

Federal Wage System Job Grading Standard for Wastewater Treatment Plant Operating, 5408

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WORK COVERED

This standard covers nonsupervisory work involved in the operation of wastewater treatment facilities and plants to treat and dispose of waterborne domestic waste or industrial wastewater.

This standard cancels and supersedes the Job Grading Standard for Sewage Disposal Plant Operator, 5408, issued in September 1969.

WORK NOT COVERED

This standard does not cover work which primarily involves:

- Operating water treatment facilities and plants to treat or pump water for domestic or industrial use. (See [Job Grading Standard for Water Treatment Plant Operating, 5409.](#))
- Operating power boilers and treating boiler wastewater prior to discharge. (See [Job Grading Standard for Boiler Plant Operating, 5402.](#))

TITLES

Jobs covered by this standard at grade 7 level and below are titled *Wastewater Plant Operator*.

Jobs at grade 8 and above are titled *Wastewater Treatment Plant Operator*.

GRADE LEVELS

This standard describes three levels of nonsupervisory wastewater treating work (grades 7, 8, and 9). It does not describe all possible levels at which jobs may be established. If jobs differ substantially from the skill, knowledge, and other work requirements described in the grade levels of this standard, they may be graded above or below the levels described based upon sound grading methods.

NOTE TO USERS

Because of possible adverse human health and environmental effects, many states have imposed strict certification requirements on wastewater treatment plant operators. Certification of employees, however, does not directly affect the difficulty or other characteristics of work which are considered in grading trades and labor jobs under the Federal Wage System. Under this system, jobs are graded considering the skill and knowledge which are applied in actual work performance, as well as the factors of responsibility, physical effort, and working conditions actually involved in accomplishing work assignments. Consequently, certification requirements

have no grade level impact. (See [Digest Vol. 14](#) for additional guidance on the impact of state certification and licensure requirements on the classification of jobs covered by this standard.)

SPECIAL ADDITIONAL RESPONSIBILITIES

This section provides guidance for determining the grade level of certain plant operating situations. The Wastewater Treatment Plant Operator Standard describes normal operation.

When positions clearly meet the criteria described below, one additional grade may be credited to plant operator positions at the grade 8 level whether they work alone or with a small group of plant operating employees. It is the intent of this provision that only one operator on each shift be credited with an additional grade for shift-level responsibility.

Most wastewater treatment plants run on a 7-day, 3-shift plan. Operators may be assigned to a specific shift or alternate working on all three shifts, including weekends. On second and third shifts and on weekends, one operator is typically designated as the "operator in charge" of the complete plant, including ancillary and stand-alone wastewater treatment facilities which may be geographically dispersed. The operator typically performs additional duties which are more responsible and require a slightly higher level of skill and knowledge than of full performance level operators who are on duty where a supervisor is available to provide specific guidance and assistance.

The "operator in charge" must have a thorough knowledge of the entire wastewater treatment system and user requirements in order to locate problems and initiate immediate corrective action to maintain adequate wastewater treatment. The operator, in the absence of written contingency procedures, must have the responsibility to decide whether to shut down a wastewater treatment plant and, if so, whether equipment still in operation can handle the load or whether to attempt to bypass the trouble until corrective action has been completed. Typically, the "operator in charge" has responsibility to determine what work must be done and the authority to approve overtime or to call in necessary maintenance personnel. The operator is responsible for relaying instructions to the next shift operator including problems encountered and action taken.

While these and other similar situations do not describe supervisory responsibilities, they represent situations which indicate that individuals designated as "operator in charge" have more responsibility and a higher level of skill and knowledge than operators who have a supervisor who is available for technical advice and guidance.

Additional grade credit will be added only to plant operators at the journey level who are assigned shift responsibility on a regular and recurring basis. Credit will not be given to plant operators who regularly work when a supervisor is present at the facility or at a nearby facility on the same shift.

WASTEWATER PLANT OPERATOR, GRADE 7

General: Grade 7 wastewater plant operators work in wastewater treatment plants which provide pretreatment and primary treatment of effluent wastewater or liquid waste. At this level, they monitor wastewater treatment equipment and gauges according to a prescribed schedule and perform routine operator maintenance. The operators perform routine tests such as standard jar and ion concentration (pH) tests and record results in standardized reports. They make adjustments to control valves and pumps in the wastewater treatment process.

Skill and Knowledge: Grade 7 wastewater plant operators know how to use equipment such as bar racks, fine screens, grit chambers, and grease separators in the wastewater settling process to separate, retain, and grind solids in preparation for further treatment in other stages of the wastewater treatment process. They have skill using primary treatment stage equipment such as septic, Imhoff, and settling tanks used to remove and retain settleable solids which are rejected or processed.

