.CWEA.org</u>. Candidates should ensure that they have the most current version as indicated by the date in the title above.

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INTRODUCTION TO THE TECHNICAL CERTIFICATION PROGRAM

CWEA's Technical Certification Program (TCP) develops and administers competency-based certification exams for wastewater professionals in a number of different vocations. The certification program was founded in 1937. The first certification offered was the Wastewater Treatment Plant Operator certification, which was later adopted by the State Water Board. The exams are developed and revised by CWEA Subject Matter Experts under the guidance of exam development professionals. The certification professional practices. Exams are offered throughout the year and are experience based, ranging from entry level to upper management.

CWEA currently certifies over 7,000 individuals. Certification is a great way to demonstrate competency, show commitment to the water profession, and help with job advancement.

TECHNICAL CERTIFICATION PROGRAM Executive Committee

The Technical Certification Program Executive Committee is the governing body of CWEA's certification program. It was created to develop and implement a multilevel technical certification program for individuals employed in the wastewater field. They are responsible for the development and administration of the Technical Certification Program, including the application, examination development, examination administration, and certification renewal process. They develop the guidelines, criteria, and testing procedures that are responsive to the needs of the water quality industry and allow participants to demonstrate technical competence. They are also responsible for maintaining the quality of the examinations through continuous upgrading and review.

For current Committee members, contact the CWEA office.





Overview of the Certification Process

To become certified all applicants must complete the following requirements:

- 1. Submit an application
- 2. Pay the application fee
- 3. Meet the minimum qualifications regarding professional experience
- 4. Pass the exam

Once an applicant successfully completes the requirements, they will be mailed their certificate. In order to maintain the certification once earned, certified individuals must continue to meet the following recertification requirements:

- 1. Submit 12 contact hours of continuing education every two years
- 2. Pay the annual renewal fee

Certifications Offered by CWEA

- Collection Systems Maintenance, Grades 1-4
- Mechanical Technologist, Grades 1-4
- Electrical & Instrumentation, Grades 1-4
- Laboratory Analyst, Grades 1-4
- Environmental Compliance Inspector, Grades 1-4
- Advanced Water Treatment Operator, Grades 3-5
 - Offered in partnership with California-Nevada Section of the American Water Works Association. For more information visit <u>www.AWTOperator.org</u>.

Please note that the **Wastewater Treatment Plant Operator Certification** and **Drinking Water Treatment Plant Operator Certification** are administered by the State of California. To work on a drinking water treatment system, distribution system or in a wastewater treatment plant, an individual must have a valid operator certificate or an operator-in-training certificate from the State Water Board. For information about these programs, please contact the <u>State Water</u> <u>Board Office of Operator Certification</u>.





APPLICATION PROCESS

Submitting an Application

Candidates must submit an application and be approved before they can schedule an exam. Applications can be faxed, emailed or mailed to the CWEA office at any time throughout the year. Applications are reviewed by CWEA TCP Staff and/or Subject Matter Experts. Once the application is processed, candidates are notified of their approval status via email. Please follow all instructions on the application carefully. Incomplete applications may delay approval. The application is available on the <u>Cert.CWEA.org</u> website.

Application Deadlines and Exam Windows

The year is divided into four exam windows, each with an application deadline. Applications are valid for one year from the first date of the applicant's original exam window. Applicants may transfer exam windows throughout the year, for details see *Transferring Exam Windows* (p. 16).

Exam Windows	Exam Dates	Application Deadlines
FALL	October 1 st – December 31 st	August 31 st
WINTER	January 1 st - March 31 st	November 30 th
SPRING	April 1 st – June 30 th	February 28 th
SUMMER	July 1 st – September 30 th	May 31 st

CWEA Application Fees

Current fees are listed on the application. Valid CWEA members qualify for a discounted member rate. The non-member rate includes a one-year CWEA membership. If an applicant does not wish to take advantage of the membership, they must note it on the application.





Minimum Qualifications: Qualifying Education and Experience

Applicants must meet the minimum qualifications for the exam at the time the application is submitted. The table below gives the combinations of education and/or experience that will satisfy the requirements. There is no education or experience requirement to take any Grade 1 exam, however, the Grade 1 exams test at the level of one year of experience in the field. Education and experience should be relevant to the vocation and reflect the job knowledge for that grade level. Relevancy is at the sole discretion of CWEA. Applicant's experience must be indicated on the application under "Job Duties". Applicants should provide sufficient detail to demonstrate they possess the relevant experience. The best way to provide this information is to include the official job description for the position. Applicants consent to a thorough investigation of employment records and other qualifications in related activities for the purpose of verification of qualifications. CWEA may verify job history by contacting employers.

ECI Certification Minimum Qualifications Chart

GRADE 1	 No experience required (1 year of experience in the vocation is recommended)
GRADE 2	 2 years of experience in the vocation, OR 1 year with a bachelor's degree in a related field
GRADE 3	 ECI Grade 2 certification in good standing, and 4 years of experience in the vocation, OR 3 years with an associate degree in a related field, OR 2 years with a bachelor's degree in a related field
GRADE 4	 ECI Grade 3 certification in good standing, and 6 years of experience in the vocation OR 5 years with associate degree in a related field OR 4 years with a bachelor's degree in a related field, and 1 year of experience supervising others in a related field, OR proof of completion of a training course in management and supervision of at least 60 hours

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Acceptable Degrees for ECI Certification Application

Bachelor's Degrees

- Chemistry
- Biology
- Environmental Science
- Environmental Studies
- Agriculture
- Microbiology
- Biochemistry
- Chemical Engineering
- Environmental Engineering
- Environmental Toxicology
- Environmental Architecture
- Environmental Health Sciences
- Environmental Law

Associate Degrees

- Chemistry
- Biology
- Microbiology
- Water / Wastewater
- Environmental Science
- Environmental Studies

*Related degrees that are not listed may be submitted for consideration.





Application Approval

Once an application has been approved, the applicant will receive a Certification Application Approval Notification via email. It is very important that applicants use a current email address when filling out the application. CWEA will only contact applicants in regard to their application status via email. The Certification Application Approval Notification will contain the certification exam the applicant has been approved for, the exam window and CWEA ID number. This ID number is needed when contacting Pearson VUE to schedule an exam appointment.

Rejected Application

Applications will be rejected if applicants do not meet all requirements at the time they apply. CWEA will refund the application fee minus a \$50 admin fee. Refunds are automatically issued within two weeks of rejection to the original form of payment. Candidates may request that their rejected application be reviewed by the Technical Certification Program Executive Committee by submitting a request in writing to <u>tcpcommittee@cwea.org</u>.

Code of Ethics

All CWEA certification holders and applicants are expected to meet the following standards of professional conduct and ethics:

- 1. To protect public health, themselves, their co-workers, property, and the environment by performing the essential duties of the CWEA certified vocation safely and effectively, and complying with all applicable federal, state and local regulations.
- 2. To represent themselves truthfully and honestly throughout the entire certification process.
- 3. To adhere to all test site rules and make no attempt to complete the test dishonestly or to assist any other person in doing so.
- 4. To refrain from activities that may jeopardize the integrity of the Technical Certification Program.

The CWEA Code of Ethics establishes basic values and standards of conduct for certification applicants and certification holders. Any action of a certification holder or applicant that compromises the reliability of the certification process may be subject to the process described by the Ethics Procedures.

The Ethics Procedures provide a fair process for dealing with ethics complaints. The procedures define the participants in an ethics case and how each case will be handled.

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Individuals going through the process will be given opportunities to defend themselves and appeal any decisions made. The Ethics Officer handles all official ethics complaints and determines if there is enough merit in each case to follow through with the procedures. If appropriate, the Ethics Officer may suggest mediation to resolve ethics disputes without the formality of going through the entire procedural process. This information is paraphrased for clarity from the 05-01 CWEA Code of Ethics and Ethics Procedures.

A full copy of the policy can be requested by contacting the TCP department.

Some examples of violations would be:

- Providing false work history on an application
- Using prohibited reference materials during a test
- Taking test materials from a test site
- Falsifying documentation of continuing education contact hours

Any action that might undermine CWEA's process of certifying basic minimal competency will be investigated.

Non-Discrimination Policy

CWEA does not discriminate among applicants on the basis of age, gender, race, religion, national origin, disability, sexual orientation or marital status.

Accommodations

In compliance with the Americans with Disabilities Act, reasonable accommodations will be provided for those individuals who provide CWEA with a physician's certificate, or its equivalent, documenting a physical or psychological disability that may affect the individual's ability to successfully complete the certification examination. Written requests for reasonable accommodations must be submitted with the application.

Language barriers and lack of familiarity with computers are not covered under ADA laws.

Privacy

CWEA is committed to protecting privacy. Exam results and any other information regarding an application are confidential and will only be released to the applicant. Basic certification information is available on our <u>Certification Registry</u>. Employers can use the registry to verify an individual's certification status.

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Out-of-State Programs

Anyone anywhere in the United States can apply for CWEA certification. Our certifications are specific to the state of California.

CWEA partners with the following water environment associations to administer certification exams for their members:

- Hawaii Water Environment Association
- Michigan Water Environment Association

Candidates wishing to earn certification through one of those associations should be sure to use the correct application that is specific to that association.

Reciprocity

CWEA does not grant certification by reciprocity. For other certification programs that do offer reciprocity, CWEA will provide any information necessary for verification upon request.

SCHEDULING AN EXAM

Scheduling an Exam Appointment

Once an applicant receives the approval notification email, they will be eligible to schedule an exam appointment. Applicants can schedule an exam appointment through <u>Pearson VUE's</u> website by creating an account or by logging into an existing account. The applicant's CWEA ID number is needed when creating an account. The CWEA ID number can be found in the approval notification email. To schedule an appointment over the phone, call Pearson VUE at 888-749-3881. Test centers are conveniently located throughout the U.S. Locations can be found on <u>Pearson VUE's Test Center Search</u>.

Online Proctored Exams

Online proctoring is available for CWEA exams. If available, candidates will be notified in their approval email of the option to schedule their exam online versus at an in-person test center. Candidates should examine both options before making the choice that is best for them. Candidates will make their selection at the time when they schedule their exam.

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Online proctored exams are a convenient way to take an exam at home or at work. Candidates will complete a check in process and are monitored online by a live proctor. An onscreen calculator and white board are provided, no physical calculators or scratch paper are allowed.

For more information about the online proctored experience, please see: <u>https://home.pearsonvue.com/cwea/onvue</u>. Please review the system requirements and Pearson Vue policies and procedures for online proctored exams before you schedule your appointment. You will be required to accept and comply with these policies.

To take an online proctored exam, candidates must meet the system requirements. If a candidate is testing at work, they should check with their Network Administrator or IT Professional that their system meets the requirements.

It is the candidate's responsibility to ensure they meet the system requirements prior to their appointment time. If a candidate does not meet the system requirements, they will not be able to complete their exam and will need to reschedule.

Canceling an Existing Appointment

To cancel an appointment, applicants must notify Pearson VUE 24 hours before their scheduled appointment time. Failure to notify Pearson VUE at least 24 hours before the existing appointment will result in an \$85 No Show fee. Pearson VUE will send applicants a Cancellation Confirmation to the email on file in their Pearson VUE account.

The following are considered No Shows and will result in an \$85 No Show fee:

- Failing to appear at a scheduled test appointment
- Failing to check-in for an online appointment
- Arriving at the test center without a current, government-issued photo ID
- Arriving at the test center 15 minutes or later to a scheduled test appointment

Applicants must pay the No Show fee to schedule a new test appointment. Applicants should contact the CWEA office to reschedule.

Rescheduling an Exam Appointment

To reschedule an existing appointment within the same exam window, applicants must call Pearson VUE directly at least 24 hours before their existing exam appointment, for details see *Canceling an Existing Appointment* (p. 15).

