Sanitarian/ Environmental Specialist

Study Guide

Assessments:
9903 Sanitarian/Environmental Specialist

OKLAHOMA State Department of Health
OKLAHOMA CareerTech
CTTC CareerTech Testing Center
Health and Professional Certifications Project

Overview

This study guide is designed to help candidates prepare for licensure through the Oklahoma State Department of Health – Consumer Health Service Division. It includes information about each of the examinations, and the skills standards upon which the examinations are based, resources that can be used to prepare for the examinations, and test taking strategies.

Each of the sections in this guide provides useful information for candidates preparing for the examinations.

- Sanitarian/Environmental Specialist
  - Assessment Information
  - Standards and Test Content
  - Test Writing Resources
- Strategies for Test Taking Success
- Notes

This assessment was developed in partnership with the Oklahoma State Department of Health, which regulates the licensing of sanitarian/environmental specialist who effectively plan, organize, manage, execute, and evaluate one or more of the many diverse elements comprising the fields of public health or environmental protection or both. Each examination measures the candidate's mastery of knowledge and skills expected of workers in the area of licensure.

CareerTech and Licensure Exams

Career and technology education uses industry professionals and certification standards to identify the knowledge and skills needed to master an occupation. This input provides the foundation for development of curriculum, assessments and other instructional materials needed to prepare candidates for wealth-generating occupations and produce comprehensively trained, highly skilled employees demanded by the work force.

Measuring Success

Certification assessments provide a means of evaluating the candidate's mastery of knowledge and skills. Coaching reports communicate assessment scores to candidates and provide a breakdown of assessment results. The coaching report also shows how well the candidate has mastered skills needed to perform major job functions and identifies areas of job responsibility that may require additional instruction and/or training.

Assessment Information

How are the assessments developed?

The assessments are developed by the CareerTech Testing Center in partnership with the Oklahoma State Department of Health. Items for the exams were developed and reviewed by committees of subject matter experts within each of the licensure areas. All subject matter experts are professionals who have many years of experience in the industry.

How do I register for an exam?

Candidates for licensure can take an exam in-person. A list of testing centers and their contact information can be found at **www.okhcp.com** under the Sanitarian/Environmental Specialist tab. Candidates will be required to show one of the following forms of photo identification:

1. valid, current driver's license issued by any state in the United States, or
2. valid, current state of Oklahoma identification card

Identification cards issued by other states or entities **will not** be accepted. Candidate must provide an original testing authorization letter from OSDH.

What do the examinations cover?

Each examination is aligned to the skills standards for that licensure area. The standards for each licensure area are contained in this study guide.

What is required to pass the exam?

Candidates who score 60% or higher on the written examination and meet all licensure requirements will be issued a license by the Oklahoma State Department of Health.

Are the exams timed?

Yes. The exam is 2 hours. If the time allowed expires before the candidate is finished with the examination, the examination will automatically be submitted for scoring and all unanswered questions will be marked incorrect.

Can candidates use a calculator on the exam?

Yes, calculators may be used on these exams. If a calculator is needed, it will be provided by the testing center or through the assessment navigator within the exam.

What is the testing fee for written examinations?

Candidates must pay all testing fees to the test site upon registration. The current testing fees for the exams are located on the website at **www.okhcp.com** under the Sanitarian/Environmental Specialist tab.

When will I receive my results?

Candidates will receive their results immediately upon completion of the testing.

Can candidates retake an exam?

Candidates who do not pass the written examination may retest. The candidate must apply for a retest letter from the licensing agency.

