Appendix A

ENVIRONMENTAL HEALTH SPECIALIST
EXAM CONTENT OUTLINE

I. GENERAL ENVIRONMENTAL HEALTH (14% of exam)

A. Conduct Environmental Health Investigations, Inspections, and Audits
   1. Determine the nature of the environmental health problem
   2. Gather historical and site information
   3. Conduct interviews using standardized techniques
   4. Consider possible causal agents
   5. Knowledge of epidemiology
   6. Design an investigation
   7. Implement an investigation using scientific methods
   8. Evaluate and interpret data
   9. Perform a risk assessment
  10. Determine need for remediation
  11. Initiate enforcement proceedings
  12. Ensure proper self-protection
  13. Knowledge of environmental health inspector safety (slips, falls, stings, bites, sun protection, cold protection, gloves, dog bites, bloodborne diseases, defensive driving, etc.)
  14. Analyze inspection findings
  15. Determine corrective action required
  16. Document inspection
  17. Knowledge of how to present a case to a prosecutor or attorney for court presentation

B. Conduct Epidemiological Investigations
   1. Record complaint and document essential information
   2. Determine scope of the problem
   3. Plan and implement an investigation
   4. Collect and analyze data in a scientific manner
   5. Knowledge of epidemiological terms (epidemic, endemic, incidence, etc.)
   6. Knowledge of emerging agents and diseases (E.coli 0157:H7, Listeria, Cryptosporidium, Campylobacter, HIV)
   7. Knowledge of HIPAA laws regarding medical records

C. Collect Samples and Specimens for Laboratory Analysis
   1. Knowledge of sampling techniques and sampling theory
   2. Collect specimens in a legally defensible manner
   3. Preserve and protect samples and specimens
   4. Document critical information about samples and sites
   5. Interpret test results
D. Perform Routine Field Tests and Measurements
   1. Select proper equipment
   2. Knowledge of equipment operation principles
   3. Calibrate and/or validate test equipment
   4. Perform accurate measurements and calculations
   5. Interpret test results

E. Plan Land Use
   1. Perform a site assessment
   2. Analyze environmental impact of development
   3. Knowledge of soil science and geology
   4. Understand multiple factors influencing land-use planning
      (political, economic, environmental, legal, public health)

F. Review Construction Plans
   1. Interpret architectural plans and blueprints
   2. Assess equipment for compliance with applicable standards
   3. Recommend necessary revisions of the construction plans
   4. Inspect construction to determine degree of compliance
   5. Knowledge of the plan review process

G. Environmental Microbiology
   1. Knowledge of sanitization
   2. Knowledge of sterilization
   3. Knowledge of antisepsis
   4. Knowledge of disinfection

H. Contamination Control
   1. Knowledge of principles of contamination control
   2. Knowledge of cross contamination
   3. Knowledge of direct contamination
   4. Knowledge of contamination sources

II. STATUTES, REGULATIONS, & STANDARDS (6% of exam)

A. Knowledge of Source and Nature of Legal Authority
   1. Knowledge of source and nature of legal authority

B. Knowledge of Law concerning Inspections (search warrants, right of entry, seizures, etc.)
   1. Knowledge of law concerning inspections (search warrants, right of entry, seizures, etc.)

C. Knowledge of Lawfulness of Agency Administrative Actions
   1. Understand legal differences among permits, licenses, and registration
   2. Knowledge of embargo, search, seizure, condemnation, and nuisance abatement
D. Evaluate Compliance with Appropriate Federal Laws
   1. Knowledge of current environmental health laws and regulations

E. Knowledge of Standards
   1. Knowledge of ISO, NSF, UL, NFPA, ANSI, and BISCC

III. FOOD PROTECTION (14% of exam)

A. Inspection and Investigation of Food Establishments
   1. Identify chemical, biological, and physical hazards
   2. Perform appropriate tests of food
   3. Inspect equipment
   4. Apply correct food sampling procedures
   5. Assess food handling procedures
   6. Assess food storage practices
   7. Instruct food managers when inspecting