Grade 7 operators know how, when, and where to collect samples to determine the amount of solids to be removed by drying and weighing the samples in accordance with prescribed Federal and State standards. They have skill in adding predetermined chemical reagents to samples and to conduct tests such as pH and settleable solids. Grade 7 level operators follow prescribed Federal and State measures to adjust the rate of flow and the amounts of chemicals to be fed into the system. They have skill in adjusting plant equipment to regulate the speed of the treatment process so that the wastewater flows at a rate slow enough to allow settleable matter to separate from the liquid. They also know how to fill out the numerous Federal and State reports. The grade 7 operators have the skill necessary to know when the wastewater treatment process is completed such as when solids are dry enough after draining and drying on sand beds and when to dispose of resulting liquids and solids.

Grade 7 wastewater plant operators know the location and purpose of equipment such as pumps, gate valves, and outlets to adjust and regulate the flow of wastewater into and out of the system. They have skill in performing routine operator maintenance such as lubricating, cleaning, and painting wastewater pumping equipment and pipes, and assisting higher grade operators in performing minor operational repairs.

Responsibility: Grade 7 operators receive work assignments from a supervisor or a higher grade operator either orally or in writing. The operators perform routine wastewater assignments within the framework of established practices, processes, and procedures. They are responsible for performing routine tests such as pH, settleable solids, and sludge content within established parameters, using equipment such as color comparators, Imhoff cones, and chlorometers. Grade 7 operators verify that the proper amounts and mixtures of chemicals have been fed into the equipment for proper treatment procedures. Tests are done in accordance with specific and easily understood instructions in printed pamphlets and guidelines. All reports are checked by a supervisor or higher grade operator.

Grade 7 wastewater plant operators check the equipment frequently according to a prescribed schedule and determine within established guidelines if it is working properly, detecting and correcting problems such as minor leaks, oiling, greasing, and cleaning machinery as prescribed. They follow prescribed regulations concerning reading meters and gauges to maintain efficient wastewater treatment. Work is checked by the supervisor or wastewater "operator in charge" for compliance with instructions and regulations. In some work situations, at large plants, operators at this level may be responsible for any major part of the system.

Physical Effort: Grade 7 wastewater plant operators do considerable walking, standing on concrete floors, and climbing stairways and ladders. Light to moderate physical effort is necessary to turn valves and controls. They frequently lift and carry items weighing up to 18 kilograms (40 pounds) unassisted and occasionally lift and carry heavier items with assistance of other workers or with lifting devices.

Working Conditions: Grade 7 wastewater plant operators usually work indoors and occasionally work outside for short periods where they are subject to prevailing weather conditions. They are exposed to constant noise, rotating machinery, dirt, grease, chemicals, oil, and fumes in the work area. Wastewater plant operators are subject to cuts and abrasions from the use of tools and equipment and burns from chemicals. In addition, they work on catwalks and ladders. Operators at this level follow prescribed safety practices and use safety equipment such as face shields, gloves, hard-toe shoes, respirators, and protective clothing. Some of these safety items may be uncomfortable to wear and may be worn or used for long periods.

WASTEWATER TREATMENT PLANT OPERATOR, GRADE 8

General: Grade 8 wastewater treatment plant operators provide, in addition to the pretreatment and primary treatment performed at grade 7, secondary treatment of wastewater, which promotes bacteriological growth that is used to feed on nonsettling solids. Grade 8 operators do more extensive testing than grade 7 operators to determine such things as biochemical oxygen demand, suspended and dissolved solids, and dissolved oxygen. They increase or decrease chemical agents based upon the results of these and similar tests. Operators at this level record the results in standardized reports designed to meet Federal and State regulations.

In addition to the equipment used at grade 7, grade 8 operators use equipment such as biological filters, sand filters, aeration tanks, and oxidation ponds. Grade 8 operators adjust plant equipment for proper separation of settleable matter from the liquid and, in addition to what grade 7 operators do, process nonsettling solids through secondary stage equipment.

Skill and Knowledge: In addition to the knowledge of primary treatment equipment required by grade 7 operators, grade 8 wastewater treatment plant operators have a thorough knowledge of the secondary processes and equipment such as biological filters, oil separators, holding tanks, sand filters, aeration tanks, and oxidation ponds to accomplish the secondary or tertiary treatment processes. Grade 8 wastewater treatment plant operators know how to collect water samples and conduct tests such as chlorine residual, biochemical oxygen demand, acidity or alkalinity, and total solids.

They have skill to make proper adjustments by adding in a prescribed manner the necessary chemicals such as hydrated lime to cultivate anaerobic bacteria. At this grade level, the operators take samples from more points in the plant, tests are for additional purposes (secondary treatment), and adjustments are made at more locations. Grade 8 wastewater treatment plant operators have skill to fill out reports according to clearly delineated Federal and State reporting requirements. Reports are spot-checked by the supervisor or a higher grade employee for adherence to Federal and State reporting requirements.