Standards and Test Content

9903 Sanitarian/Environmental Specialist
97 questions — 2 hour time limit

Duty A: **Promote General Environmental Health – 11%** (11 questions)
Duty B: **Demonstrate Knowledge of Statutes and Regulations – 5%** (5 questions)
Duty C: **Ensure Food Protection – 14%** (13 questions)
Duty D: **Ensure Potable Water – 13%** (12 questions)
Duty E: **Verify Correct Disposal of Wastewater – 17%** (16 questions)
Duty F: **Verify Correct Disposal of Solid and Hazardous Waste – 8%** (8 questions)
Duty G: **Safeguard Hazardous Materials – 5%** (5 questions)
Duty H: **Verify Control of Vectors, Pests, and Weeds – 3%** (3 questions)
Duty I: **Ensure Radiation Protection – 3%** (3 questions)
Duty J: **Promote Occupational Safety and Health – 2%** (2 questions)
Duty K: **Ensure Air Quality and Noise Control – 5%** (5 questions)
Duty L: **Safeguard Housing – 1%** (1 question)
Duty M: **Inspect Institutions and Licenses Establishment – 1%** (1 question)
Duty N: **Inspect Swimming Pools and Recreational Facilities – 8%** (8 questions)
Duty O: **Disaster and Terrorism Preparedness Response and Remediation – 2%** (2 questions)
Duty P: **Incident Command System (ICS) – 2%** (2 questions)

Sanitarian/Environmental Specialist
Skills Standards

Duty A: Promote General Environmental Health – 11% (11 questions)

CODE	TASK
A.01	Plan and conduct sampling and chemical, biochemical,biological or radiochemical analysis of various samples and consumer products (regulatory purposes, standardized laboratory procedures, standardized field sampling procedures, water, soil, air, milk, industrial waste or wastewater and/or food for bacterial and chemical analysis, chain of custody).
A.02	Review and interpret plans and specifications of proposed facilities.
A.03	Perform technical reviews of plans, specifications and permit applications for proposed facilities such as (water and waste water treatment plants, sanitary landfills and hazardous waste sites, food establishments).
A.04	Perform inspections and evaluate data relating to public health and the environment.
A.05	Participate in epidemiological investigations.
A.06	Investigate and resolve program complaints.
A.07	Apply research methodologies.
A.08	Understand obligations, both legal and ethical, to all parties involved in inspection activity.
A.09	Know how to recognize and prioritize environmental health problems at the site, including the identification of deficiencies and violations.
A.10	Understand basic tests and sampling procedures associated with routine activity and associated interview activities.
A.11	Know the proper approach to analyze inspection findings, including documentation and consultation with colleagues.
A.12	Understand options available and limitations of enforcement and corrective measures.
A.13	Know equipment operation principles.
A.14	Perform accurate measurements and calculations including Oklahoma legal descriptions.
A.15	Represent the profession of environmental health favorably to the public.

Duty B: Demonstrate Knowledge of Statutes and Regulations – 5% (5 questions)

CODE	TASK
B.01	Investigate complaints, prepare reports, initiate abatement procedures and maintain records of environmental quality or environmental/public health program inspections and investigations.
B.02	Assist in preparing testimony and exhibits for court activities (provide expert testimony at hearings).
B.03	Interpret statutes and codes to local officials, private citizens, environmental health officials, consulting engineers, industry representatives, and appropriate agencies.
B.04	Perform highly technical surveys and inspections in environmental specialty area to determine extent of compliance with environmental statutes, codes, and regulations.
B.05	Advise facilities such as water treatment plants and water pollution control facilities of proper methods to upgrade operations or correct deficiencies to meet required standards.
B.06	Interpret state and federal laws pertaining to environmental health.
B.07	Interpret state rules and regulations for Sanitarian/Environmental Specialist.

Duty C: Ensure Food Protection – 14% (13 questions)

CODE	TASK
C.01	Perform surveys and plan and direct inspections and investigations of food manufacturing, milk production, processing plants, service establishments, temporary events, and mobile foodservice.
C.02	Demonstrate knowledge of food safety principles, protection, quality, storage and transportation.
C.03	Know examples of this major biological, chemical, and physical hazards and their methods of transmission.
C.04	Understand the basis for HACCP implementation.
C.05	Understand the definition of the danger zone and its significance in prevention of food-borne illnesses.
C.06	Know the proposed temperature controls for food equipment, according to the adopted Model Food Code.
C.07	Apply correct food sampling procedures and perform appropriate tests of food.
C.08	Know how to prevent transmission of pathogens through improved employee hygiene.
C.09	Understand the proper methods of cleaning and sanitizing equipment and establishments.
C.10	Inspect equipment.
C.11	Know the proper food storage techniques.
C.12	Identify food source, labeling and evaluate purity.
C.13	Understand that cleanliness is the best method of pest control.
C.14	Know that controlled pesticides must be applied by a registered pesticide applicator.
C.15	Know the proper temperature of food products during receiving, preparing, holding, transporting, and final service.
C.16	Perform surveys and inspections/investigations of temporary mass gathering sites (concerts/fairs).
C.17	Know the causes for exclusion or restriction from food handling.
C.18	Know and understand foods that contain or promote food allergens.

