



Operator Certification

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Operations

Introduction

Water/wastewater treatment is a field of work that requires skills and knowledge in a wide variety of subjects. The need for operators who are “jacks of all trades” has long been recognized. Never before has this been more apparent than as we enter into the 21st century. Simple treatment plants that treat the water to “acceptable” levels are rapidly disappearing in preference to facilities which are capable of producing water of exceptional quality. The operator of “state of the art” water and wastewater treatment facilities not only requires knowledge of maintenance and mechanics as in the past, but also requires general understanding of concepts in mathematics, science, chemistry, biology, physics, computers and electronics. Only with this knowledge will operators be able to understand and control the processes which are dependent upon them.

The value of certification

To be safe and produce a high-quality water, communities need every advantage possible to be successful. Having certified operators on staff will help your community achieve this goal.

- **Increased credibility.** Having certified operators on staff helps your community's credibility. It shows residents that you employ skilled professionals who are knowledgeable on the latest water treatment procedures.
- **Motivational tool.** Encouraging employees to earn their certification empowers them to take on more responsibilities and advance their career.
- **Proof of knowledge and skills.** As a operator, they will have passed a rigorous exam that covers all aspects of water/wastewater treatment technology.
- **Proof of your commitment to the industry.** Operators have to recertify every few years to maintain their certification.
- **Career Advancement.** Having a certified operator certificate and designation creates career advancement opportunities throughout the industry.

Operator Certification Program

Nova Scotia's operator certification program dates to 1984, when it was a voluntary program. Operator certification became mandatory in 1996 and further requirements and guidance were introduced in 2005, including the need to renew certificates. The requirements for persons operating classified water and wastewater facilities in Nova Scotia are described in the [Water and Wastewater Facilities and Public Drinking Water Supplies Regulations](#).

The operator certification program is required to ensure that operators have the necessary training and experience to operate a system for the

Certification program benefits include:

- Measure of competency
- Meets a national standard
- Provides some assurance of public safety
- Employee pride and recognition
- Reciprocity (ability to move between Provinces)

Operator definitions

The regulations state an "operator" means a person who directs, adjusts, inspects, tests or evaluates an operation or a process that controls the effectiveness or efficiency of a facility.

An operator can become certified in the following categories of facilities in Nova Scotia:

- Water Treatment
- Water Distribution
- Wastewater Collection
- Wastewater Treatment

Education and Operating Experience Requirements for Classes of Operator Certification Certificates

Education and Operating Experience Requirements for Classes of Operator Certification Certificates	
Operator-in-training certificate	
Education	Operating experience
grade 12 high school diploma, or general equivalency diploma (GED), or equivalent education	none
Class I operator certification certificate	
Education	Operating experience
grade 12 high school diploma, or general equivalency diploma (GED), or equivalent education	1 year of operating experience at a Class I or higher facility

Education and Operating Experience Requirements for Classes of Operator Certification Certificates

Class II operator certification certificate	
Education	Operating experience
grade 12 high school diploma, or general equivalency diploma (GED), or equivalent education	3 years of operating experience at a Class I or higher facility
Class III operator certification certificate	
Education	Operating experience
grade 12 high school diploma, or general equivalency diploma (GED), or equivalent education and 2 years of post-secondary education, or 90 CEUs of acceptable training	4 years of operating experience at a Class II or higher facility, including 2 years of direct responsible charge experience

Education and Operating Experience Requirements for Classes of Operator Certification Certificates

Class IV operator certification certificate	
Education	Operating experience
grade 12 high school diploma, or general equivalency diploma (GED), or equivalent education and 4 years of post-secondary education, or 180 CEUs of acceptable training	4 years of operating experience at a Class III or higher facility, including 2 years of direct responsible charge experience

Substituting surplus education for operating experience

Post-secondary education or CEUs required for an operator certification certificate must be

(a) in engineering, the water or wastewater field or in a related science; or

(b) acceptable to an administrator.

Substituting surplus education for operating experience

Operating experience required for an operator certification certificate must be

- (a) acquired through actual operating experience at the same type of facility as the type of certificate that is applied for; and
- (b) acceptable to an administrator.

OIT Restrictions:

- As an OIT you are deemed to be certified under the Regulations and thus capable of performing operational duties at a water or wastewater facility. However, the facility owner cannot place you in overall direct responsible charge of a facility.

Substituting surplus education for operating experience

- An applicant for a Class II, III or IV operator certification certificate who does not have the operating experience for the class of certificate applied for as set out in Section 19 may substitute surplus education for the required operating experience in accordance with, and up to the maximums set out in the following table:

Surplus Education that may be Substituted for Required Operating Experience

Surplus Education that may be Substituted for Required Operating Experience			
Class of Certificate	Surplus Education	May be Substituted for	Maximum Substitution
Class I	–	–	no substitution permitted
Class II	1 year of post-secondary education or 45 CEUs of acceptable training	1 year of operating experience	Up to 50% of operating experience
Class III or Class IV	1 year of post-secondary education or 45 CEUs of acceptable training	1 year of operating experience or 1 year of direct responsible charge experience	Up to 50% of operating experience or Up to 50% of direct responsible charge experience

ABC Association of Boards of Certification

WATER AND WASTEWATER OPERATOR CERTIFICATION EXAMS

On March 31, 2021, Nova Scotia started using ABC standardized exams for drinking water and wastewater operator certification, replacing the current Nova Scotia exams.