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Applicants must contact the CWEA office to reschedule (transfer) an existing exam appointment to a different exam window. Before contacting CWEA, the applicant must cancel their existing appointment.

Transferring Exam Windows

Applications are valid for one year from the first date of the applicant's original test window. Applicants may transfer exam windows throughout the year. The first transfer is complimentary, subsequent transfers are \$50.

Applicants can request a transfer at any time. If an applicant does not test by the last date of their original exam window, CWEA will automatically initiate a transfer and the applicant will be notified via email.





PREPARING FOR THE EXAM

Environmental Compliance Inspector Certification Scope

Specifications	Grade 1	Grade 2	Grade 3	Grade 4
Brief description of the Grade Level in relation to the job family.	Entry and basic working level.	Skilled or journey level.	Lead/advanced technical level.	Program manager level.
Level of knowledge, skill and ability within the job family, in relation to job tasks, including the taxonomic level of knowledge applied on the job.	Basic knowledge and ability, as needed to safely and effectively perform basic tasks. This includes: recall	Knowledge and ability to safely and effectively accomplish most technical tasks in the job family.	Knowledge, skill, and ability to safely and effectively accomplish and coordinate complex tasks.	Knowledge, skill, and ability to administer, coordinate and manage complex programs across vocations.
	and recognition, comprehension, and application.	This includes: comprehension, application, and analysis.	This includes: application, analysis and synthesis.	This includes: analysis, synthesis, and evaluation, planning, budget preparation, and procurement.
Level of supervision received.	Receives direct supervision.	Works independently with limited supervision.	Receives general direction.	May receive broad direction.
Level of supervision exercised.	None.	May provide technical guidance to other staff.	Will oversee and direct complex tasks performed by others.	Will coordinate program activities within or across vocations.
Level of training provided to other personnel.	None.	May train lower level personnel.	Provides training to entry and journey level staff and may oversee a training program.	Designs and administers training program within the job family.

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Specifications	Grade 1	Grade 2	Grade 3	Grade 4
Use of tools.	Will recognize and use the basic tools of the job family with supervision.	Will be able to apply tools and equipment used by those in the job family.	Will select tools for individuals and teams in relation to specific problems.	Manages and evaluates systems and facilities.
Problem solving and troubleshooting responsibilities.	Follows directions, gathers information, documents, and reports problems.	Troubleshoots and solves common problems.	Troubleshoots and solves complex problems.	Evaluates program effectiveness and takes corrective actions as needed.
Actions in relation to safety problems.	Recognizes unsafe conditions and able to work in a safe manner.	Performs work in a safe manner, identifies and reports unsafe conditions.	Anticipates and prevents unsafe conditions.	Designs and administers safety programs.
Actions in relation to standard operating procedures (S.O.P.s), laws and regulations.	Has the ability to follow S.O.P.s, and general understanding of laws and regulations.	Has the ability to understand and apply S.O.P.s, laws, and regulations. May write work instructions.	Formulates new S.O.P.s in compliance with laws and regulations.	Assures program compliance with laws and regulations.
Actions in relation to documentation of work activities.	Completes basic work process documentation, communication, and basic reporting	Completes routine work process documentation.	Responsible for detailed technical report writing and review.	Responsible for quality assurance of program documentation.





Exam Content

CWEA's Technical Certification Program Environmental Compliance Inspector exams are based on exam blueprints that outline the exam content and are periodically reviewed by CWEA Subject Matter Experts. An exam blueprint is based on a job task analysis that includes research of the essential duties of an Environmental Compliance Inspector at a representative cross-section of systems and facilities in California. The Environmental Compliance Inspector Certifications were last reviewed by Subject Matter Experts in 2024.

The exam content outline that follows presents content covered on the Environmental Compliance Inspector exams and shows the amount of the exam devoted to each Domain in the column labeled weighting.

ECI GRADE 1 EXAM CONTENT OUTLINE

Content Domain	Weighting
Domain 1: Environmental Knowledge, Regulations, and Compliance	24%
Domain 2: Sampling, Monitoring, and Data Analysis	19%
Domain 3: Inspection and Enforcement	20%
Domain 4: Safety	13%
Domain 5: Recordkeeping, Documentation, and Communication	14%
Domain 6: Math	10%
Total	100%

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Domain 1: Environmental Knowledge, Regulations, and Compliance

Sub-Domain 1.1:

Environmental Knowledge

- 1. Basic knowledge of chemistry principles that relate to industrial and commercial wastewater.
- 2. Basic knowledge of wastewater treatment concepts and pretreatment processes used to manage industrial waste (i.e., physical, chemical, and biological).
- 3. Basic knowledge of pretreatment and the mechanical function of grease removal equipment, sand-oil clarifiers, oil/water separators, gravity separators, and related equipment.
- 4. Basic knowledge of structural, non-structural, and stormwater management best practices for existing development and construction projects.
- 5. Basic knowledge of manufacturing processes as sources of industrial waste and their effects on wastewater treatment processes.

Sub-Domain 1.2:

Environmental Regulations and Compliance

- 1. Basic knowledge of the Clean Water Act and its implications on wastewater management.
- 2. Basic knowledge of National Pollutant Discharge Elimination System (NPDES) permits and their requirements.
- 3. Basic knowledge of the Environmental Protection Agency's Code of Federal Regulations (CFR) 40, CFR 40 Subchapter N, CFR 403
- 4. Basic knowledge of state-specific regulations related to industrial waste, pretreatment and stormwater management.
- 5. Basic awareness of local ordinances and guidelines governing industrial and commercial waste discharges.
- 6. Basic knowledge of the Industrial Waste and Stormwater Programs and their requirements.
- 7. General knowledge of site plans, maps, waste management plans, slug control plans, spill containment plans, and other projects wastewater discharge.





Domain 2: Sampling, Monitoring, and Data Analysis

Sub-Domain 2.1:

Sampling

- 1. Identify appropriate sampling techniques for collecting wastewater samples from various sources, including industrial, commercial, and domestic dischargers, and stormwater and conveyance systems.
- 2. Basic understanding of sample preservation and documentation procedures, ensuring proper chain of custody.
- 3. Gather and prepare labels and sampling equipment.
- 4. Install and troubleshoot samplers.
- 5. Retrieve, preserve, and transport samples according to established procedures, and properly dispose of samples collected and analyzed in the field.
- 6. Inspect and record observed conditions during sampling events that might influence sample results.

Sub-Domain 2.2:

Laboratory Testing

- 1. Basic knowledge of laboratory testing methods used for analyzing collected samples including chemical, biological, and bacteriological analysis of water, stormwater, groundwater, and wastewater.
- 2. Basic knowledge of how to operate, calibrate, clean, and maintain a variety of field meters, sampling, and related equipment including pH meters, flow meters, atmosphere monitors, conductivity and other various meters, ammonia and chlorine test kits, and automatic sampling devices.

Sub-Domain 2.3:

Monitoring

- 1. Identify field monitoring equipment, such as samplers, hydrogen sulfide (H2S) monitors, pressure monitors, pH meters, flow meters, and Lower Explosive Limit (LEL) meters.
- 2. Conduct system checks on instrumentation to verify their proper functioning and accuracy (e.g., samplers, meters, in-line monitoring).

Sub-Domain 2.4: Analysis

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- 1. Analyze collected data, including temperature, pH, flow, and other relevant observations to determine compliance with regulations.
- 2. Set up, calibrate, and operate a variety of field instruments used to analyze samples.

Domain 3: Inspection and Enforcement

Sub-Domain 3.1:

Inspection

- 1. Inspect industrial and commercial facilities to determine compliance with environmental regulations and agency guidelines.
- 2. Basic knowledge of pretreatment and stormwater devices, including sample points (e.g., grease traps, grease interceptors, sand and oil clarifiers, sumps, rain valves and pumps, drain inserts/screens/baskets, downspout filters, hydrodynamic separators, vegetated swales, detention, bioretention and infiltration basins, sand filters, and other stormwater or sewer pretreatment systems).
- 3. Basic knowledge of industrial inspection procedures used to detect evidence of illicit non-rainwater discharges.
- 4. Basic knowledge of permitting requirements for commercial portions of the industrial waste pretreatment and stormwater programs.
- 5. Review, modify, and recommend issuance of permits to industrial users for a variety of discharge permit applications.
- 6. Investigate complaints of alleged violations of waste discharge standards and possible illicit discharges into the stormwater conveyance system and/or sanitary sewer.

Sub-Domain 3.2:

Enforcement

- 1. Basic knowledge of enforcement actions and procedures for addressing violations and non-compliant sites.
- 2. Issue enforcement documents (Warning Notice, Notice of Violation) and take other routine steps as they relate to the enforcement of rules and regulations.

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Domain 4: Safety

Sub-Domain 4.1:

Safety

- 1. Adhere to safety principles and practices while handling chemicals, operating equipment, and conducting fieldwork.
- 2. Identify potential hazards in the field or workplace and implement safety precautions to protect oneself and others.
- 3. Observe proper safety procedures, rules, regulations, and practices.
- 4. Use appropriate Personal Protective Equipment (PPE).
- 5. Basic knowledge of confined space.
- 6. Basic knowledge of common gases encountered in a sewer system.
- 7. Basic knowledge of temporary traffic control.

Domain 5: Recordkeeping, Documentation, and Communication

Sub-Domain 5.1:

Recordkeeping and Documentation

- 1. Maintain accurate and detailed records of field activities, inspections, and sample data in field notebooks and computer programs.
- 2. Prepare necessary documentation for sample collection and preservation, laboratory analysis, and enforcement actions, ensuring proper record-keeping.
- 3. Prepare technical reports and correspondence related to facility inspection and/or sampling activities.
- 4. Monitor and track submission of compliance reports from permitted industries.
- 5. Maintain chain-of-custody documentation.
- 6. Recognize the importance of chain-of-custody procedures and the consequences of breaking such procedures.

Sub-Domain 5.2:

Communication and Collaboration

- 1. Communicate technical information clearly and concisely to supervisory and environmental compliance personnel.
- 2. Collaborate with team members, industry representatives, and the public to explain regulatory requirements and ensure compliance.

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3. Provide public outreach to businesses and the general public regarding various environmental programs.

Domain 6: Math

Sub-Domain 6.1:

Math

- 1. Understand basic mathematical principles and perform basic calculations using arithmetic.
- 2. Calculate detention time.
- 3. Calculate sewer fees.

Suggested References

CWEA's exam is based on a job task analysis that includes research of the essential duties of an Environmental Compliance Inspector at a representative cross-section of systems and facilities in California. CWEA's exams do not correspond directly to any specific textbook, educational course, or program; instead, the exams are based on an analysis of the duties commonly performed in actual practice. In developing the exam, CWEA Subject Matter Experts used their years of experience in the field along with the key textbooks and reference materials listed below. Candidates should understand that the references listed do not necessarily cover all exam content. Candidates who meet the minimum qualifications for this exam may find these suggested references useful when preparing for this exam; however, these suggested references are not required reading and should not be interpreted as constituting the sole source of all exam questions.

This list does not include all the available textbooks and materials for studying for this exam. Candidates are strongly encouraged to seek additional material, training, and experience, especially in content areas for which the candidate is not adequately prepared. Candidates are encouraged to prepare for CWEA certification exams using as many different study materials as possible plus education events and on-the-job training. Candidates are encouraged to develop their own personal study plan based on individual needs and knowledge. Taking our free self-evaluation can help identify strengths and areas to work on.