Duty D: Ensure Potable Water – 13% (12 questions)

CODE	TASK
D.01	Promote and solicit cooperation for environmental and water quality practices.
D.02	Conduct water-quality studies and investigations (prepare reports, perform follow-up studies and investigations).
D.03	Make recommendations for remedial actions to correct water quality deficiencies.
D.04	Perform surveys and inspections/investigations of private and public water supplies.
D.05	Assist in making recommendations concerning remedial actions to correct environmental or water problems.
D.06	Perform stream and ground water pollution studies in accordance with federal and state laws.
D.07	Demonstrate knowledge of diseases associated with contaminated water.
D.08	Understand water cycle and its relation to geology.
D.09	Understand accurate sampling of water, testing, and interpretation of water analysis results.
D.10	Understand chemical, physical, biological, and radiological contaminants associated with water.
D.11	Understand effects of actual and potential sources of pollution in water supplies.
D.12	Understand water treatment and distribution systems design.
D.13	Understand land use issues related to the development of water systems.
D.14	Understand water conservation and reclamation methods.
D.15	Understand the health effects associated with potential waterborne disease-causing organisms.
D.16	Know and understand disinfectant terminology.
D.17	Know the different types of water treatment processes to produce safe potable water.
D.18	Know basic plumbing.

Duty E: Verify Correct Disposal of Wastewater – 17% (16 questions)

CODE	TASK
E.01	Perform surveys and inspections/investigations of industrial wastewater retention, industrial wastewater treatment facilities, private and public wastewater and land use.
E.02	Demonstrate knowledge of soil characteristics and analysis methods.
E.03	Demonstrate knowledge of disease-causing organisms associated with wastewater.
E.04	Protect potable water sources from untreated wastewater discharges and waterborne disease.
E.05	Protect humans, animals, and food from wastewater contamination and waterborne disease (fecal/oral route of transmission with water as the mode of transmission).
E.06	Prevent wastewater-related nuisances.
E.07	Protect recreational fishing, bathing, and swimming areas from wastewater pollution.
E.08	Understand common wastewater terminology.
E.09	Understand the causes of water pollution and its characteristics.
E.10	Understand stream pollution, degradation and recovery, and the manner in which various pollutants inhibit stream recovery.
E.11	Understand water quality classification and monitoring.
E.12	Understand the process of eutrophication.
E.13	Know the role of soil and microorganisms in the treatment of sewage effluent from small subsurface sewage treatment systems.
E.14	Understand how soil permeability is determined and the significance of various permeability rates to the size of the absorption system required for treatment of sewage effluent from a septic tank.
E.15	Understand how soil profiles, soil histories, soil textures, and percolation tests may be used to determine the rate of soil permeability.
E.16	Know the important points of septic tank construction.
E.17	Understand small sewage treatment systems, such as operation and maintenance of septic tanks.
E.18	Understand prefabricated wastewater systems.
E.19	Understand each step in the basic municipal wastewater treatment process and the reason a particular process is used.
E.20	Nutrient removal: understand the nitrogen cycle and the importance of treating to reduce nutrients.

Duty F: Verify Correct Disposal of Solid and Hazardous Waste – 8% (8 questions)

CODE	TASK
F.01	Perform surveys and inspections/investigations of collection, transportation and disposal services.
F.02	Demonstrate knowledge of waste management systems (waste classifications, landfill methods, hazardous waste disposal methods).
F.03	Demonstrate knowledge of health risks associated with poor waste management.
F.04	Understand and have knowledge of the different types of waste.
F.05	Be familiar with RCRA and CERCLA.
F.06	Understand and have knowledge of integrated waste management.
F.07	Know the difference and benefits of the various solid waste reduction methods.
F.08	Understand hazardous waste management methods and processes.
F.09	Understand hazardous waste storage and transportation principles (manifest).
F.10	Know the designs and technologies used in state-of-the-art landfills.
F.11	Understand the health risks associated with improper handling of hazardous and solid waste.
F.12	Understand risk perception and risk management techniques and procedures.
F.13	Understand solid and hazardous waste issues and effectively communicate this knowledge to the public.

