




Operator Training

Requirements and Objectives





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.

Types and classes of operator certification certificates

- (1) An administrator may issue the following types of operator certification certificates:
 - (a) water treatment operator certification certificate;
 - (b) water distribution operator certification certificate;
 - (c) wastewater treatment operator certification certificate;
 - (d) wastewater collection operator certification certificate.

Types and classes of operator certification certificates cont.

- (2) Each type of operator certification certificate must be issued in one of the following classes:
- (a) Operator-in-training;
 - (b) Class I;
 - (c) Class II;
 - (d) Class III;
 - (e) Class IV.

Deemed certification of operator with water or wastewater treatment certificate

(1) Unless the water treatment operator certification certificate states otherwise, an operator who holds a valid Class I, Class II, Class III or Class IV water treatment operator certification certificate is deemed to also hold a Class I water distribution operator certification certificate for the purposes of operating components in a water distribution facility that affect a water treatment facility.

(2) Unless the wastewater treatment operator certification certificate states otherwise, a person who holds a Class I, Class II, Class III or Class IV wastewater treatment operator certification certificate is deemed to also hold a Class I wastewater collection operator certification certificate for the purposes of operating components in a wastewater collection facility that affect a wastewater treatment facility.

Operator certification certificate application

To apply for an operator certification certificate, an applicant must submit all of the following to the Minister:

- (a) a properly completed application, on a form approved by the Minister or an administrator;
- (b) proof that they have met the education requirements of Section 19;
- (c) proof that they have met the operating experience requirements of Section 19;
- (d) before their certificate is issued, proof that they have passed the exam as required by Section 20;
- (e) before their certificate is issued, the fee established by the Minister.

Operator certification certificate application cont.

An applicant for an operator certification certificate must meet the education and operating experience requirements for the class of certificate applied for as set out in the following table:

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.

Exam requirements for operator certification certificate

- (1) An applicant for a operator certification certificate must write and pass an exam for the type and class of certificate applied for.
- (2) An exam for an operator certification certificate must be approved by the Minister or an administrator and the pass mark for the exam must be set by the Minister or an administrator.
- (3) An applicant for a Class I, II, III or IV operator certification certificate may write an exam only if all of the following apply:
 - (a) they already hold the same type of operator certification certificate in the next lower class;
 - (b) their operator certification certificate is valid;
 - (c) they have the operating experience and education required by Section 19.

Exam requirements for operator certification certificate cont.

- (4) An applicant for an Operator-in-training operator certification certificate may write an exam only for an Operator-in-training certification certificate.
- (5) Despite clause (3)(a), an applicant who is deemed to hold a Class I water distribution or Class I wastewater collection operator certification certificate under Section 17 must write and pass an exam for a Class I operator certification certificate before they are permitted to write an exam for a Class II operator certification certificate.
- (6) Despite clause (3)(c), an administrator may, in accordance with guidelines and policies established by the Department, allow an applicant to write an exam before the applicant has the operating experience required for the type and class of operator certification certificate applied for if the applicant already holds an operator certification certificate that is valid, of the same type and in the next lower class.

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



Operator certification certificate

- (1) An applicant who satisfies the requirements of these regulations for the type and class of operator certification certificate applied for may be issued a certificate under subsection 64(1) of the Act.
- (2) An operator certification certificate must be in a form approved by the Minister or an administrator.
- (3) An operator certification certificates expires 4 years after the date it is issued.
- (4) An operator certification certificate is not transferable.
- (5) An operator must produce their operator certification certificate to an administrator or inspector on request.

Renewal of operator certification certificate

A certified operator may renew their operator certification certificate by submitting all of the following to the Minister at least 60 days before the date their certificate expires:

- (a) a properly completed renewal application, on a form approved by the Minister or an administrator;
- (b) the renewal fee established by the Minister;

Renewal of operator certification certificate cont.

(c) for a Class I or II operator,

(i) if the operator has not been designated in overall direct responsible charge, proof satisfactory to an administrator that the operator completed at least 2.4 CEUs of acceptable training during the term of their current certificate, or

(ii) if the operator has been designated in overall direct responsible charge, proof satisfactory to an administrator that the operator completed at least 4.8 CEUs of acceptable training during the term of their current certificate;

Renewal of operator certification certificate cont.

(d) for a Class III or Class IV operator, proof satisfactory to an administrator that the operator completed at least 4.8 CEUs of acceptable training during the term of their current certificate.

NOTE: An Operator-in-training operator certification certificate is not renewable.

Expired operator certification certificates

(1) An operator certification certificate that has expired and has not been renewed under Section 24 may be re-issued for the same type and class of operator certification certificate if the holder submits all of the following to the Minister:

(a) a properly completed renewal application, on a form approved by the Minister or an administrator

(b) the fee established by the Minister

(c) proof satisfactory to an administrator that the operator has obtained the CEUs of acceptable training required.

(2) An operator who applies to renew an operator certification certificate that has been expired for 3 years or longer must re-write and pass the exam for the type and class of certificate applied for.



General Education Development (G.E.D.)

A way to get your high school equivalency is by registering to take General Educational Development (GED) tests.

GED tests cover five different subject areas.

A person must pass all five tests to get their GED certification (certified Canadian high school equivalency).



G.E.D. cont.

The GED certificate shows that you have high school-level knowledge and skills, without having completed a formal secondary school program.

The GED test is composed of five tests:

- writing (language arts)
- reading (language arts)
- mathematics
- social studies
- Science

You will need a score of 450 out of 800 on each of the five tests to receive the GED Certificate.

G.E.D. cont.

Eligibility

- You must be a Canadian citizen and at least 18 years old.
- If you are 18, you must provide a 'date of leaving letter' from the last high school you attended or If you were home schooled, you must provide proof that you were home schooled.



Hands-on Training

An intricate part of operator certification entails hands-on training. The key benefits to this training for operators will:

- provide a basic understanding of water and wastewater treatment principles and procedures
- ability to perform basic water and wastewater treatment calculations using formulas
- become familiar with water and wastewater treatment terminology
- A more in-depth understanding of the facilities currently being operated

Goals of hands-on training and workshops

- 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
- become familiar with basic chemistry terms such as matter, atoms, elements, compounds, change of state, chemical change

Goals of hands-on training and workshops

- 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
- 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

Goals of hands-on training and workshops

- understand the principles of the conventional filtration process
- understand the water distribution principles and procedures
- 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

References

Water and Wastewater Facilities and Public Drinking Water Supplies Regulations

made under Sections 66 and 110 of the

Environment Act

S.N.S. 1994-95, c. 1

O.I.C. 2005-426 (effective September 30, 2005), N.S. Reg. 186/2005

amended to O.I.C. 2019-298 (effective April 1, 2020), N.S. Reg. 166/2019