DRAFT Need to Know Criteria for Wastewater Treatment Operator License Exams

Wastewater Treatment Level D Curriculum

The following items are reference materials for the Wastewater Treatment Level D examination:

Operation of Wastewater Treatment Plants, Volume I, Seventh Edition - Office of Water Programs, California State University, Sacramento:

Chap 1 – The Treatment Plant Operator
Chap 2 – Why Treat Wastes
Chap 3 – Wastewater Treatment Facilities
Chap 4 – Racks, Screens, Comminutors, and Grit Removal
Chap 5 – Sedimentation and Flotation, Lesson 1 & 2
Chap 6 – Trickling Filters, Lesson 1
Chap 8 – Activated Sludge, Lesson 1 & 2
Chap 9 – Waste Treatment Ponds
Chap 10 – Disinfection, Lesson 1, 2, 3, 5 & 6
Appendix – Math

Wastewater Treatment Plants, Volume II, Seventh Edition - Office of Water Programs, California State University, Sacramento

Chap 14 – Plant Safety
Chap 15 – Maintenance, Lesson 1
Chap 16 – Laboratory Procedures and Chemistry, Lessons 1, 2, 3, 4, 6, 8 & 9
Chap 19 – Records & Report Writing

MO. 10 CSR 20-7 (PDF File)
MO. 10 CSR 20-8 (PDF File)
MO. 10 CSR 20-9 (PDF File)
Standard Conditions 1, 2 & 3

The following items are subjects and skills a person should know and understand before taking the Wastewater Treatment Level D examination:

1. Regulations
    a. What is the name of the permitting system called that regulates the discharge of pollutants?
    b. Where are the environmental regulations located?
    c. Penalties for a noncompliance are covered in what federal regulations?
    d. Where is toxic waste disposed?
    e. Material Safety Data Sheet
    f. National Pollutant Discharge Elimination System (NPDES)
    g. Know and understand the requirements under *MO. 10 CSR 20-9 (PDF File)* on certification of wastewater operators and classifications of wastewater treatment plants
2. Biology/Chemistry/Laboratory
    a. pH
        i. Range of pH?
        ii. Net change per-unit of pH
    b. Disease-producing bacteria
    c. Oxygen demand
3. Math

    a. Units of flow measurements
    b. Detention time
    c. Pumping rates
    d. Volume
        i. Gallons
        ii. Cubic Feet
    e. Temperature calculations
    f. Horse Power
    g. Dosage
        i. 100% concentration
        ii. Less than 100% concentration
    h. Demand
    i. Velocity
    j. BOD calculations
4. Operation & maintenance
    a. Lock out and tag out
    b. Manhole safety
    c. Other plant safety
5. Metering
    a. Types of flow metering devices and characteristics
    b. Chart recording
6. Activated sludge
    a. Observations and problems
    b. Types of aeration
    c. The term "Activated"
7. Ponds
    a. Types
    b. Effect of wind action
    c. Most common type of pond
    d. Toxic waste
    e. Top of a levee
    f. Algae bloom
8. Miscellaneous
    a. Short Circuiting
    b. Shock load
    c. Operating practices
    d. Infiltration