Duty G: Safeguard Hazardous Materials – 5% (5 questions)

CODE	TASK
G.01	Demonstrate knowledge of self-protection procedures, types of hazardous materials, and the associated general health risks.
G.02	Understand chemical and physical data and their use in the classification of materials for regulatory and practical purposes.
G.03	Understand basic definitions relating to toxicology and its sub-disciplines.
G.04	Understand the three general fate pathways for toxic substances within the human body.
G.05	Understand and interpret dose-response terminology.
G.06	Understand how to select proper respiratory protection and chemical protective clothing.
G.07	Understand the general requirements for the four levels of protection.
G.08	Know the units of government responsible for the regulation of hazardous material transportation.
G.09	Understand the requirements that the shipper of hazardous material must fulfill.
G.10	Understand and apply the basic elements of the emergency management process.

Duty H: Verify Control of Vectors, Pests, and Weeds – 3% (3 questions)

CODE	TASK
H.01	Demonstrate knowledge of control methods for vectors, pests and weeds (life cycle, types, conditions favorable to growth).
H.02	Demonstrate knowledge of diseases and organisms associated with specifically identified vectors, pests, and weeds.
H.03	Know the natural and source reduction methods of control.
H.04	Understand methods of the importance of prior disaster planning and the basic elements of an emergency response plan.
H.05	Determine nature and scope of field problems.

Duty I: Ensure Radiation Protection – 3% (3 questions)

CODE	TASK
I.01	Perform surveys and inspections/investigations of radiation hazards (testing equipment/ sampling methods used to detect radiation).
I.02	Demonstrate knowledge of types of radiation (common sources of exposure).
I.03	Demonstrate knowledge of protection methods (health risks of radiation exposure).
I.04	Know the units of radiation measurement.
I.05	Understand ionizing and non-ionizing radiation.
I.06	Understand the agencies that establish guidelines, regulations, and standards for radiation protection.

Duty J: Promote Occupational Safety and Health – 2% (2 questions)

CODE	TASK
J.01	Perform surveys and inspections/investigations in occupational settings.
J.02	Demonstrate knowledge of common health and safety hazards at work sites.
J.03	Understand how to use SDS sheets.
J.04	Be familiar with current OSHA Hazard Communication Standards.

Duty K: Ensure Air Quality and Noise Control – 5% (5 questions)

CODE	TASK
K.01	Perform surveys and inspections/investigations of air quality control facilities (assess ambient air quality and environmental noise, air/noise sampling methods and equipment, air/noise pollution control equipment and techniques).
K.02	Demonstrate knowledge of air pollution sources.
K.03	Demonstrate knowledge of health risks associated with poor air quality and excessive noise.
K.04	Understand the ambient air quality standards and the Pollutant Standards Index (PSI).
K.05	Know and understand the basis for determining ambient air quality standards.
K.06	Understand the methods used to measure smoke and soiling.
K.07	Know and understand the effects of wind and atmospheric stability on air pollutants.
K.08	Know the importance of topography on air quality.
K.09	Understand the relationship between the effects of noise and public welfare.
K.10	Know and understand the principles of noise reduction, including sound absorption and sound transmission.

Duty L: Safeguard Housing – 1% (1 question)

CODE	TASK
L.01	Demonstrate knowledge of health/safety risks of substandard housing (housing codes, heating, ventilation, cooling systems, lead contamination, utility connections, public lodgings).
L.02	Be familiar with federal, state, and local regulations as they apply to housing sanitation and safety.

Duty M: Inspect Institutions and Licenses Establishment – 1% (1 question)

CODE	TASK
M.01	Perform surveys and inspections/investigations of schools, hotels/motels, correctional facilities, medical facilities, childcare facilities, and barber shops.
M.02	Maintain and improve biohazard safety, blood-borne pathogen control, and infection control techniques.
M.03	Assess hazardous and infectious waste disposal procedures.
M.04	Understand the specific plumbing and hot water control methods that must be employed to prevent burns.
M.05	Know potentially hazardous sources of lead, blood levels that indicate exposure, and effects of lead on a developing child.
M.06	Examine restroom sanitation and equipment.