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Domain 1 – E	nvironmental Knowledge, Regulations, and Compliance
Sub-Domain 1.1	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 1, 5, 6
Sub-Domain 1.2	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 1, 3
	40 CFR 261.4
	40 CFR 403
	40 CFR 403.2
	40 CFR 403.5
Domain 2 – S	ampling, Monitoring, and Data Analysis
Sub-Domain 2.1	Pretreatment Facility Inspection, 4th Edition. Chapter 4
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 3, 6
	40 CFR 136
Sub-Domain 2.2	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 3, 6, 7
	Industrial User Inspection and Sampling Manual for POTWs, January 2017. Chapter 3
Sub-Domain 2.3	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 2, 3, 4,
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapter 7
Sub-Domain 2.4	Pretreatment Facility Inspection, 4th Edition. Chapters 3, 4, 5
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 3, 6, 7
	40 CFR 403.5
	40 CFR 136
Domain 3 – Iı	nspection and Enforcement
Sub-Domain 3.1	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
	Industrial User Inspection and Sampling Manual for POTWs, January 2017. Chapter 2
	40 CFR 403.3
Sub-Domain 3.2	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 4, 5

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	Industrial User Inspection and Sampling Manual for POTWs, January 2017. Chapter 3
	40 CFR 403.8
	40 CFR 403.17
Domain 4 - S	Safety
Sub-Domain 4.1	Pretreatment Facility Inspection, 4th Edition. Chapters 2, 4
	Industrial User Inspection and Sampling Manual for POTWs, January 2017. Chapter 2
	Title 29 CFR 1910.46
Domain 5 – R	Recordkeeping, Documentation, and Communication
Domain 5 – R Sub-Domain 5.1	Recordkeeping, Documentation, and Communication Pretreatment Facility Inspection, 4th Edition. Chapters 1, 4, 5
Domain 5 – R Sub-Domain 5.1	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 4, 5 Industrial User Inspection and Sampling Manual for POTWs, January 2017. Chapters 2, 3
Domain 5 – R Sub-Domain 5.1 Sub-Domain 5.2	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 4, 5 Industrial User Inspection and Sampling Manual for POTWs, January 2017. Chapters 2, 3 Pretreatment Facility Inspection, 4th Edition. Chapter 5
Domain 5 – R Sub-Domain 5.1 Sub-Domain 5.2 Domain 6 – N	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 4, 5 Industrial User Inspection and Sampling Manual for POTWs, January 2017. Chapters 2, 3 Pretreatment Facility Inspection, 4th Edition. Chapter 5 Ath





Publications in the Suggested Reference List

- Industrial User Inspection and Sampling Manual for POTWs, January 2017. U.S. Environmental Protection Agency
- Industrial Waste Treatment, Volume 1, 4th Edition. Office of Water Programs
- <u>Pretreatment Facility Inspection, 4th Edition. Office of Water Programs</u>
- 40 CFR 136
- <u>40 CFR 261.4</u>
- 40 CFR 403
- 40 CFR 403.2
- 40 CFR 403.3
- <u>40 CFR 403.5</u>
- 40 CFR 403.8
- 40 CFR 403.17
- Title 29 CFR 1910.46





Sample Questions

This section provides sample questions to help applicants become familiar with the exam format and subject matter.

- 1. Prohibited discharges from industrial users to POTWs, as stipulated in the Clean Water Act, are pollutants that:
 - a. create a fire or explosion hazard in the sewer or POTW.
 - b. have a pH lower than 6.0.
 - c. are released in such volume or strength as to inhibit chemical treatment at the POTW.
 - d. have a temperature that exceeds 100 F.
- 2. A significant industrial user can be defined as:
 - a. Discharging 20,000 gpd or more of process wastewater
 - b. Contributes 2.0 percent or more of the POTWs hydraulic or organic (BOD, TSS) capacity
 - c. A federal categorical industrial user
 - d. A user that generates hazardous waste
- 3. What could contribute to errors in analytical results?
 - a. Dirty sampling equipment
 - b. Metal finishing process
 - c. Stormwater runoff
 - d. Groundwater
- 4. Is an essential part of any sampling quality control methodology:
 - a. Proper cleaning techniques for sampling equipment
 - b. Traffic control
 - c. Maps
 - d. Plant site runoff
- 5. How often must SIUs be inspected?
 - a. Once a year
 - b. Every three years
 - c. Every six months
 - d. Every two years
- 6. Industrial plants producing wastes with a high suspended solids content include:
 - a. Breweries
 - b. Textile dyehouses
 - c. Oil fields
 - d. Laundries
- 7. Safety hazards associated with hydrogen sulfide in sewer systems include:
 - a. Bad odors

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- b. Corrosion of pipelines
- c. Toxic gasses
- d. Growth of pathogens
- 8. A confined space is one that:
 - a. has or may contain atmospheric, engulfment, design, or other serious health/safety hazard.
 - b. is large enough to enter and work in, has a restricted entry/exit, and is not meant for continuous occupancy.
 - c. is large enough to enter and work in and has a restricted entry/exit.
 - d. has or may contain an atmospheric or engulfment hazard.
- 9. A chain-of-custody form:
 - a. replaces the need for sample container labels.
 - b. must include field notes regarding sampling conditions.
 - c. traces samples possession and handling from collection through lab receiving.
 - d. is the ability to trace sample handling techniques from preservation through extraction or digestion to analysis.
- 10. An industry operating an 8-hour shift, 5 days per week, generates 100,000 gallons of wastewater per shift. Their pretreatment system has a capacity of 150 gallons per minute. How long must the pretreatment facility operate to process the wastewater generated each day?
 - a. 15 hours
 - b. 10.5 hours
 - c. 11.1 hours
 - d. 6.6 hours
- 11. What is the average detention time, in minutes, for a 40,000 gpd flow going through a 1,500-gallon interceptor?
 - a. 54 minutes
 - b. 27 minutes
 - c. 15 minutes
 - d. 40 minutes





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Answer Key and Solutions

- 1. A Domain 1
- 2. C Domain 1
- 3. A Domain 2
- 4. A Domain 2
- 5. A Domain 3
- 6. A Domain 3
- 7. C Domain 4
- 8. B Domain 4
- 9. C Domain 5
- 10. C Domain 6 Solution:

 $\frac{100,000 \ gal}{150 \ gal/min} = 11.1 \ hrs$

11. A - Domain 6 Solution:

 $\frac{1,500 \text{ gallons}}{40,000 \text{ gallons/day}} = 0.0375 \text{ days} \times 24 \text{hrs/day} \times 60 \text{min/hr}$ = 54 minutes





ECI GRADE 2 EXAM CONTENT OUTLINE

Content Domain	Weighting
Domain 1: Environmental Knowledge, Regulations, and Compliance	23%
Domain 2: Sampling, Monitoring, and Data Analysis	19%
Domain 3: Inspection, Investigation, and Enforcement	23%
Domain 4: Safety	11%
Domain 5: Recordkeeping, Documentation, and Communication	14%
Domain 6: Math	10%
Total	100%

Domain 1: Environmental Knowledge, Regulations, and Compliance

Sub-Domain 1.1:

Environmental Knowledge

- 1. Knowledge of chemistry principles that relate to industrial and commercial wastewater.
- 2. Knowledge of wastewater treatment concepts and pretreatment processes used to manage industrial waste (i.e., physical, chemical, and biological).
- 3. Knowledge of pretreatment and understanding of the mechanical function of grease removal equipment, sand-oil clarifiers, oil/water separators, gravity separators, and related equipment.
- 4. Knowledge of structural and non-structural stormwater best management practices for existing commercial and industrial users.
- 5. Knowledge of the types of wastestreams generated by manufacturing processes and their impacts on wastewater treatment.

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Sub-Domain 1.2:

Environmental Regulations and Compliance

- 1. Knowledge of the Clean Water Act and its implications on wastewater management.
- 2. Knowledge of National Pollutant Discharge Elimination System (NPDES) permit requirements, Waste Discharge Requirements (WDR), and Municipal Separate Storm Sewer Systems (MS4).
- 3. Knowledge of the Environmental Protection Agency's Code of Federal Regulations (CFR) 40, CFR 40 Subchapter N, CFR 136, and CFR 403.
- 4. Knowledge of state-specific regulations related to industrial waste, pretreatment, and stormwater management.
- 5. Knowledge of local ordinances, rules, and codes governing industrial and commercial waste and enforcement response plans.
- 6. Knowledge of the Federal Resource Conservation Recovery Act (RCRA), Industrial Wastewater and Stormwater Programs and their requirements.

Domain 2: Sampling, Monitoring, and Data Analysis

Sub-Domain 2.1:

Sampling

- 1. Use approved sampling techniques and equipment for collecting wastewater samples from various sources, including industrial, commercial, and domestic dischargers, and stormwater and conveyance systems.
- 2. Understand sample preservation and documentation procedures (including field analyses) and ensure proper chain of custody.
- 3. Gather and prepare labels and sampling equipment.
- 4. Install, set up, operate, and troubleshoot samplers.
- 5. Retrieve, preserve, and transport samples according to established procedures, and properly dispose of samples collected and analyzed in the field.
- 6. Monitor and record observed conditions during sampling events that might influence sample results.
- 7. Review sample collection and preservation policies, procedures, and methods (Reference 40 CFR 136).

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Sub-Domain 2.2: Laboratory Testing

- 1. Knowledge of approved laboratory testing methods used for analyzing collected samples including chemical, biological, physical, and bacteriological analysis of water, stormwater, groundwater, and wastewater.
- 2. Operate, calibrate, troubleshoot, clean, and maintain a variety of field meters, sampling, and related equipment, including pH meters, flow meter, atmosphere monitor, conductivity and other various meters, ammonia, sulfide, and chlorine test kits, and automatic sampling devices.

Sub-Domain 2.3:

Monitoring

- Proficiency in using field monitoring equipment, such as samplers, flow meters, pH meters, and atmospheric monitoring devices (e.g., hydrogen sulfide (H2S) monitors, oxygen (O2), carbon monoxide (CO), and Lower Explosive Limit (LEL) meters).
- 2. Conduct system checks on instrumentation to verify their proper functioning and accuracy (e.g., samplers, meters, in-line monitoring).
- 3. Review compliance monitoring reports, such as toxic organic management plans (TOMPs), stormwater pollution prevention plans (SWPPPs), spill prevention control and countermeasure plans, slug discharge control plans, baseline and self-monitoring reports, 90-day reports, periodic reports of continued compliance, and monitoring reports for compliance with federal, state, and local requirements.

Sub-Domain 2.4:

Analysis

- 1. Analyze collected data, including temperature, pH, flow, and other relevant observations to determine compliance with regulations.
- 2. Analyze data by comparing test results to requirements to determine compliance status.





Domain 3: Inspection, Investigation, and Enforcement

Sub-Domain 3.1:

Inspection and Investigation

- 1. Conduct industrial and commercial facility inspections to determine compliance with environmental regulations and agency guidelines.
- 2. Inspect pretreatment and stormwater devices, including sample points (e.g., grease traps, grease interceptors, sand and oil clarifiers, sumps, rain valves and pumps, drain inserts/screens/baskets, downspout filters, hydrodynamic separators, vegetated swales, detention, bioretention and infiltration basins, sand filters, and other stormwater or sewer pretreatment systems).
- 3. Understand industrial inspection procedures used to detect evidence of illicit non-rainwater discharges.
- 4. Familiarity with permitting requirements for commercial portions of the industrial waste pretreatment and stormwater programs.
- 5. Review, modify, and recommend issuance of permits to industrial users for a variety of discharge permit applications.
- 6. Investigate complaints of alleged violations of waste discharge standards and possible illicit discharges into the stormwater conveyance system and/or sanitary sewer.
- 7. Issue new, renewal, or updated Industrial User permits and explain changes and compliance requirements.
- 8. Develop and negotiate complex industrial discharge permits.
- 9. Investigate and trace sources of illegal or toxic wastes and unusual discharges entering stormwater and wastewater collection systems.
- 10. Research compliance history of facilities.
- 11. Recognize when a facility is in Non-Compliance or Significant Non-Compliance and respond appropriately.

