

DACUM Research Chart for Class III Wastewater Treatment Operator

DACUM Panel

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| Duties | | ← Tasks → | | | | |
|----------|--|---|--|---|--|--|
| A | Manage Biological Processes | A-1 Perform observation analyses (e.g., smell, sight) | A-2 Calculate solids inventory | A-3 Perform microscopic analyses | A-4 Adjust DO levels | A-5 Determine settling characteristic |
| B | Manage Lab Processes | B-1 Calibrate lab equipment | B-2 Analyze samples (e.g., permit, operational) | B-3 Maintain QAQC program (e.g., DMRQA) | B-4 Record analytical data | B-5 Perform lab equipment maintenance |
| C | Manage Bio-solids Processes | C-1 Conduct sludge thickening operations | C-2 Conduct sludge digestion | C-3 Perform laboratory analyses of sludge | C-4 Prepare sludge for disposal (e.g., de-water, lime-stabilize) | C-5 Dispose of bio-solid |
| D | Oversee Plant Maintenance Process | D-1 Create preventative maintenance program | D-2 Perform observational analyses (e.g., smell, sight) | D-3 Schedule preventative maintenance | D-4 Develop tool & supply inventory | D-5 Maintain inventories (e.g. spare parts, equipment, supplies) |
| E | Maintain Facility Safety | E-1 Perform job safety analysis | E-2 Develop health & safety plan (e.g., OSHA 29 CFR1910) | E-3 Implement health and safety plan (e.g., signage procedures) | E-4 Conduct safety meetings | |
| F | Manage Employees | F-1 Set performance standards | F-2 Develop personnel guidelines | F-3 Train personnel | F-4 Perform performance reviews | F-5 Acknowledg good behavior |
| G | Manage Operational Functions | G-1 Create operational checklists (e.g., benchsheets, logs) | | G-2 Maintain instrumentation (e.g., flow meters, PLCs) | G-3 Manage grounds-keeping activities | G-4 Complete MOR |
| H | Execute Administrative Functions | H-1 Manage facility budget | H-2 Perform NPDES application process | H-3 Respond to non-compliance issues | H-4 Upgrade/update facility's manuals | H-5 Develop/update job descriptions |
| I | Strengthen Public Relations | I-1 Address customer complaints | I-2 Notify customers of plan activities | I-3 Attend community functions | I-4 Conduct plant tours | I-5 Distribute informational materials |
| J | Pursue Professional Development | J-1 Participate in research activities | J-2 Participate in professional organizations (e.g., OWEA, ORWA) | J-3 Network with professional colleagues | | J-4 Obtain additional education |
| K | Participate in System Upgrade Process | K-1 Attend RFQ meetings | K-2 Tour wastewater treatment facilities | K-3 Interview wastewater plant operators | K-4 Participate in selection of engineer | K-5 Review design specification |
| | | K-13 Participate in final walk-through | K-14 Test equipment during warranty period | | | |

General Knowledge and Skills

Biology
Chemistry
Grant writing
Budgeting
OSHA safety requirements
Equipment operation
Problem solving skills
Multi tasking skills
Time management skills
Communication skills
Driving/navigation skills
Office skills (filing, recordkeeping)
Environmental regulations (local, state, federal)

Tools, Equipment, Supplies and Materials

Backhoe
Skid loader
Dump truck
Lawn mower
Sewer jetter
Hand tools
Trash pump
Common lab supplies
Lab oven
Scales
Settleometer
Core sampler
Centrifuge
pH meter
Chlorine meter
Ammonia meter
Portable DO meter
Dessicator
Refrigerator
BOD incubator
USA Bluebook
Rain gauge
Automatic samplers
Portable flowmeter
Sewer auger
Water bath
ORP meter
Sample dipper
Multi-meter
Digital camera
Truck

Grounds management supplies
Chemicals
Valve wrench
Lubricants
Personal protective equipment
Common cleaning equipment
Common office supplies
Muffle furnace
Microscopes: dissecting,
lab grade
Degreasers/deodorizers
Dye
Smoke canisters
Ladders
Blowers
Pressure washer
Deionized water
Sewer camera
Logbook
Operations and maintenance
manual
Reference books
Portable generators
Fax machine
Computer/peripherals
Internet access
Chemical pumps
Marking paint
Marking flags
Trade journals
Portable testing equipment

Worker Behaviors

Presentable
Dependable
Adaptable
Diligent
Enthusiastic
Organized
Dedicated
Sense of humor
Self-confident
Assertive
Conscientious

Eloquent
Cooperative
Ethical
Intelligent
Trustworthy
Flexible
Independent
Self-motivated
Safety-conscious
Punctual
Detail-oriented

Future Trends and Concerns

Class "A" biosolids requirements? When?
Aging operator pool
Additional regulatory requirements/demands
Lack of funding
Inadequate staffing levels
More stringent discharge limits
More documentation requirements on operator in charge
Aging infrastructure
Total elimination of SSOs and CSOs
Lack of young professionals in field
Job image
Water coalition addressing concerns

Acronyms

CSO Combined Sewer Overflow
SSO Sanitary Sewer Overflow
RBC Rotating Biological Contactor
CBOD Carbonaceous Biochemical Oxygen Demand
DO Dissolved Oxygen
TSS Total Suspended Solids
MLSS Mixed Liquor Suspended Solids
QA/QC Quality Assurance Quality Control
SCADA System Control & Data Acquisition
MOR Monthly Operating Report
RFQ Request for Qualifications
ORP Oxidation Reduction Potential
NPDES National Pollutant Discharge Elimination
System
RAS Return Activated Sludge
WAS Waste Activated Sludge
POTW Publicly Owned Treatment Works
OTCO Operator Training Committee of Ohio
ORWA Ohio Rural Water Association
OWEA Ohio Water Environment Association
ML Mixed Liquor
DNR Department of Natural Resources
SARA Superfund Amendments and Reauthorization Act
CERCLA Comprehensive Environmental Response,
Compensation and Liability Act