In addition to the equipment used by grade 7, grade 8 wastewater treatment plant operators know how to operate and perform minor maintenance on a greater variety of equipment such as pumps, valves, chemical feed machines, and chlorinators. Equipment is more complex at this level since it is used in the secondary, tertiary, or final treatment process to completely treat the wastewater before final discharge to either city wastewater systems or water sources such as lakes and rivers.

Responsibility: Grade 8 wastewater treatment plant operators receive work assignments from a supervisor or a higher grade operator who is in charge of the facility or work shift. These assignments may be in the form of written or oral instructions. Overall responsibility within the framework of established practices, processes, and procedures made by grade 8 wastewater treatment plant operators are more complicated and numerous because the secondary treatment process uses additional and more complex equipment than the pretreatment and primary treatment stages.

The grade 8 water treatment operators are responsible for conducting tests and measurements similar to the grade 7 operator, within prescribed State and Federal standards; however, results are checked and records are reviewed at the completion of the shift. Work is spot-checked by a supervisor or the "operator in charge" for compliance with instructions and regulations.

Physical Effort: Physical effort at this grade level is the same as that described at the [grade 7 level](#).

Working Conditions: Working conditions at this grade level are the same as that described at [grade 7](#).

WASTEWATER TREATMENT PLANT OPERATOR, GRADE 9

General: In addition to the treatment processes at the 8 level, grade 9 wastewater treatment plant operators treat industrial wastewater by removing nitrogen, phosphorous, soluble chemicals, oils, and heavy metals such as copper and chrome. Grade 9 level operators perform testing that is more varied and complex than grade 8 operators to determine such things as sedimentary characteristics and flow rates, adjust for pH, and add proper amounts of chemicals to precipitate heavy metals. Similar to the grade 8 level, operators at this level record the results in standardized reports designed to meet Federal and State regulations.

In addition to the equipment used at grade 8, the grade 9 operators use such equipment as rapid mix and flocculation chambers, chemical treatment tanks and their associated pumps, as well as treatment tanks for batch treatment.

Skill and Knowledge: In addition to the knowledge of primary and secondary treatment required by grade 8 operators, the grade 9 wastewater treatment plant operators have a thorough knowledge of the tertiary wastewater treating processes relating specifically to industrial wastewater normally encountered in heavy industrial environments. The operators know how to monitor and control industrial wastes such as hexavalent chrome, cyanide, hydrazine, penesolve, caustics, and phosphates. Grade 9 level operators know how to read and follow chemical procedures to treat industrial wastes. Operators use instruments such as dissolved oxygen meters, pH meters, water meters, mag meters, and turbidity meters to perform tasks such as adjusting pH and adding prescribed amounts of chemicals to precipitate heavy metals. They are skilled in monitoring equipment operations to assure correct processing of waste and rinse waters through successive stages of the industrial wastewater treatment system.

Grade 9 operators know how to collect samples and conduct tests such as phenol, ion concentration, heavy metal content and concentration, suspended or volatile solids, and chemical or radioactive contaminants. They make additional adjustments to chemical additives based upon a prescribed set of Federal and State regulations and report findings according to established guidelines.

In addition to equipment used at grade 8, grade 9 wastewater treatment plant operators are skilled in the use and operation of various kinds of equipment associated with industrial wastewater treatment such as nitrification reactors, chemical flocculation chambers, flash mix tanks, oxidation chambers, clarifiers, sludge thickeners, and ion exchangers. The adjustments made on the various apparatuses are critical since the equipment is used in the final treatment of industrial wastewater before final discharge.

Responsibility: Grade 9 wastewater treatment plant operators receive work assignments from a supervisor or a higher grade worker who is in charge of the facility or work shift. Overall responsibility is greater than that described at the grade 8 level because grade 9 operators make independent judgments and decisions within the framework of established practices, processes, and procedures. They are responsible for all phases of treatment prior to final discharge of treatment wastewater.

The judgments and decisions that grade 9 operators make are more complicated and numerous than the pretreatment, primary and secondary nonindustrial wastewater treatment processes because the industrial treatment processes require the operators to know and respond to additional and more complex chemicals and procedures not encountered in nonindustrial wastewater treatment. Responsibility for checking equipment for proper operation, and detecting and correcting malfunctions is greater at the grade 9 level since operators must neutralize potentially toxic chemicals during the treatment process prior to final discharge. Work is spot-checked by a supervisor or the "operator in charge" for compliance with instructions and regulations.

Physical Effort: Physical effort at this grade level is the same as that described at the [grade 7 level](#).

Working Conditions: Working conditions at this grade level are the same as that described at [grade 7](#).