ABC Association of Boards of Certification

- The Association of Boards of Certification (ABC) is an association which provides guidance and resources to certification authorities across North America and internationally. Nova Scotia's facility classification and operator certification program was created based upon the model provided by the ABC.

ABC Association of Boards of Certification

- ABC's standardized exams were released for testing in 2017 and have since been adopted throughout Canada and the United States. Using the standardized exams ensures that Nova Scotia operators are certified to the latest international standard of competency.

Nova Scotia is using standardized exams for the following certifications:

Water Treatment & Wastewater Treatment

- Class I
- Class II
- Class III
- Class IV

Water Distribution & Wastewater Collection

- Class I
- Class II
- Class III

Standardized Exam Format:

- Multiple choice
- Includes both metric and imperial units
- 110 questions, 10 of which are not included in the final score
- No regulatory questions, as the exams are used in other jurisdictions

Frequently Asked Questions:

Why do the standardized exams being implemented March 31 have 110 questions?

- *The 10 additional questions will help ABC gather data about new items before they are included in future exams. These questions are unidentified and will not be included in the final score. Their level of difficulty is appropriate and consistent with the level of difficulty of the scored questions.*

Will ABC send me my exam mark?

- *No, ABC cannot provide your exam mark. Nova Scotia Environment and Climate Change will send you your exam mark.*

Frequently Asked Questions:

If I want to check the status of my exam mark, should I follow-up with ABC?

- *No. Please contact Environment and Climate Change if you want to check on the status of your exam mark.*

How were the exams developed?

- *Exams were developed based on results from a 2014-15 job analysis conducted by ABC where input from over 7,000 industry stakeholders was collected. Operators from across Canada were involved in developing the exam questions. The new exams were piloted across Canada in 2017.*

Reasons for requiring certification

A person **MUST** be certified as an operator in order to perform the following functions (also referred to as operating functions)

- control flow or pressure of drinking water in drinking water systems
- disinfect or treat water using chemicals and/or making adjustments to treatment equipment
- monitor gauges, meters and control valves related to disinfection, treatment or distribution of drinking water
- conduct water tests for monitored operational parameters (e.g. testing for chlorine residual, turbidity, alkalinity, pH)

Reasons for requiring certification

- open and close valves and gates, whether done manually or by remote access (a non-certified person can open and close valves for the purpose of 'exercising' a valve if under supervision)
- add chlorine or other chemicals to the treatment or distribution system
- perform wet-taps
- flush hydrants
- isolate watermains and reconnect isolated watermains
- maintain logs (e.g. shift logs) or other forms of record-keeping related to treatment and distribution activities in the subsystem, make entries into such logs/records including meter and gauge readings
- start and stop pumps, engines and generators to control and adjust flow and treatment

A person does not need to be certified to perform the following functions:

- repair previously isolated watermains
- install or do maintenance on a service meter or perform work on a service line that is covered under the Building Code
- close a watermain valve as a result of an emergency (i.e. watermain break) if approved by a certified operator (if not an emergency, this must be done by a certified operator)
- operate (close/open/adjust) a curb stop at the property line which controls the flow of water to a service
- take water for fire fighting purposes
- perform 'dry taps'

Subcontractors

- A person or contractor, that is not certified as a drinking water operator, can perform functions normally required to be done by a certified operator provided they are being directly supervised by a certified operator, meaning the certified operator is physically present and monitoring the work being performed. At **NO** point should a subcontractor be left unsupervised at a facility for any length of time.

AFNWA Training Workshops

Course Curriculum – Class I Preparation

Overall General Expectations

By the end of the course, students will:

- have a basic understanding of water and wastewater treatment principles and procedures
- be able to perform basic water and wastewater treatment calculations using formulas
- become familiar with water and wastewater treatment terminology

Specific Expectations

By the end of the course, students will:

- become familiar with the metric system and unit conversions
- be able to solve for the area of squares/rectangles, triangles and circles
- be able to calculate the volume of cubes, cones and cylinders
- have a general understanding of the nature of microorganisms and pathogens
- distinguish between aerobic and anaerobic microorganisms

Continued...

- identify the difference between acids, bases and salts
- become familiar with the pH scale
- identify the different parts of a solution and be able to calculate concentration
- identify and become familiar with common chemicals used or found in water supplies
- identify various forms of chlorine used in water treatment
- become familiar with basic chemistry terms such as matter, atoms, elements, compounds, change of state, chemical change

Continued...

- know the relationship between chlorine dosage, chlorine demand and chlorine residual
- know the difference between free and combined chlorine residuals
- know basic electrical terms such as voltage, current, resistance and power and units of measurement
- know basic hydraulic terms such as velocity, flow rate, pressure and head, friction loss, cavitation and water hammer
- understand the principles of the conventional filtration process
- understand the water distribution principles and procedures

Continued...

- understand the principles of the activated sludge process and waste stabilization ponds
- understand wastewater collection principles and procedures
- become familiar with equipment found in and around water and wastewater treatment facilities including pumps, pipes, valves and controls
- identify safety hazards in and around treatment facilities



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