Sub-Domain 3.2:

Enforcement

- 1. Knowledge of enforcement actions and procedures for addressing violations and non-compliant sites/Industrial Users.
- 2. Understand the escalation of enforcement hierarchy, issue Notice of Violation, and implement other enforcement actions as they relate to the enforcement of rules and regulations as outlined in the agency's enforcement response plan and sewer use ordinance.

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Sub-Domain 3.3: Site Plans and Permits

- 1. Review and evaluate site plans, maps, waste management plans, slug control plans, spill containment plans, and other projects involving wastewater discharge.
- 2. Receive and review plans for pretreatment of new buildings or tenant improvements and verify completed applications.
- 3. Use sample and flow data to assist with the Industrial User permitting process.
- 4. Review plumbing plans for compliance with sewer ordinance and suggest modifications to plumbing inspectors or engineers.
- 5. Evaluate commercial and industrial discharge loading to assess sewer impact fees.

Domain 4: Safety

Sub-Domain 4.1:

Safety

- 1. Adhere to safety principles and practices while handling chemicals, operating equipment, and conducting fieldwork.
- 2. Adhere to safety principles and practices while handling chemicals, operating equipment, and conducting fieldwork.
- 3. Identify potential hazards in the field or workplace and implement safety precautions to protect oneself and others.
- 4. Observe proper safety procedures, rules, regulations, and practices.
- 5. Use appropriate Personal Protective Equipment (PPE).
- 6. Knowledge of confined space, permitted confined space, the hazards they pose, and requirements for entry.
- 7. Knowledge of common gases encountered in a sewer system.
- 8. Review Safety Data Sheets for pertinent information about materials stored and used at permitted facilities.
- 9. Identify flash point temperatures of liquids commonly encountered in the field.
- 10. Knowledge of proper protocol for safely and effectively opening a sewer manhole.
- 11. Basic knowledge of temporary traffic control.





Domain 5: Recordkeeping, Documentation, and Communication

Sub-Domain 5.1:

Recordkeeping and Documentation

- 1. Maintain accurate and detailed records of field activities, inspections, and sample data in field notebooks and computer programs.
- 2. Prepare necessary documentation for sample collection and preservation, laboratory analysis, and enforcement actions, ensuring proper record-keeping.
- 3. Prepare technical reports and correspondence related to facility inspection and/or sampling activities.
- 4. Monitor and track submission of compliance reports from permitted industries.
- 5. Maintain chain-of-custody documentation and recognize the consequences of breaking procedures.
- 6. Assist in the preparation of NPDES program reports and other related reports and documents, such as Annual Reports, Pretreatment Compliance Inspection (PCI), and Pretreatment Compliance Audit (PCA).
- 7. Prepare surcharges, sampling fees, violations, and capacity fee bills for Industrial Users.

Sub-Domain 5.2:

Communication and Collaboration

- 1. Communicate technical information clearly and concisely to supervisory and environmental compliance personnel and facility contacts (e.g., when initiating enforcement actions).
- 2. Collaborate with team members, industry representatives, and the public to explain regulatory requirements and ensure compliance.
- 3. Provide public outreach to businesses and the general public regarding various environmental programs.
- 4. Communicate effectively with local, regional, state, and federal departments and agencies.
- 5. Provide professional customer service in both internal and external settings (e.g., de-escalation).
- 6. Provide training and technical guidance to lower-level colleagues.

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Domain 6: Math

Sub-Domain 6.1:

Math

- 1. Understand mathematical principles and perform calculations using arithmetic.
- 2. Calculate detention time.
- 3. Calculate sewer fees.
- 4. Calculate size requirements of basin/containment structures.
- 5. Perform calculations to determine industrial discharge permit limits, including production-based and mass-based limits.
- 6. Calculate pollutant loading in wastewater discharges.
- 7. Calculate percent removal and removal efficiency.
- 8. Perform common wastewater conversions (e.g., ug/L to mg/L, CF to gallons, mg/L to lbs, etc.).





Suggested References

CWEA's exam is based on a job task analysis that includes research of the essential duties of an Environmental Compliance Inspector worker at a representative cross-section of systems and facilities in California. CWEA's exams do not correspond directly to any specific textbook, educational course, or program; instead, the exams are based on an analysis of the duties commonly performed in actual practice. In developing the exam, CWEA Subject Matter Experts used their years of experience in the field along with the key textbooks and reference materials listed below. Candidates should understand that the references listed do not necessarily cover all exam content. Candidates who meet the minimum qualifications for this exam may find these suggested references useful when preparing for this exam; however, these suggested references are not required reading and should not be interpreted as constituting the sole source of all exam questions.

This list does not include all the available textbooks and materials for studying for this exam. Candidates are strongly encouraged to seek additional material, training, and experience, especially in content areas for which the candidate is not adequately prepared. Candidates are encouraged to prepare for CWEA certification exams using as many different study materials as possible plus education events and on-the-job training. Candidates are encouraged to develop their own personal study plan based on individual needs and knowledge.

Domain 1 - Environmental Knowledge, Regulations, and Compliance	
Sub-Domain 1.1	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 1, 4, 5, 6, 7
	40 CFR 403.8(a)
Sub-Domain 1.2	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 1, 3
	40 CFR 403
	40 CFR 403.5(b)
Domain 2 – Sampling, Monitoring, and Data Analysis	
Sub-Domain 2.1	Pretreatment Facility Inspection, 4th Edition. Chapters 4, 5
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 3, 6

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	Industrial User Inspection and Sampling Manual for POTWs, January 2017. Chapter 3
	40 CFR 136
Sub-Domain 2.2	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 3, 4, 6, 7
	Industrial User Inspection and Sampling Manual for POTWs, January 2017. Chapter 3
Sub-Domain 2.3	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 2, 3, 4, 5
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 3, 7
Sub-Domain 2.4	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
Domain 3 – Inspection, Investigation, and Enforcement	
Sub-Domain 3.1	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
Sub-Domain 3.2	Pretreatment Facility Inspection, 4th Edition. Chapter 5
	40 CFR 403.8(f)
Sub-Domain 3.3	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 1, 3
Domain 4 - S	afety
Sub-Domain 4.1	Pretreatment Facility Inspection, 4th Edition. Chapters 2, 4
Domain 5 – R	ecordkeeping, Documentation, and Communication
Sub-Domain 5.1	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 4, 5
	40 CFR 403.12(o)
Sub-Domain 5.2	Pretreatment Facility Inspection, 4th Edition. Chapter 5
	40 CFR 403.8(f)
Domain 6 – Math	
Sub-Domain 6.1	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapter 1

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Publications in the Suggested Reference List

- Industrial User Inspection and Sampling Manual for POTWs, January 2017. U.S. Environmental Protection Agency
- Industrial Waste Treatment, Volume 1, 4th Edition. Office of Water Programs
- <u>Pretreatment Facility Inspection, 4th Edition. Office of Water Programs</u>
- 40 CFR 136
- <u>40 CFR 403</u>
- 40 CFR 403.5(b)
- 40 CFR 403.8(a)
- 40 CFR 403.8(f)
- 40 CFR 403.12(o)





Sample Questions

This section provides sample questions to help applicants become familiar with the exam format and subject matter.

- 1. The Federal Act that introduced the concept of cradle to grave manifesting for hazardous waste products is:
 - a. Comprehensive Environmental Response, Compensation and Liability Act (CERCLA).
 - b. Superfund Amendments and Reauthorization Act (SARA).
 - c. Toxic Substances Control Act (TSCA).
 - d. Resource Conservation and Recovery Act (RCRA).
- 2. New Categorical Dischargers must submit a Baseline Monitoring Report to the POTW control authority prior to the planned commencement of discharge by at least:
 - a. 45 days
 - b. 90 days
 - c. 180 days
 - d. 360 days
- 3. Why are septum vials used for TTO samples?
 - a. To prevent skin contact with toxic organic compounds
 - b. To prevent cross contamination of grab samples
 - c. To prevent sample contact with air
 - d. To comply with hazardous waste regulations
- 4. The following type of flow measuring device can be installed in a pipe flowing full:
 - a. Cipolletti weir
 - b. Palmer-Bowlus flume
 - c. Venturi meter
 - d. Parshall flume
- 5. Non-storm water discharges to storm drains that are generally not permitted under municipal NPDES storm water discharge permits include:
 - a. irrigation runoff.
 - b. drainage from footing drains around buildings.
 - c. air conditioner condensate.
 - d. automobile detailing.
- 6. A major pollutant of concern (POC) from a printed circuit board shop is:
 - a. mercury.
 - b. cadmium.
 - c. chromium.
 - d. copper.

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- 7. Permit space emergency personnel must have the following training:
 - a. Traffic control
 - b. Rescue and data entry
 - c. Pipe materials
 - d. Enter and rescue procedures
- 8. Hydrogen sulfide smells like _____ (at high concentrations of hydrogen sulfide, however, the sense of smell is deadened and no odor is detected).
 - a. dead fish
 - b. fuel gas
 - c. rotten cabbage
 - d. rotten eggs
- 9. A POTW must retain Industrial User records for a minimum of:
 - a. 2 years
 - b. 3 years
 - c. 5 years
 - d. 10 years
- 10. A chain-of-custody form:
 - a. replaces the need for sample container labels.
 - b. must include field notes regarding sampling conditions.
 - c. traces samples possession and handling from collection through lab receiving.
 - d. is the ability to trace sample handling techniques from preservation through extraction or digestion to analysis.
- 11. An industry has a wastewater discharge of 10,000 gallons per day containing 5 mg/L of copper. What is the industry's mass emission rate of copper in pounds per day?
 - a. 4.17
 - b. 0.42
 - c. 250
 - d. 0.042
- 12. A solution of ferrous chloride used at a pretreatment facility contains 30 percent ferrous chloride and has a density of 1.33 g/mL. How many grams of ferrous chloride are in one liter of solution?
 - a. 399
 - b. 40
 - c. 226
 - d. 0.399





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Answer Key and Solutions

- 1. D Domain 1
- 2. B Domain 1
- 3. C Domain 2
- 4. C Domain 2
- 5. D Domain 3
- 6. D Domain 3
- 7. D Domain 4
- 8. D Domain 4
- 9. B Domain 5
- 10. C Domain 5
- 11. B Domain 6 Solution:

 $10,000 \text{ gal} \times 3.785 L/gal = 37,850L$ $5 \text{ mg/L} \times 37,85L = 189,250mg$ 1 lb = 453.6g = 453,600mg $\frac{189,250mg}{453,600\frac{mg}{lb}} = 0.42lbs$

12. A - Domain 6 Solution:

> 1 L = 1000 mL1.33 g/mL × 1000 mL = 1330 g/L 1330 g/L × 30% = 399 g/L

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ECI GRADE 3 EXAM CONTENT OUTLINE

Content Domain	Weighting
Domain 1: Environmental Knowledge, Regulations, and Compliance	25%
Domain 2: Sampling, Monitoring, and Data Analysis	18%
Domain 3: Inspection, Investigation, and Enforcement	24%
Domain 4: Safety and Training	11%
Domain 5: Recordkeeping, Documentation, and Communication	12%
Domain 6: Math	10%
Total	100%

Domain 1: Environmental Knowledge, Regulations, and Compliance

Sub-Domain 1.1:

Environmental Knowledge

- 1. Knowledge of chemistry principles that relate to industrial and commercial wastewater.
- 2. Advanced knowledge of wastewater treatment concepts and pretreatment processes used to manage industrial waste (i.e., physical, chemical, and biological).
- 3. Advanced knowledge of pretreatment and understanding of the mechanical function of grease removal equipment, sand-oil clarifiers, oil/water separators, gravity separators, and related equipment.
- 4. Advanced knowledge of structural and non-structural stormwater best management practices for existing commercial and industrial users.
- 5. Advanced knowledge of the types of wastestreams generated by manufacturing processes and their impacts on wastewater treatment.