Duty N: Inspect Swimming Pools and Recreational Facilities – 8% (8 questions)

CODE	TASK
N.01	Perform surveys and inspections/investigations of public swimming pools/spas, and recreational areas (sampling/test methods).
N.02	Perform surveys and inspections/investigations of temporary mass gathering sites (concerts, fairs).
N.03	Demonstrate knowledge of common organisms that result in diseases associated with swimming pools/spas.
N.04	Demonstrate knowledge of water treatment systems and water chemistry.
N.05	Demonstrate knowledge of safety issues.
N.06	Perform field calculations on turnover rates, filter loading, corrosion control, disinfection levels, pump sizing, and breakpoint chlorination requirements.
N.07	Identify structural issues that threaten health and safety.
N.08	Provide advice concerning hazardous chemicals (materials use and storage).
N.09	Make recommendations for closure from the field based on imminent health and safety hazards.
N.10	Know why the main drain outlet grating must have an area of opening that is a minimum of four times the area of the discharge pipe.
N.11	Know and understand the differences of each type of filter.
N.12	Understand the special concerns of operating hot tubs and therapeutic pools (NSPF).
N.13	Know the safety equipment that should be on hand.
N.14	Evaluate water clarity.

Duty O: Disaster and Terrorism Preparedness Response and Remediation – 2% (2 questions)

CODE	TASK
O.01	Demonstrate knowledge of disaster and/or terrorism preparation.
O.02	Demonstrate knowledge of emergency response procedures (chain of command, supply needs, temporary shelter/facilities and services, remediation methods).
O.03	Understand situations and determine whether food is acceptable for human consumption.
O.04	Know how to use the current DOT Emergency Response Guidebook, including color codes and layout of information.
O.05	Provide oversight for temporary facilities and life support services.
O.06	Assess food exposed to disaster situations or terrorist activity.
O.07	Provide guidance for development of sanitary shelter, water, and waste management systems.
O.08	Assess needs, recommend actions, and implement solutions for insect and vector control.
O.09	Demonstrate knowledge of disaster terrorism preparedness, including ICS training.
O.10	Understand disease transmission from vectors.

Duty P: Incident Command System (ICS) – 2% (2 questions)

CODE	TASK
P.01	Recognizing and anticipating the requirement that organizational elements be activated and taking the necessary steps to delegate authority, as appropriate.
P.02	Establishing incident facilities as needed, located to support field operations.
P.03	Establishing the use of common terminology for organizational elements, position titles, facilities, and resources.
P.04	Rapidly evolving from oral direction to the development of a written Incident Action Plan (IAP).

APPROVED COURSES

As approved by the Sanitarian and Environmental Specialist Registration Advisory Council August 16, 1989, and amended October 18, 1989; October 13, 1993; October 9, 2002; December 8, 2004; December 7, 2005; April 12, 2006; April 12, 2016; and December 10, 2019.

Qualifications for registration are a four-year baccalaureate degree with a major in public health, environmental health, environmental science, physical science, natural science, biological science, agricultural science or equivalent, from an accredited college or university with at least thirty (30) semester hours of work in physical, natural, and biological sciences, public health and/or environmental health. Courses titled "Intro to" will not be counted.

A. Basic Science Courses (30 Semester Units) such as:

1. Anatomy (or Applied Anatomy)
2. Animal Reproduction
3. Bacteriology
4. Biochemistry
5. Biology
6. Biophysics
7. Botany
8. Cell/Cellular Physiology
9. Chemistry – Inorganic
10. Chemistry – Organic
11. Ecology
12. Embryology
13. Entomology
14. Endocrinology
15. Epidemiology
16. Genetics
17. Geology
18. Geophysics
19. Herpetology
20. Histology
21. Hydrology
22. Hydro-Geology
23. Ichthyology
24. Limnology
25. Meat, Animal and Carcass Evaluation
26. Meat Science
27. Meteorology
28. Microbiology
29. Molecular Biology
30. Ornithology
31. Parasitology
32. Pathology
33. Physical Science
34. Physics
35. Physiology
36. Plant Toxicology
37. Principles of Animal Nutrition
38. Radiological Health
39. Sanitary Engineering
40. Soil Science
41. Toxicology
42. Virology
43. Zoology

B. Special Consideration Courses: Course work acceptable only if the major emphasis of the work is directed toward environmental health or environmental protection. Appropriate direction would not include the sociological aspects of the particular subject matter. A maximum of fifteen (15) hours can be accepted from the Special Consideration Courses.

