Drinking Water Operator Qualification Program

Operator of Complete Surface Water Treatment Station

Job P5a

Apprenticeship and Evaluation Booklet

EQ-5053-02A (03-2005)

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Emploi-Québec, in collaboration with the *Comité sectoriel de main-d'œuvre de l'Environnement*, has produced this guide to describe the skills required to qualify as an Operator of Complete Surface Water Treatment Station (P5)

OUR SPECIAL THANKS TO THE SPECIALISTS WHO HELPED DEVELOP THE JOB PROFILE AND LEARNING & ASSESSMENT GUIDE

Mr. Normand Arcouette
Technical Supervisor
Approvisionnement et projet
Laval

Mr. Rachid Baïou
Project Manager
Comité sectoriel de main-d'œuvre de l'Environnement

Ms Jacqueline Bélanger
Drinking Water Coordinator
Secteur ouest
Lévis

Ms Line Coté
Consultant, Tool Development
Groupe Réseau Conseil
Longueuil

Mr. René Juillet
Project Agent
Comité sectoriel de main-d'œuvre de l'Environnement

Mr. Régeant Langlois
Superintendent
Filtration Plant
Roberval

Mr. Daniel Leblanc
Technician
City of Montreal
Arrondissement Dorval - Île de Dorval

Mr. Simon Sauvageau
Responsible for the Québec Sector
Aquatech

Mr. Claude Therrien
Operator
Régie d'aqueduc intermunicipale des Moulins
Terrebonne

Mr. Alain Véronneau
Operator
Acton Vale

Members of Sous-comité Apprentissage

Mr. Rachid Baïou
Project Manager
Comité sectoriel de main-d'œuvre de l'Environnement (CSMOE)
Montreal

Mr. Gilbert Brosseau
Municipal inspector
Ripon
COMBEQ

Mr. Gilles Comtois
Superintendent
Filtration Plant
Granby

Mr. Daniel Labrèche
Training Consultant
Commission scolaire des Trois-Lacs
Vaudreuil-Dorion

Ms Sylvie Lalancette
Consultant
Direction du développement des compétences en milieu de travail (DDCMT)
Emploi-Québec

Mr. Jean Lavoie
Superintendent
Division eau potable
Laval
RÉSEAU-Environnement

Ms Chantal Lebrun
Consultant
Direction du développement des compétences en milieu de travail (DDCMT)
Emploi-Québec

Mr. Jocelyn Léveillé
Operator
Beauharnois
Confédération des syndicats nationaux (CSN)

Mr. Robert Ouellet
General Manager
Comité sectoriel de main-d'œuvre de l'Environnement (CSMOE)
Montreal

Mr. Claude Rhéaume
Training Consultant
Cégep Saint-Laurent
Saint-Laurent

Ms Caroline Robert
Biologist
Direction du milieu municipal
Ministère de l'Environnement du Québec (MENV)
Quebec City

Mr. Claude Therrien
Operator
Régie d'aqueduc intermunicipale des Moulins
Terrebonne
SCFP

Mr. Thimothy Watchorn
Municipal inspector
Saint-Sauveur

Members of Comité d'orientation et d'apprentissage

Mr. Didier Bicchi
Department Head
Politiques du secteur municipal
Ministère de l'Environnement du Québec (MENV)

Mr. Jean-Guy Cadorette
General Manager
Aquatech
Representing private companies involved in water related operations

Mr. Pierre Chantal
Consultant
Direction générale adjointe à l'intervention sectorielle (DGAIS)
Emploi-Québec

Ms Josée Chartrand
Ministère de la Santé et des services sociaux (MSSS)

Ms Marieke Cloutier
Policy Consultant
Union des municipalités du Québec (UMQ)

Mr. Kamal Karazivan
Direction des infrastructures
Ministère des Affaires municipales du sport et du loisir (MAMSL)

Mr. Jean Lavoie
Superintendent
Division eau potable, Laval
Représentant de RÉSEAU-environnement

Mr. Robert Ouellet
General Manager
Comité sectoriel de main-d'œuvre de l'Environnement (CSMOE)

Mr. Patrice Sallam
Representative
Fédération des travailleurs du Québec (FTQ)

Mr. Oussaï Samak
Health, Safety and Environment Consultant
Confédération des syndicats nationaux (CSN)

Mr. François Vézina-Roy
Responsible for Sectorial Training
Ministère de l'Éducation du Québec (MEQ)

Ms Lise Villeneuve
Representative
Association des directeurs municipaux du Québec (ADMQ)

APPRENTICE FILE

NAME _____

ADDRESS _____

CITY _____ POSTAL CODE _____

PHONE (____) _____

Emploi-Québec File #: _____

Note on the protection of personal information

① The information collected in this guide is subject to the *Act respecting access to documents held by public bodies and the protection of personal information*

② The information is being collected for the purposes of administering the Emploi-Québec Drinking Water Operator Qualification Program

③ For any questions regarding access to documents and the protection of personal information, please contact Emploi-Québec

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Introduction

This learning guide is made up of modules for on-the-job training as an operator of complete surface water treatment station, Job P5a.