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Sub-Domain 1.2:

Environmental Regulations and Compliance

- 1. Advanced knowledge of the Clean Water Act and its implications on wastewater management.
- Advanced knowledge of National Pollutant Discharge Elimination System (NPDES) permit requirements, Waste Discharge Requirements (WDR), and Municipal Separate Storm Sewer Systems (MS4).
- 3. Advanced knowledge of the Environmental Protection Agency's Code of Federal Regulations (CFR) 40, CFR 40 Subchapter N, CFR 136, and CFR 403
- 4. Advanced knowledge of state-specific regulations related to industrial waste, pretreatment, and stormwater management.
- 5. Advanced knowledge of local ordinances and guidelines governing industrial and commercial waste and enforcement response plans.
- 6. Advanced knowledge of the Federal Resource Conservation Recovery Act (RCRA), Industrial Waste and Stormwater Programs and their requirements.

Domain 2: Sampling, Monitoring, and Data Analysis

Sub-Domain 2.1: Sampling

- 1. Oversee the appropriate use of sampling techniques for collecting wastewater samples from various sources, including industrial, commercial, and domestic dischargers, and stormwater and conveyance systems.
- 2. Advanced understanding of sample preservation and documentation procedures, ensuring the integrity of the chain of custody.
- 3. Oversee the inventory of sampling equipment and gather and prepare labels and sampling equipment when necessary.
- 4. Oversee the installation, set up, operation, and troubleshooting of samplers.
- 5. Retrieve, preserve, and transport samples according to established procedures, and properly dispose of samples and their preservatives collected and analyzed in the field.
- 6. Oversee the inspection and documentation of observed conditions at the sample locations that might influence sample results.

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Sub-Domain 2.2: Laboratory Testing

- 1. Advanced knowledge and understanding of laboratory testing methods used for analyzing collected samples including chemical, biological, and bacteriological analysis of water, stormwater, groundwater, and wastewater.
- 2. Operate, calibrate, clean, maintain, and train others how to use a variety of field meters, sampling, and related equipment including pH meters, flow meter, atmosphere monitor, conductivity and other various meters, ammonia and chlorine test kits, and automatic sampling devices.

Sub-Domain 2.3:

Monitoring

- 1. Advanced proficiency in using field monitoring equipment, such as samplers, hydrogen sulfide (H2S) monitors, pressure monitors, pH meters, flow meters, and Lower Explosive Limit (LEL) meters.
- 2. Conduct system checks on instrumentation to verify proper functioning and accuracy (e.g., samplers, meters, in-line monitoring).
- 3. Review and generate compliance monitoring reports, such as toxic organic management plans (TOMPs), stormwater pollution prevention plans (SWPPPs), spill prevention control and countermeasure plans, slug discharge control plans, baseline and self-monitoring reports, 90-day reports, periodic reports of continued compliance, and monitoring reports for compliance with federal, state, and local requirements.

Sub-Domain 2.4:

Analysis

- 1. Analyze collected data, including temperature, pH, flow, and other relevant observations, to determine compliance with regulations.
- 2. Evaluate data to identify instances of noncompliance.
- 3. Conduct sampling and evaluate data for local limit studies.





Domain 3: Inspection and Enforcement

Sub-Domain 3.1:

Inspection and Investigation

- 1. Conduct industrial and commercial facility inspections to ensure compliance with environmental regulations and agency guidelines.
- 2. Inspect pretreatment and stormwater devices, including sample points (e.g., grease traps, grease interceptors, sand and oil clarifiers, sumps, rain valves and pumps, drain inserts/screens/baskets, downspout filters, hydrodynamic separators, vegetated swales, detention, bioretention and infiltration basins, sand filters, and other stormwater or sewer pretreatment systems).
- 3. Comprehensive understanding of industrial inspection procedures used to detect evidence of illicit non-rainwater discharges.
- 4. Comprehensive understanding of permitting requirements for commercial portions of the industrial waste pretreatment and stormwater programs.
- 5. Review, modify, and recommend issuance of permits to industrial users for a variety of discharge permit applications.
- 6. Investigate complaints of alleged violations of waste discharge standards and possible illicit discharges into the stormwater conveyance system and/or sanitary sewer.
- 7. Issue new, renewal, or updated Industrial User permits, clarify modifications, and outline compliance obligations.
- 8. Develop and negotiate complex industrial discharge permits.
- 9. Research compliance history of facilities.
- 10. Recognize when a facility is in Non-Compliance or Significant Non-Compliance and respond appropriately.
- 11. Assist with the development of appropriate inspection procedures, sampling locations and methodology, for a broad variety of industrial users.
- 12. Respond to and investigate illegal discharges to sewers, streets, and storm drains, including sewer stoppages, spills/Sanitary Sewer Overflows (SSO), and illicit discharges.
- Report spills/SSOs, submit accurate and certified sanitary sewer overflow reports into the California Integrated Water Quality System (CIWQS), California State Office of Emergency Services (OES), and to other regulators.





Sub-Domain 3.2:

Enforcement

- 1. Advanced knowledge of enforcement actions and procedures for addressing violations and non-compliant sites.
- 2. Generate and issue Notice of Violations and take other routine steps as they relate to the enforcement of rules and regulations.
- 3. Facilitate and participate in enforcement hearings and monitor follow-up action.
- 4. Provide support for legal action in response to permit non-compliance.
- 5. Address complaints and meet with industrial and commercial dischargers to resolve waste problems.

Sub-Domain 3.3:

Site Plans and Permits

- 1. Review and evaluate site plans, maps, waste management plans, slug control plans, spill containment plans, and other projects involving wastewater discharge.
- 2. Receive and review plans for new buildings or tenant improvements; update plan check log sheet, review plumbing plans for compliance, suggest modifications, conduct inspections, and ensure appropriate completion.
- 3. Assist with permitting and analyzing industrial flow and samples.
- 4. Understand fundamental hydraulic and environmental engineering concepts and interpret engineering drawings effectively.
- 5. Evaluate commercial and industrial discharge loading to assess sewer impact fees.

Domain 4: Safety and Training

Sub-Domain 4.1:

Safety and Training

- 1. Adhere to and provide training on safety principles and practices while handling chemicals, operating equipment, and conducting fieldwork.
- 2. Provide training on potential hazards in the field or workplace and implement safety precautions to protect oneself and others.

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- 3. Observe and provide training on proper safety procedures, rules, regulations, and practices.
- 4. Provide training on and oversee the use of appropriate Personal Protective Equipment (PPE).
- 5. Knowledge of confined space, permitted confined space, the hazards they pose, and requirements for entry.
- 6. Knowledge of common gases encountered in a sewer system.
- 7. Review Safety Data Sheets for pertinent information about materials stored and used at permitted facilities, and recognize incompatible chemicals.
- 8. Identify flash point temperatures of liquids commonly encountered in the field.
- 9. Assist in the administration of a safety program.
- 10. Perform job hazard assessments and develop appropriate standard operating procedures (SOPs).
- 11. Perform field inspections for compliance with SOPs.

Sub-Domain 4.2:

Supervision and Administration

- 1. Assist management with employee development and training programs to meet performance standards.
- 2. Provide instruction and training to staff on sampling and inspection methodologies, as well as the application of laws, codes, ordinances, and procedures governing implementation and enforcement of pretreatment regulations.
- 3. Coordinate, strategize, oversee, and assess the activities, work, and performance of managed personnel.
- 4. Perform managerial and supervisory tasks such as budget management, invoice approval, and requisition submission, and assist in the drafting of requirements for Requests for Proposals (RFPs).

Domain 5: Recordkeeping, Documentation, and Communication

Sub-Domain 5.1:

Recordkeeping and Documentation

1. Maintain and review records of field activities, inspections, and sample data for accuracy and completion.





- 2. Prepare and review completed documentation for sample collection and preservation, laboratory analysis, and enforcement actions, ensuring proper record-keeping.
- 3. Prepare and review completed technical reports and correspondence related to facility inspection and/or sampling activities.
- 4. Review submitted compliance reports from permitted industries and identify violations.
- 5. Maintain chain-of-custody documentation and recognize the consequences of breaking procedures.
- 6. Participate in the administration of the NPDES program and assist in the preparation of NPDES program reports and other related reports and documents, such as Annual Reports, Pretreatment Compliance Inspections (PCI), and Pretreatment Compliance Audits (PCA).
- 7. Prepare and review surcharges, sampling fees, violations and capacity fee bills for Industrial Users.
- 8. Draft and review compliance letters to industrial waste dischargers.
- 9. Prepare technical reports for the State Water Quality Control Board and the Environmental Protection Agency.
- 10. Monitor discharge volumes and loadings from industrial and commercial users for billing and data collection purposes.

Sub-Domain 5.2:

Communication and Collaboration

- 1. Communicate technical information clearly and concisely to management, environmental compliance personnel and facility contacts (e.g., when initiating enforcement actions).
- 2. Provide support to team members, industry representatives, and the public to explain regulatory requirements and ensure compliance.
- 3. Coordinate and provide public outreach to businesses and the general public regarding various environmental programs.
- 4. Interface with local, regional, state, and federal departments and agencies.
- 5. Oversee and provide professional customer service in both internal and external settings (e.g., de-escalation).
- 6. Develop and implement Pollution Prevention Programs to promote environmental compliance.
- 7. Prepare and conduct presentations to industrial users and the public to educate and raise awareness on environmental compliance.

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Domain 6: Math

Sub-Domain 6.1:

Math

- 1. Perform calculations to determine industrial discharge permit limits, including production-based and mass-based limits.
- 2. Calculate pollutant loading in wastewater discharges.
- 3. Calculate percent removal and removal efficiency.
- 4. Use the combined waste stream formula in the calculation of permit limits and compliance.
- 5. Calculate the pollutant travel time from the sample point to the treatment plant.

Suggested References

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Domain 1 – Environmental Knowledge, Regulations, and Compliance	
Sub-Domain 1.1	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4,
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 1, 4, 5, 6, 7
Sub-Domain 1.2	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 1, 3
Domain 2 – S	ampling, Monitoring, and Data Analysis
Sub-Domain 2.1	Pretreatment Facility Inspection, 4th Edition. Chapters 4, 5
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 3, 6
	40 CFR 136
Sub-Domain 2.2	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 3, 4, 6, 7
Sub-Domain 2.3	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 2, 3, 4, 5
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 3, 7
Sub-Domain 2.4	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
	40 CFR 136
	40 CFR 403.8
	40 CFR 433.17
Domain 3 – Ir	nspection, Investigation, and Enforcement
Sub-Domain 3.1	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
	State Water Resources Control Board Order WQ 2022-0103-DWQ
	40 CFR 403.6
	40 CFR 403.8
	40 CFR 441
Sub-Domain 3.2	Pretreatment Facility Inspection, 4th Edition. Chapters 4, 5
Sub-Domain 3.3	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapters 1, 3
	40 CFR 403
	40 CFR 461

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Domain 4 – Safety and Training	
Sub-Domain 4.1	Pretreatment Facility Inspection, 4th Edition. Chapters 2, 4
Sub-Domain 4.2	
Domain 5 – Recordkeeping, Documentation, and Communication	
Sub-Domain 5.1	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
	40 CFR 403.3
	40 CFR 403.12
Sub-Domain 5.2	Pretreatment Facility Inspection, 4th Edition. Chapter 5
Domain 6 – Math	
Sub-Domain 6.1	Pretreatment Facility Inspection, 4th Edition. Chapters 3, 4
	Industrial Waste Treatment, Volume 1, 4th Edition. Chapter 1





Publications in the Suggested Reference List

- Industrial User Inspection and Sampling Manual for POTWs, January 2017. U.S. Environmental Protection Agency
- Industrial Waste Treatment, Volume 1, 4th Edition. Office of Water Programs
- <u>Pretreatment Facility Inspection, 4th Edition. Office of Water Programs</u>
- 40 CFR 136
- <u>40 CFR 403</u>
- <u>40 CFR 403.3</u>
- 40 CFR 403.6
- <u>40 CFR 403.8</u>
- <u>40 CFR 403.12</u>
- <u>40 CFR 433.17</u>
- 40 CFR 441
- 40 CFR 461





Sample Questions

This section provides sample questions to help applicants become familiar with the exam format and subject matter.