B. Food Safety, Protection, Quality and Storage
   1. Knowledge of time, temp., and hygiene factors
   2. Knowledge of HACCP
   3. Identify food source
   4. Evaluate food purity (adulteration and contamination)
   5. Verify product identification
   6. Evaluate labeling
   7. Knowledge of physical & chemical control systems
   8. Knowledge of food processes
   9. Knowledge of food presentation

C. Temporary Events with Food Service
   1. Develop food handling plans for temporary events
   2. Inspect mobile-catering vehicles

D. Transportation of Food
   1. Review shipping-manifest documents
   2. Assess equipment sanitation
   3. Evaluate critical factor controls during transport & delivery of food

IV. POTABLE WATER – (8% of exam)

A. Conduct Sanitary Surveys of Potential or Existing Water Systems and Watersheds
   1. Perform accurate testing and sampling of water
   2. Interpret results of water analysis properly
   3. Evaluate effects of actual and potential sources of pollution on water quality
4. Understand land use issues related to development of water systems
5. Knowledge of water supply systems (groundwater, wells, etc)
6. Knowledge of water treatment systems (design and operation)
7. Knowledge of the water cycle and its relation to geology
8. Knowledge of chemical, physical, and biological contaminants
9. Knowledge of diseases associated with contaminated water
10. Knowledge of water conservation and reclamation methods
11. Knowledge of emergency sources of water

V. WASTEWATER (8% of exam)

A. Conduct Investigations of Wastewater Management Systems
1. Knowledge of biological & physical composition of sewage
2. Knowledge of disease-causing microorganisms and toxic chemicals found in sewage
3. Knowledge of industrial wastes (common problems)
4. Understand land use issues in relation to wastewater management systems
5. Knowledge of soil characteristics (texture, granular structure, etc.)
6. Perform a site investigation including a soil analysis - 2
7. Understand processes used in municipal wastewater management systems (filtration, aeration, stabilization, etc)
8. Knowledge of small sewage treatment systems (septic tank, drain field, etc)
9. Knowledge of prefabricated wastewater systems
10. Knowledge of stream classifications and wastewater discharge standards
11. Assist in developing wastewater reclamation and disposal program

VI. SOLID AND HAZARDOUS WASTE (4% of exam)

A. Knowledge of Waste Management Systems
1. Knowledge of waste types (hazardous, infectious, municipal, solid)
2. Knowledge of medical, biological, and “hazardous” waste issues associated with household waste collection
3. Knowledge of on-site and off-site processing (incineration, densification, composting, etc)
4. Knowledge of sanitary landfill design and methods
5. Knowledge of storage of hazardous waste (technology, procedures, regulations, land use)
6. Understand social and scientific limitations on waste management (economic, political, technology, ecological, health, and legal)
7. Understand health risks associated with poor waste management

B. Conduct Waste Management Investigations
   1. Identify type of waste and assess risk factors
   2. Identify source of waste and persons responsible for dumping

C. Public Education
   1. Instruct public on principles and practices of responsible waste management (source reduction, recycling, etc)

VII. HAZARDOUS MATERIALS (2% of exam)
A. Conduct Investigations of Hazardous Materials
   1. Use proper self-protection procedures at site
   2. Identify type of hazardous materials (chemical, biological, flammable, explosive, radioactive, etc)
   3. Assist with emergency response (notify authorities, containment, evacuation)
   4. Verify compliance with regulations