1. Health Science
2. Public Health (or Practicum in)
3. Chemical Engineering
4. Food Science
5. Dairy Processing
6. Veterinary Science
7. Community Health (or Practicum in)
8. Internship: Community/Public Health
9. Environmental Management
10. Environmental Safety
11. Environmental Health
12. Environmental Science
13. Industrial Hygiene
14. Industrial Safety
15. Injury Prevention
16. Occupational Health

C. Core Curriculum Course Work: Any course that addresses one or more of the elements of environmental health.

1. Wastewater Treatment
2. Vector Control
3. Hazardous Waste
4. Solid Waste
5. Water Treatment
6. Indoor Air
7. Air Quality
8. Radiological Issues

D. Courses in Mathematics: Additional recommendation (no more than three (3) semester hours will be accepted).

1. College Algebra
2. Trigonometry
3. Calculus
4. Statistics

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Testing Policies

Handling of Examination Materials

All examination materials are the copyrighted property. Distribution of examination content or materials through any form of unauthorized reproduction or through oral or written communication is strictly prohibited. Individuals/entities that compromise the security of testing materials will be held responsible for the expense of developing replacement materials.

Security/Cheating

If a candidate is caught cheating during the examination, testing will stop immediately. The candidate will receive a failing result and the incident will be reported to the Oklahoma State Department of Health for review. Testing fees will not be refunded and the candidate will not be able to test without a letter of approval from the OSDH. Each HPCP Test Center reserves the right to monitor and record all testing using audio, visual, and electronic devices.

Testing Accommodations

Requests to accommodate special needs during testing (i.e. oral test administration, special seating arrangements) must be made at the time of registration by completing the HPCP Form, Request for Testing Accommodations. Acceptable accommodations are determined by the OSDH.

Electronic Devices

Cellular phones or other electronic devices are not permitted and must be turned off during testing. Use of electronic devices during testing will be considered cheating and will be handled accordingly.

Study Aids

Only allowed resources listed in this study guide are permitted. Personal belongings brought into the testing area will be collected by testing personnel and returned when the examination has been completed. The HPCP test center is not responsible for lost or misplaced items.

Translation

All examinations will be administered in English. Translators, translation devices, or translation dictionaries may not be used during the examination.

Eating/Drinking/Smoking

Candidates are not permitted to eat, drink, or smoke during the examination.

Misconduct

Candidates causing a disturbance of any kind or engaging in any kind of misconduct will be dismissed from the examination and reported to the Oklahoma State Department of Health for disciplinary measures.

Guests/Visitors

No guests, visitors, pets or children are allowed at the testing site.

Use of Restrooms

Candidates must obtain permission from the written test proctor to use the restroom during testing. All testing materials will be collected from the candidate. No additional testing time will be granted.

Test Taking Strategies

This section of the study guide contains valuable information for testing success and provides a common-sense approach for preparing for and performing well on any test.

General Testing Advice

1. Get a good night's rest the night before the test – eight hours of sleep is recommended.
2. Avoid junk food and "eat right" several days before the test.
3. Do not drink a lot or eat a large meal prior to testing.
4. Be confident in your knowledge and skills!
5. Relax and try to ignore distractions during the test.
6. Focus on the task at hand — taking the test and doing your best!
7. Listen carefully to the instructions provided by the exam proctor. If the instructions are not clear, ask for clarification.

Testing Tips

1. Read the entire question before attempting to answer it.
2. Try to answer the question before reading the choices. Then, read the choices to determine if one matches, or is similar to your answer.
3. Do not change your answer unless you misread the question or are certain that your first answer is incorrect.
4. Answer questions you know first, so you can spend additional time on the more difficult questions.
5. Check to make sure you have answered every question before you submit the assessment for scoring — unanswered questions are marked incorrect.

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