- 1. Special Conditions of an industrial user discharge permit may include:
 - a. duty to mitigate clause.
 - b. accidental discharge reporting.
 - c. industrial user management practices.
 - d. severability clause.
- 2. Which one of the following items is not a major section of the OSHA regulations?
 - a. Hazardous materials
 - b. Laboratories
 - c. Personal protective equipment
 - d. Walking-working surfaces
- 3. Review of an industrial discharge permit application indicates the discharger must comply with a Categorical TTO standard. What pollutants must the discharger sample and analyze for to comply with the TTO standard?
 - a. All pollutants listed in the standard.
 - b. Only the pollutants detected in previous sampling results.
 - c. Only the pollutants found in the raw materials used.
 - d. Only the pollutants that would reasonably be expected to be present.
- 4. Which of the following types of control samples may be used to determine accuracy?
 - a Mathad b
 - a. Method blank
 - b. Calibration standard
 - c. Certified reference material
 - d. Duplicate
- 5. Which of the following items is a major characteristic of the wastes from the manufacture of candles?
 - a. Grease
 - b. Organic acids
 - c. Temperature
 - d. Variable pH
- 6. An alternative pretreatment limit calculated by the combined wastestream formula (CWF) may not be used if the alternative limit is:
 - a. based on less than 60-day average flows.
 - b. calculated on combined wastestreams with concentration and productionbased mass limits.
 - c. calculated on wastestreams combined before pretreatment.

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- d. below the analytical detection limit.
- 7. Performance appraisal forms:
 - a. should not be discussed with the employee.
 - b. make the employee evaluation process consistent.
 - c. should not contain a rating scale.
 - d. must be limited to three judging factors.
- 8. What is the primary responsibility of a supervisor when reviewing the accident report form of an injured employee?
 - a. Determine whether or not medical treatment was needed
 - b. Determine what disciplinary action is needed for the injured employee
 - c. Determine the causes and the steps needed to prevent such accidents in the future
 - d. Determine which personnel were responsible for the accident
- 9. Why is written communication more demanding than oral communication?
 - a. Ideas must be expressed clearly.
 - b. Important information may be missed.
 - c. The need to use highly technical terms.
 - d. No chance to clarify and explain ideas in response to audience.
- 10. Performance appraisal forms:
 - a. should not be discussed with the employee.
 - b. make the employee evaluation process consistent.
 - c. should not contain a rating scale.
 - d. must be limited to three judging factors.
- 11. A circular clarifier treats a flow at 1.2 MGD with an influent suspended solids concentration of 300 mg/L. The diameter is 55 feet, the depth is 8 feet, and the effluent suspended solids is 90 mg/L. What is the clarifier efficiency in removing suspended solids?
 - a. 23 percent
 - b. 63 percent
 - c. 65 percent
 - d. 70 percent





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Answer Key and Solutions

- 1. C Domain 1
- 2. B Domain 1
- 3. D Domain 2
- 4. C Domain 2
- 5. B Domain 3
- 6. D Domain 3
- 7. B Domain 4
- 8. C Domain 4
- 9. D Domain 5
- 10. B Domain 5
- 11. D Domain 6 Solution:

$$\frac{\left(300\frac{mg}{L} - 90\frac{mg}{L}\right)}{300\frac{mg}{L}} \times 100 = 70\%$$





ECI GRADE 4 EXAM CONTENT OUTLINE

Content Domain	Weighting
Domain 1: Environmental Knowledge, Regulations, and Compliance	38%
Domain 2: Administration	25%
Domain 3: Supervision and Safety	18%
Domain 4: Audits	19%
Total	100%

Domain 1: Environmental Knowledge, Regulations, and Compliance

Sub-Domain 1.1:

Environmental Knowledge

- 1. Apply knowledge of chemistry and biology to understand the composition, properties, and impacts of wastewater and stormwater discharges on the environment.
- 2. Identify and assess the risks associated with sewer and stormwater discharges, sampling, and inspection, and develop procedures to mitigate those risks.
- 3. Use chemical, biological, physical, and environmental sciences to analyze environmental data, identify trends, and reach valid conclusions.
- 4. Apply methods and techniques used in sampling and principles of statistical analysis.
- 5. Understand the principles and practice of environmental compliance, including the development and implementation of environmental compliance programs, the conduct of inspection and reviews, and enforcement of environmental regulations.





Sub-Domain 1.2: Compliance Enforcement

- 1. Monitor and enforce program regulations, ensuring compliance with federal, state, and local laws.
- 2. Evaluate Notices of Intent (NOI) and Storm Water Pollution Prevention Plans (SWPPPs) for compliance with relevant regulations.
- 3. Evaluate industrial dischargers for compliance with discharge regulations.
- 4. Prepare compliance letters and implement enforcement action against noncompliant industrial dischargers.
- 5. Review and make recommendations regarding California Environmental Quality Act (CEQA), Environmental Impact Reports (EIRs), and associated documents to ensure adherence to stormwater regulations for construction activities and new and redevelopment projects.
- 6. Oversee completion of mitigation measures.
- Implement monitoring programs as required by the Regional Water Quality Control Board (RWQCB), State Water Resources Control Board (SWRCB), U.S. Environmental Protection Agency (EPA), Department of Public Health (DPH), and other regulatory agencies.
- 8. Develop and recommend revisions of local ordinances and Enforcement Response Plans (ERPs) related to environmental compliance for adoption by the agency's governing board.

Sub-Domain 1.3:

Wastewater and Stormwater Programs

- 1. Plan, organize, develop, administer, and monitor complex wastewater treatment and stormwater management programs.
- 2. Identify, inspect, and evaluate new industries and businesses for enrollment in wastewater pretreatment and/or stormwater programs.
- 3. Review industrial, commercial, and institutional accounts for sanitary and storm sewer service fee accuracy.
- 4. Coordinate, direct, and conduct inspections of industrial, commercial, and residential facilities and construction sites regulated by wastewater pretreatment and/or stormwater programs.
- 5. Respond to, or direct the response to, illicit discharges and potential pollutants in the municipal separate storm sewer system (MS4); including assessing cleanup procedures and making appropriate recommendations for cleanup.
- 6. Investigate liability claims and policy violations related to wastewater and stormwater issues and maintain documentation that may be used in a court of law.

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7. Analyze stormwater run-off sample data results to determine effectiveness and compliance with stormwater program objectives.

Sub-Domain 1.4:

Regulatory Requirements

- 1. Perform technical review of existing environmental regulations, and review and provide technical input for new local, state, and federal environmental regulations.
- 2. Possess knowledge of pertinent federal, state, local, and department regulatory requirements, including the following:
 - Environmental Protection Agency (EPA)
 - California Environmental Protection Agency (CalEPA)
 - Department of Environmental Quality (DEQ)
 - California Environmental Quality Act (CEQA)
 - State Water Resources Control Board (SWRCB)
 - National Pollutant Discharge Elimination System (NPDES) Permit Program
 - California Code of Regulations, Title 27
 - California Water Code
 - California Biosolids Management Program
 - Biosolids Beneficial Use Program
 - Biosolids Outreach Program
 - Clean Air Act
 - California Air Resources Board (CARB)
- Develop, implement, and manage various programs related to National Pollutant Discharge Elimination System (NPDES) Permit Program, including but not limited to pollution prevention programs, pretreatment programs, sanitary sewer collection system, stormwater, municipal separate storm sewer system (MS4), recycled water, and biosolids management to ensure compliance with requirements.

Sub-Domain 1.5:

Construction and Capital Improvement Projects

- 1. Oversee and coordinate the completion of permit conditions and mitigation requirements for capital improvement projects, to ensure compliance with all applicable regulations.
- 2. Review new construction, redevelopment, and tenant improvement plans for compliance with necessary industrial waste requirements, including wastewater pretreatment, and stormwater management.

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- 3. Understand how to read and interpret plans and specifications, including drawings and diagrams.
- 4. Coordinate with building departments, industries, public agencies, and business representatives to review blueprints/plans to confirm proper configuration of facilities and compliance with all applicable regulations.
- 5. Review project plans for water efficiency and monitoring and managing water use. Inspect plans and documents for dewatering of construction sites and the disposal of hazardous waste.

Domain 2: Administration

Sub-Domain 2.1:

Data Management and Technical Reporting

- Manage and manipulate complex database information including the collection, storage, and analysis of data related to wastewater treatment, Fats, Oils, and Grease (FOG) management, stormwater management, and air quality from methane from biosolids.
- 2. Analyze stormwater run-off sample data results to determine effectiveness and compliance with established objectives, identify trends, and make recommendations for improvement.
- 3. Prepare and submit periodic reports to the California Regional Water Quality Control Board (CRWQCB) and other related regulatory agencies, in accordance with all applicable regulations.
- 4. Prepare technical reports analyzing a variety of environmental data, including wastewater treatment plant operations, stormwater management programs, and environmental compliance activities.
- 5. Maintain detailed records, which may be used in a court of law, including all data collected, analyzed, and reported, such as:
 - Data related to wastewater treatment and stormwater management
 - Data related to air quality from methane from biosolids
 - Records of all inspections, monitoring, and testing activities
 - Records of all permits and approvals
 - Correspondence with regulatory agencies
 - Reports of any incidents, plant upsets, or spills





Sub-Domain 2.2:

Public Outreach and Communication

- 1. Interact with public and private sector individuals, firms, agencies, and schools to promote environmental compliance, including providing information, answering questions, and responding to complaints.
- 2. Provide guidance on environmental compliance matters to businesses and the public, promoting adherence to regulations, and best practices.
- 3. Answer questions and provide information to the public in a clear and concise manner, using plain language that is easy to understand.
- 4. Investigate complaints and recommend corrective action as necessary to resolve complaints.
- 5. Coordinate pollution prevention activities with local businesses and other government agencies to reduce the environmental impact of their operations.
- 6. Participate in administrative appeals and show cause hearings on environmental compliance matters.
- 7. Ensure continuous communication with agency personnel and governing board regarding spills, plant upsets, and investigations to promptly disseminate information, coordinate response efforts, and facilitate adherence to established environmental compliance protocols.

Sub-Domain 2.3:

Budgeting

- 1. Develop cost projections for budget proposals that are consistent with the agency's strategic objectives.
- 2. Submit justifications for staff, supplies, equipment, and services that demonstrate a rationale for the estimated costs, that alternatives that were considered, and the benefits that will be realized.
- 3. Monitor and control expenditures by tracking the actual expenditures against the budget and taking corrective action as needed to ensure that the budget is not exceeded.

Sub-Domain 2.4:

Administration

- 1. Identify supplies and materials needed, obtain quotes from suppliers, and place orders in a timely manner to ensure that they are available when needed.
- 2. Identify equipment needs, specify the features and performance requirements, draft Requests for Proposals (RFPs), and obtain quotes from suppliers in a clear and concise manner to ensure that the correct equipment is purchased.

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- 3. Oversee and assist in the preparation of wastewater capacity fee calculations and other cost recovery fees to ensure that calculations are accurate and that fees are fair, equitable, and based on sound financial principles.
- 4. Prepare reports and presentations with recommendations for action to the agency's governing board.
- 5. Draft staff reports for local governing board.