VIII. VECTORS, PESTS, AND POISONOUS PLANTS (6% of exam)
A. Develop Controls for Vectors, Pests and Poisonous Plants
   1. Identify vectors, pests, poisonous plants and poisonous plants
   2. Knowledge of the life cycle and conditions favorable to growth of vectors, pests, and poisonous plants
   3. Understand multi-method control (education, biological, physical, legal)
   4. Knowledge of natural & source reduction methods of control
   5. Knowledge of epidemiology of vector-borne diseases (transmission modes, symptoms, etc)
   6. Understand chemical controls (proper use, storage, health risks, and environmental effects)
   7. Determine nature and scope of field problems
   8. Conduct an environmental assessment before applying controls
   9. Provide public instruction about vector, pest, and poisonous plants

IX. RADIATION PROTECTION (2% of exam)
A. Conduct Investigations of Radiation Hazards
   1. Knowledge of radiation (atomic structure, types of radiation, ionization, half-life, etc)
   2. Knowledge of sources of radiation exposure
   3. Knowledge of the health hazards of radiation exposure

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4. Knowledge of medical uses of radiation and its hazards
5. Knowledge of radiation protection methods
6. Understand radiation factors and their interaction (time, distance, shielding, exposure level)
7. Perform tests to determine presence of harmful radiation
8. Evaluate decontamination procedures
9. Monitor use of radioactive materials (transportation, application, storage, and disposal)

X. OCCUPATIONAL SAFETY AND HEALTH (2% of exam)

A. Conduct Investigations of Work Sites
1. Identify health and safety hazards at work sites
2. Knowledge of common accidents and prevention programs
3. Knowledge of OSHA principles
4. Analyze potential hazards
5. Evaluate environmental health impact of industrial hazards and accidents

XI. AIR QUALITY AND NOISE (2% of exam)

A. Assess Ambient Air Quality
1. Knowledge of types of air pollutants (nitrogen and sulfur oxides, carbon monoxide and dioxide, hydrocarbons, etc)
2. Knowledge of air pollution sources (man-made and natural)
3. Understand air pollution problems and effects (biosphere, human and animal health, plant life, economic, visibility)
4. Knowledge of ambient air quality parameters and standards
5. Conduct air sampling and measure pollutants
6. Knowledge of air pollution control methods
7. Knowledge of diseases associated with air pollution
8. Understand environmental factors that influence air pollution (meteorology and topography)

B. Survey Noise Control
1. Knowledge of the properties of sound (terminology and physics)
2. Understand the health hazards of noise
3. Knowledge of the sources of noise

XII. HOUSING SANITATION AND SAFETY (6% of exam)

A. Conduct Investigations of Public and Private Housing
1. Understand the health and social problems resulting from substandard housing
2. Knowledge of housing codes (building, electrical, plumbing, fire, etc)
3. Identify serious health and safety hazards (structural, electrical, fire, plumbing, and indoor air pollutants)
4. Investigate sewage and water system problems
5. Understand heating, ventilation, and cooling systems
6. Appraise level of sanitation (debris, odors, cleanliness, etc)
7. Identify child safety hazards (lead-based paint, abuse, neglect)

B. Conduct Investigations of Mobile Home and Recreational Vehicle Parks
   1. Examine utility connections (sewer, water, electrical, gas)
   2. Examine attachment of units (adequate anchoring)

XIII. INSTITUTIONS AND LICENSED ESTABLISHMENTS (12% of exam)

A. Understand the Health Hazards and Sanitation Problems of Institutions
   1. View institutions as small communities with environmental health concerns (air, water, food, wastewater, solid waste, etc)
   2. Consider factors influencing health (high density, proximity, hours of operation)
   3. Understand the hazards of cleaning chemicals and maintenance equipment

B. Conduct Epidemiological Investigations of Institutions
   1. Investigate HVAC system problems (sick-building syndrome, etc)
   2. Consider multiple routes of disease transmission