Domain 3: Supervision and Safety

Sub-Domain 3.1:

Supervision

- 1. Plan, prioritize, assign, supervise, monitor, and review the work of staff involved in conducting environmental compliance inspections and wastewater and stormwater programs to ensure that work is accurate and meets required standards.
- 2. Provide technical and functional guidance and supervision over assigned personnel, including directing and training them on environmental compliance investigations, inspections, and enforcement.
- 3. Direct staff evaluation activities, including reviewing performance records, conducting performance evaluations, recommending improvements and modifications to staff training programs, and conducting staff training activities to address deficiencies in knowledge and/or skills.
- 4. Participate in the recruitment and selection of staff by reviewing job descriptions, interviewing candidates, and making recommendations for hiring and promotion.
- 5. Monitor staff and address actions that may be improper, illegal, or in violation of policies or procedures.

Sub-Domain 3.2:

Safety

- 1. Ensure work is performed in a safe manner consistent with safety policies and procedures.
- 2. Oversee, coordinate, and document staff safety trainings.
- 3. Understand occupational hazards and standard safety practices including those associated with working in confined spaces.
- 4. Understand traffic control principles, practices and procedures and implement traffic control plans.

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Domain 4: Audits

Sub-Domain 4.1:

Environmental Protection Agency (EPA) and State Audits

- 1. Ensure the environmental compliance department's adherence to all applicable environmental regulations by reviewing the audit schedule, collecting necessary documentation, and identifying areas that need to be addressed.
- 2. Oversee and coordinate the audit response team, providing training on the audit process, procedures, purpose, and auditor and staff roles.
- 3. Maintain professional communication while adhering to the audit process and procedures.
- 4. Cooperate with the Environmental Protection Agency (EPA), consultants, and the Regional Water Quality Control Board (RWQCB) to perform Pretreatment Compliance Inspections and Audits
- 5. Conduct and revise Local Limits Studies for wastewater.

Sub-Domain 4.2:

Self-Audits

- 1. Periodically evaluate the program's alignment with local, state, and federal environmental regulations.
- 2. Identify instances and trends of non-compliance and coordinate necessary corrective action.
- 3. Maintain documentation of the self-audit process, findings, and corrective actions.
- 4. Foster a culture of continuous improvement.





Suggested References

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Domain 1 – Environmental Knowledge, Regulations, and Compliance	
Sub-Domain 1.1	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 5
	40 CFR 136
	40 CFR 403.12
Sub-Domain 1.2	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
	Utility Management, A Field Study Training Program, 2nd Edition. Chapter 1
	40 CFR 403.8
Sub-Domain 1.3	Manage for Success, Effective Utility Leadership Practices, 1st Edition. Chapter 8
	Pretreatment Facility Inspection, 4th Edition. Chapters 1, 3, 4, 5
	40 CFR 122.64
	40 CFR 403.8
Sub-Domain 1.4	40 CFR 403.8

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	40 CFR 413.03	
Sub-Domain 1.5	Manage for Success, Effective Utility Leadership Practices, 1st Edition. Chapter 9	
Domain 2 – Administration		
Sub-Domain 2.1	Pretreatment Facility Inspection, 4th Edition. Chapters 4, 5	
	Utility Management, A Field Study Training Program, 2nd Edition. Chapter 1	
	40 CFR 403.12	
Sub-Domain 2.2	Pretreatment Facility Inspection, 4th Edition. Chapters 4, 5	
	Utility Management, A Field Study Training Program, 2nd Edition. Chapter 1	
	Manage for Success, Effective Utility Leadership Practices, 1st Edition. Chapter 13	
Sub-Domain 2.3	Utility Management, A Field Study Training Program, 2nd Edition. Chapter 2	
	Manage for Success, Effective Utility Leadership Practices, 1st Edition. Chapter 9	
Sub-Domain 2.4	Manage for Success, Effective Utility Leadership Practices, 1st Edition. Chapter 4	
Domain 3 – S	upervision and Safety	
Sub-Domain 3.1	Manage for Success, Effective Utility Leadership Practices, 1st Edition. Chapters 1, 5	
Sub-Domain 3.2	Pretreatment Facility Inspection, 4th Edition. Chapters 2, 4	
	Manage for Success, Effective Utility Leadership Practices, 1st Edition. Chapter 12	
Domain 4 - Audits		
Sub-Domain 4.1	Pretreatment Facility Inspection, 4th Edition. Chapter 5	
	40 CFR 403.12	
Sub-Domain 4.2	Pretreatment Facility Inspection, 4th Edition. Chapter 5	

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Publications in the Suggested Reference List

- <u>Manage for Success, Effective Utility Leadership Practices, 1st Edition. Office of Water</u> <u>Programs</u>
- <u>Pretreatment Facility Inspection, 4th Edition. Office of Water Programs</u>
- <u>Utility Management, A Field Study Training Program, 3rd Edition. Office of Water Programs</u>
- <u>40 CFR 122.64</u>
- <u>40 CFR 136</u>
- 40 CFR 403.8
- 40 CFR 403.12
- 40 CFR 413.03





Sample Questions

This section provides sample questions to help applicants become familiar with the exam format and subject matter.

- 1. Which of the following sections of the Code of Federal Regulations determines the concentrations of toxins, heavy metals, pathogens, and other pollutants found in sewage sludge?
 - a. 20 CFR 1910.1450
 - b. 20 CFR 136
 - c. 40 CFR 403
 - d. 40 CFR 503
- 2. A Storm Water Pollution Prevention Plan includes a schedule of inspections, a monitoring plan, and ______.
 - a. an inventory of everything that gets wet when it rains.
 - b. a description of spill control equipment on site.
 - c. contact information for the local storm run-off management agency.
 - d. an Annual Comprehensive Stormwater Compliance Evaluation.
- 3. When developing a lesson plan, the following factor must be considered:
 - a. the trainees' current level of knowledge
 - b. the methods and materials used to gather the information
 - c. trainees' expectations
 - d. the manner in which achievement of the expectations will be rewarded
- 4. Why are good records important?
 - a. To demonstrate pattern of lawful behavior over time
 - b. To polish your report-writing skills
 - c. To record all uncritical events
 - d. To give bookkeepers a job
- 5. When you become aware of an unsafe practice or work condition:
 - a. immediately identify the person responsible.
 - b. immediately redirect your team to resolve the issue.
 - c. begin processing an incident/accident report.
 - d. ask the employees to step away from the job for a moment to evaluate the scene.





- 6. If you were supervisor of two lead inspectors, one whose work was exceptionally good and a second whose work was substandard, what should you do?
 - a. Demote the substandard inspector and bring up a replacement from the ranks
 - b. Discuss the problem with the substandard inspector and offer to help before any other action is taken
 - c. Find a replacement and then fire the substandard inspector
 - d. Wait to see if the substandard inspector does better
- 7. Which of the following would likely be most scrutinized by the U.S. EPA in an annual pretreatment report?
 - a. Reissuance of IU permits
 - b. Public relations activities
 - c. Data/information management
 - d. New IU and qualifications of SIU
- 8. 40 CFR 403.12 (o) (3) requires POTWs to retain reports for a minimum of _____ years, which shall be extended during the course of any unresolved litigation regarding the discharge of pollutants by the Industrial User or the operation of the POTW Pretreatment Program or when requested by the Director or the Regional Administrator.
 - a. two
 - b. three
 - c. seven
 - d. ten





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Answer Key and Solutions

- 1. D Domain 1
- 2. D Domain 1
- 3. A Domain 2
- 4. A Domain 2
- 5. D Domain 3
- 6. B Domain 3
- 7. D Domain 4
- 8. B Domain 4





FORMULA SHEET

This formula sheet is available onscreen during the exam.



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CREATING A STUDY PLAN

Completing a Gap Analysis

CWEA certification exams are experience based. The Gap Analysis Tool is designed to help candidates identify which grade level is best suited to their current level of experience, and where they may be lacking sufficient experience.

This free self-evaluation is available on the <u>CWEA website</u> for all vocations.

Candidates are encouraged to develop their own personal study plan based on individual needs, experience, and knowledge. Candidates should seek as many different study materials as possible as well as attend educational events and on-the-job training. This is especially important for areas in which the candidate is not adequately prepared.

CWEA's exams do not correspond directly to any specific textbook, educational course, or program. Instead, the exams are based on an analysis of the duties commonly performed in actual practice.

CWEA Local Section Training

It is the goal of CWEA's Technical Certification Program to operate in line with established best practices for certification programs. As such, CWEA is careful to separate its education and training activities from its certification program to ensure that no conflict of interest exists. Any educational materials or trainings that are designed to prepare candidates for an exam are developed and conducted by individuals that do not have access to the exams.

CWEA Local Sections host education and training events throughout the year that focus on the job duties tested by our certifications. These trainings are limited based on demand and volunteer availability.

Local Section trainings can be found on the <u>CWEA Events Website</u>. For questions about a Local Section training, please contact the Local Section directly. Contact information for individual Local Sections can be found in our <u>Directory</u>.




EXAM DAY INFORMATION

Test Site Admission and Exam Information

Applicants are required to show at least one current, valid, government-issued photo identification, such as a state driver's license or ID, or passport. A temporary license is acceptable if there is an expiration date, or if it is accompanied by paperwork explaining an expiration date.

Candidates have three (3) hours to complete the exam.

The formula sheet from this Handbook will be available on the exam screen.

For more information about the number of questions on each exam, see *Exam Scoring* (p. 82).

Calculators Allowed

An onscreen calculator with basic and scientific capability is available on all CWEA exams. Applicants may bring a handheld calculator to a test center as long as it is from the CWEA approved calculator list:

Casio	All FX-115 models (any Casio calculator with FX-115 in its name)
Texas Instruments	All TI-30x and TI-36x models
Sharp	EL models <i>except</i> EL-W516B and EL-W535B

Pearson VUE's Candidate Rules Agreement

Pearson VUE maintains its own rules regarding professional examinations. All applicants are required to sign the <u>Candidate Rules Agreement</u> at the test center prior to sitting the exam. Applicants are responsible for knowing and complying with these rules. CWEA recommends all applicants familiarize themselves with this agreement prior to testing.

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AFTER THE EXAM

Exam Result Notification

Applicants will see their result on the screen immediately after the exam is submitted. An Official Score Report will be printed out and given to the applicant before they leave the test center. Additional copies can be obtained by logging into the <u>Pearson VUE user account</u>. All results are confidential and will only be released to the applicant. No results will be given over the phone, by fax or email.

Exam Appeal Policy

All appeals must be submitted within two weeks of the exam date. Appeals will be reviewed by CWEA staff and/or Subject Matter Experts. Candidates' personal information will remain confidential and will not be accessible to Subject Matter Experts. Candidates will be updated on the status of their appeal within 4-6 weeks, and they will be notified in writing when a decision has been made. Once an appeal has been processed, candidates cannot submit a new appeal for the same exam.

Candidates cannot submit an appeal simply because they did not pass the exam.

Candidates can appeal under the following justifications:

Exam Delivery Appeal

Candidates may appeal testing conditions severe enough to have caused a major disruption of the examination process. CWEA staff will review the appeal and consult our exam administrator, Pearson VUE, to investigate the appeal if necessary. Please note, under Pearson VUE's candidate agreement, candidates must notify the proctor immediately during the exam of any issues to open a claim documenting the incident. If candidates did not notify the proctor during the exam, an appeal may still be submitted but may be dismissed if CWEA cannot verify the validity of the complaint.

Exam Question Appeal

If the candidate wishes to comment on specific exam questions, they may flag the question during the exam using the Flag to Enter a Comment function. Candidates are allowed to add comments about any question as long as there is time remaining. All comments will be reviewed and considered by the Technical Certification Program as part of the ongoing exam

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review and development process. Candidates that wish to submit an appeal of their exam results, must complete the form below within two weeks of their exam date. Candidates that wish to have specific comments considered in support of their appeal should indicate so on the appeal form.