C. Conduct Investigations of Facilities, Institutions and Licensed Establishments
   1. Apply universal blood and body fluid precautions during inspections
   2. Knowledge of disease transmission in a high risk population
   3. Knowledge of infections likely to occur in a facility (E.coli, staph, strep, tuberculosis, etc)
   4. Knowledge of methods to prevent nosocomial infection
   5. Knowledge of biohazard containment equipment and procedures
   6. Assess infectious and chemical waste disposal procedures
   7. Appraise transportation and laundering of linens
   8. Review housekeeping procedures to prevent transfer of pathogens
   9. Appraise food delivery systems
  10. Knowledge of sanitation, environmental and health hazards associated with specific licensed establishments (tanning salons, massage clinics, tattoo parlors, cosmetology salons, and fitness centers.
  11. Inspect tanning salons for sanitation and health hazards
  12. Inspect massage clinics for sanitation and health hazards
13. Inspect tattoo parlors for sanitation and health hazards
14. Inspect cosmetology salons for sanitation and health hazards
15. Examine restroom sanitation, equipment and diaper-changing facilities
16. Identify hazardous materials (lead-based paint, asbestos, radon, etc)
17. Appraise safety of playground areas, recreational yards, equipment, and toys
18. Investigate safe storage of hazardous chemicals and dangerous equipment
19. Review precautions taken to prevent disease transmission (hygiene, isolation, etc)
20. Evaluate health, security, and safety hazards in special facilities (laboratories, gyms, shops, kitchens, correctional institutions, etc)
21. Understand unique sanitation problems (overcrowding, bathroom sanitation, sabotage, etc)
22. Knowledge of infections likely to occur in facilities (TB, Hepatitis, HIV, etc)
23. Recommend corrective actions based on sanitation, safety, and security concerns
24. Awareness of special needs within various types of institutional contexts (correctional institutions, medical facilities, childcare facilities, schools, and other facilities)

XIV. SWIMMING POOLS AND RECREATIONAL FACILITIES (8% of exam)

A. Inspect Swimming Pools, Hot Tubs, and Spas
1. Knowledge of direct and indirect transmission of disease in recreational and therapeutic pools
2. Knowledge of facility designs and equipment operation
3. Knowledge of water treatment systems
4. Knowledge of swimming pool chemistry
5. Knowledge of disinfection processes
6. Sample and test water according to standard procedures
7. Evaluate life guards and safety procedures
8. Compute swimming pool calculations (turnover rate, swimmer load, flow rate, etc)
9. Knowledge of health risks associated with hot tubs and spas
10. Knowledge of proper cleaning methods and maintenance procedures for recreational and therapeutic pools
11. Knowledge of pool/spa chemical storage, hazards and handling.
B. Inspect natural recreation areas and facilities
   1. Inspect temporary use facilities (campgrounds, cabins, RVs, etc)
   2. Inspect swimming and bathing facilities (water quality, restrooms, beaches, etc)
   3. Assess health and safety risks
   4. Conduct a general inspection (water, food, waste, animal control, etc)

C. Amusement Parks and Temporary Mass Gatherings
   1. Review design plans and equipment
   2. Conduct health and safety inspections
   3. Evaluate environmental impact, including remediation

XV. DISASTER SANITATION AND EMERGENCY PLANNING (6% of exam)

A. Preparing for Disasters
   1. Understand Department of Transportation's Emergency Response Guidebook
   2. Understand key components of the HAZWOPER regulations
   3. Knowledge of the Incident Command System (ICS) and the National Incident Management System (NIMS)
   4. Ability to conduct risk assessment
   5. Knowledge of food and water security
   6. Assist with planning for emergencies
   7. Understand techniques used in emergency situations (water, wastewater, hazardous waste, radiation, etc.)

B. Assist with Management of Disaster Situations
   1. Determine equipment and supply needs
   2. Follow proper chain of command for decisions
   3. Implement emergency response plans

C. Assist with Post-Disaster Management
   1. Inspect temporary facilities and services (shelter, water, food, waste, etc)
   2. Establish infection control procedures
   3. Assess vector and pest problems and implement control measures
   4. Knowledge of bioterrorism