Non-substantive appeals or appeals without just cause will be automatically rejected. If candidates are not satisfied with the outcome of their appeal, they may submit a request for review by the Technical Certification Program Executive Committee at <u>tcpcommittee@cwea.org</u>. The committee's decision will be final.

All communication related to certification decisions and appeal results with the Technical Certification Program Executive Committee must be sent in writing to <u>tcpcommittee@cwea.org</u>. We ask that candidates do not contact committee members directly.

The appeal form can be accessed here: <u>CWEA Exam Appeal Form</u>.

Retest Application

If the candidate does not pass the exam the first time, they can submit a retest application along with the appropriate fees. The candidate will be required to skip at least one exam window before they are eligible to retest. If the candidate tested within the first 15 days of a window, they are not required to skip an exam window. Under no circumstances are candidates allowed to sit for the same exam twice in the same window. There are no exceptions to this policy.

To be eligible to use the retest application form, candidates must submit the application within one year of their original exam date. Candidates must meet the minimum qualifications of the exam for which they are applying. CWEA may require candidates to fill out a full application with job history to verify candidates meet the minimum requirements. Use of a retest application does not guarantee approval for any exam.

Receiving the Certificate and Blue Card

Certificates and Blue Cards will be issued to all candidates who pass their exam. The certificate contains the certification number and expiration date. The Blue Card contains the expiration date, contact hour due date and contact hour period. These documents are mailed along with

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the Score Report within 4 weeks to the address on file with CWEA. Candidates are responsible for making sure this address is current.

MAINTAINING CERTIFICATION

How to Renew

All certifications must be renewed annually. Certifications expire one year from the last day of the month in which the certification was earned. Renewal notices are mailed to certification holders three months before the expiration date. Certification holders can pay their renewal online by logging into their <u>mycwea.org</u> account or by mailing their renewal notice with a check or credit card information to the CWEA office. Renewal certificates and blue cards will be mailed within 4 weeks to the address on file with CWEA.

Certification holders are required to meet Continuing Education (CE) requirements. This requirement is met by completing 12 contact hours (1.2 CEUs) of vocation-related education or training every two years. For more information about earning contact hours, for details see *Earning Contact Hours* (p. 77).

Not meeting these requirements by the expiration date will cause the certification to expire. Certifications that have been expired for more than three months are subject to a \$35 late fee. If a certification holder does not meet the renewal requirements within two years of their expiration date their certification will permanently expire. To become certified once again, the individual must re-apply for certification and pass the exam. It is the certification holder's responsibility to ensure that his or her certification remains valid. There are no exceptions to these policies.

Renewal Fees

Current fees are listed on the <u>CWEA website</u>. Valid CWEA members qualify for a discounted member rate. The non-member rate includes a one-year CWEA membership. If an applicant does not wish to take advantage of the membership, please inform CWEA.

Continuing Education (CE) Requirement

Certification holders are required to meet Continuing Education (CE) requirements. This requirement is met by completing 12 contact hours (1.2 CEUs) of vocation-related education or

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training every two years. Certification holders may submit up to 50% (6 contact hours) of the required contact hours in safety related training. One contact hour is defined as 50 minutes of participation in an organized continuing education experience under responsible sponsorship, capable direction, and qualified instruction.

Contact hours must be earned within the contact hour period. Hours are earned on the date of completion of the educational or training program. The program may begin before, but must be completed during the contact hour period. If a certification holder will not earn the required hours within their contact hour period, they must notify CWEA before the period ends if they wish to remain certified, for details see *Temporary Deactivation* (p. 78).

Individuals holding more than one CWEA certification can apply the same contact hours to each certification as long as the training is relevant to each vocation. Training is acceptable as long as it is related to the vocations in which certification is held. CWEA may send contact hour certificates to Subject Matter Experts to determine relevancy.

In-house training can be used to meet this requirement as long as standard Safety Tailgate meetings do not exceed 50% (6 contact hours). In-house training includes any training that is conducted by an employer, or a trainer contracted by an employer.

Earning Contact Hours

Contact hours may be earned by any of the following activities:

- Attendance at educational/training programs, including in-house training
- Teaching, instructing or presenting educational/training material (1 hour per 25 min)
- Developing and reviewing CWEA certification exam content as a Subject Matter Expert (1 hour per 25 minutes)
- Authorship of published books or articles (2 hours per book or article)
- Retesting and passing the relevant CWEA certification exam (12 hours)
- Membership in professional membership organizations (.5 hours per year, per membership, with a maximum of 6 hours per contact hour period)

CWEA may require and request additional documentation to assess the authenticity and/or relevance of these activities.

This information is paraphrased for clarity from the O2-O3 TCP Re-Certification Policy; a full copy of the policy can be requested by contacting the TCP department.

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Contact Hour Documentation

Proof of contact hour completion for an educational/training program must meet these following guidelines:

- The name of the training organization
- The training title
- The name of the attendee who completed the program
- The number of contact hours earned
- The date of completion
- An official signature or stamp from the training organization, instructor's signature is acceptable

For other continuing education activities, CWEA may request additional information. Any documentation that does not meet these guidelines will not be accepted. It is the certification holder's responsibility to retain verification of records documenting earned contact hours and submit proof to CWEA.

Contact Hour Audit

Audits are conducted on a regular basis by CWEA to ensure that certification holders are complying with the continuing education requirement and that the documentation meets the guidelines. Certification holders are randomly selected for an audit of contact hours. The audit reviews the relevancy of the trainings to the vocation, and the dates in which the contact hours were earned to ensure that they fall within the appropriate contact hour period.

Selected participants will be notified via email that they have either successfully passed the audit, or that CWEA requires further information.

Temporary Deactivation

The Temporary Deactivation program is for certification holders that will not meet the continuing education requirement for recertification by their expiration date. Under this program, certification holders can request that CWEA temporarily deactivate their certification for up to two years from their expiration date. This grants the individual extra time to earn the required contact hours. During the time of temporary deactivation, the CWEA certification is invalid and may not be used. Certification holders can apply for reactivation once they fulfill all requirements. Certification must be in good standing to qualify for this program. For more

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information including current fees, or to request an application for temporary deactivation, contact the CWEA office.

The application must be submitted before the certification expiration date. There is no exception to this policy.

Reinstating Certification

If a certification expires, it is invalid until all recertification requirements are met. There is a three-month grace period before a certification is considered lapsed. Once a certification becomes lapsed, the certification holder will need to pay a \$35 late fee in addition to meeting the renewal requirements. Certification will remain lapsed for up to two years from the expiration date. If a lapsed certification is not renewed within the two-year period, the certification becomes permanently expired.

Expired Certification

Certificates expired for two years, or longer, cannot be reinstated under any circumstances. To become certified once again, the individual must re-apply for certification and pass the exam. It is the certification holder's responsibility to ensure that his or her certification remains valid. There are no exceptions to these policies.

Retiring Certification

Certification holders can request that CWEA retire their certification at the time it expires if they no longer wish to hold it. Once a certification has been retired, the certification will no longer be valid and CWEA will cease all communications regarding the certification. A retired certification can be reactivated only if the certification holder has met all renewal requirements within the appropriate timeframe and the certification has not permanently expired.





EXAM DESIGN AND FORMAT

Exam Design

All certification exams are designed to test knowledge required to perform the essential duties of a job at a given grade level with minimum acceptable competence. Exams are created by Subject Matter Experts under the guidance of exam development professionals.

Exam content is developed from a job task analysis that includes research of the essential duties at a representative cross-section of systems and facilities throughout California. All exam items are written by subject matter experts based on the content outline established by the job task analysis. These items are used to create the exam forms. The pass point for each exam is based on difficulty, using the Modified Angoff Method, for details see *Pass Point* and *How Pass Points are Set* (p. 81).

Exam Delivery Mechanism

All exams are computer-based format and are available in the English language only. Exams are delivered at Pearson VUE testing centers or via Pearson VUE's online testing platform On Vue.

Exam Format

All certification exams are in multiple-choice format. Multiple-choice is considered the most effective format for use in standardized tests as it allows for greater content coverage for a given amount of testing time and improves competency measurement reliability. Multiple choice questions range in complexity from simple recall of knowledge to the synthesis and evaluation of the subject matter.

Weighting

The percentage of the exam that covers a particular content area is referred to as its weighting. Weightings are established through a Job Task Analysis and are based on the frequency and criticality of the task. A weighting is approximate and shows the relative importance of a particular area compared to the other portions of the exam. Weightings are

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indicated on the content outline for each exam and can be found in the preparation materials. Each weighting on the actual certification exam may vary slightly.

Pass Points

An exam pass point is the minimum score required to pass a certification exam. The pass point is also known as a cut score or passing score. Candidates should try to score as high as possible on their exam. Pass points for CWEA certification exam vary with each exam form. The pass point for each vocation, grade level and exam form is set independently.

How Pass Points are Set

A modified Angoff Method is used to determine the pass point for each version of each exam. The modified Angoff Method uses expert judgments to determine the difficulty level of the exam. The easier the exam, the higher the pass point. Likewise, the more difficult the exam, the lower the pass point.

The following is a basic outline of the modified Angoff Method (some details have been omitted):

- 1. A group of Subject Matter Experts (SMEs) independently rate each exam question within a given exam. The ratings are defined as the probability, or likelihood, that a minimally competent person with the requisite education and experience will answer the question correctly. A minimally competent person is defined as someone who adequately performs all job functions safely and requires no further training to do so.
- 2. The SMEs review each exam question as group. A consensus is reached for the rating of each exam question. During this time the SMEs review comments submitted in writing by exam-takers. Any exam question that is judged to be ambiguous, has more than one correct answer, or has no correct answers is eliminated from the scoring process for that exam. These exam questions are then revised for future use, reclassified, or deleted from the exam item bank.
- 3. After the data are refined, the final step is to calculate the mean, or average, of all the exam question ratings. This becomes the overall pass point estimation.

Why Use Modified Angoff?

Each version of a given certification exam pulls questions from an exam item bank. Each of these questions varies in difficulty. Because a different mix of questions is used in each exam

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form, the overall difficulty level is not fixed. Thus, it is important to make sure that the varying difficulty level is reflected in the pass point of each exam to ensure that results are reliable. Exam reliability is concerned with the reproducibility of results for each version of a given exam. In other words, for an exam to be reliable it must yield the same result (pass or fail) for the same individual under very similar circumstances. For example, imagine a candidate takes an exam at a certain grade level and passes it. Immediately after completing the exam, the candidate takes the same grade level exam, but a different version. If the exam is reliable they will achieve the same result: pass. If they do not, it is likely that the exam is not a reliable measure of minimal competency.

By taking into consideration the difficulty level of an exam, the modified Angoff Method significantly increases the reliability of the exams. Also, since each exam is adjusted for difficulty level, each exam version has the same standard for passing. Thus, exam-takers are treated equitably and fairly, even if they take different versions of the exam.

There are other methods for setting pass points. However, for the type of exams administered by CWEA, the modified Angoff Method is the best.

Exam Scoring

All exams are electronically scored by Pearson VUE. Most exam items are valued at one point unless otherwise stated on the exam. After exams are scored, total points are compiled, and an overall score is calculated as the sum of all points earned on the exam. If the overall score is equal to, or greater than the established pass point, the candidate has passed the exam. Each question is worth 1 point. Total points possible for each exam are as follows:

- Grade 1 100 points
- Grade 2 100 points
- Grade 3 100 points
- Grade 4 85 points

Summary of Certification Activities

A summary of certification activities for each vocation is available upon request. The summary includes pass/fail statistics, and the number of individuals currently certified. To request this information, please visit the <u>CWEA website</u>.

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