Using this guide, apprentices will learn all about the occupation under the supervision of experienced workers, called journeymen, and gain recognition of their new skills. The journeymen will evaluate their performance at each stage of the apprenticeship and ensure that their skills meet the prescribed standards.

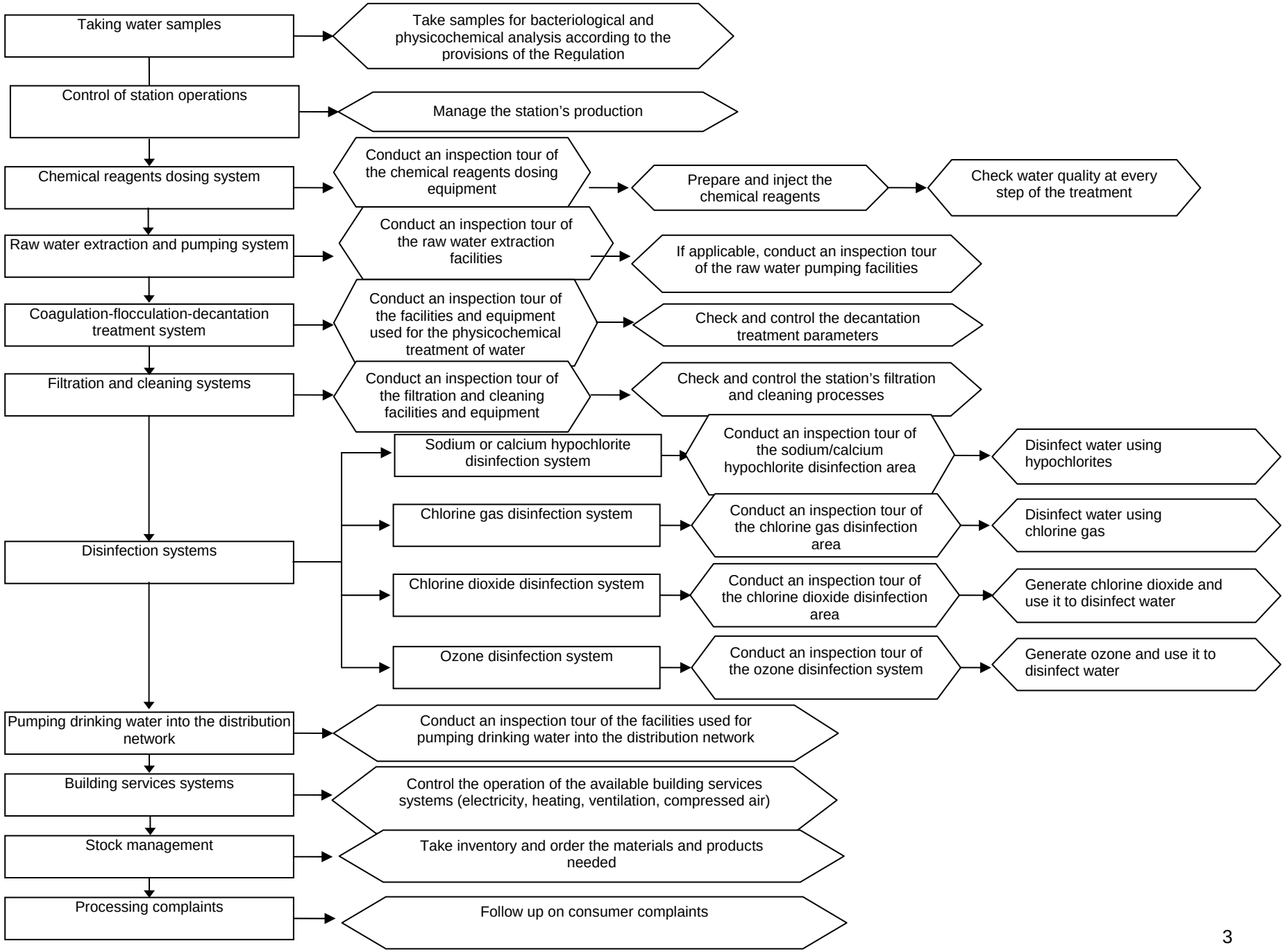
The modules and tasks can be taught in the order deemed most appropriate at any given plant.

Suggestions and explanations on how to use this learning guide are incorporated into the Journeyman's Guide.

IMPORTANT

Apprentices are responsible for the safekeeping of this guide, as it is the only document recording the details of their apprenticeship.

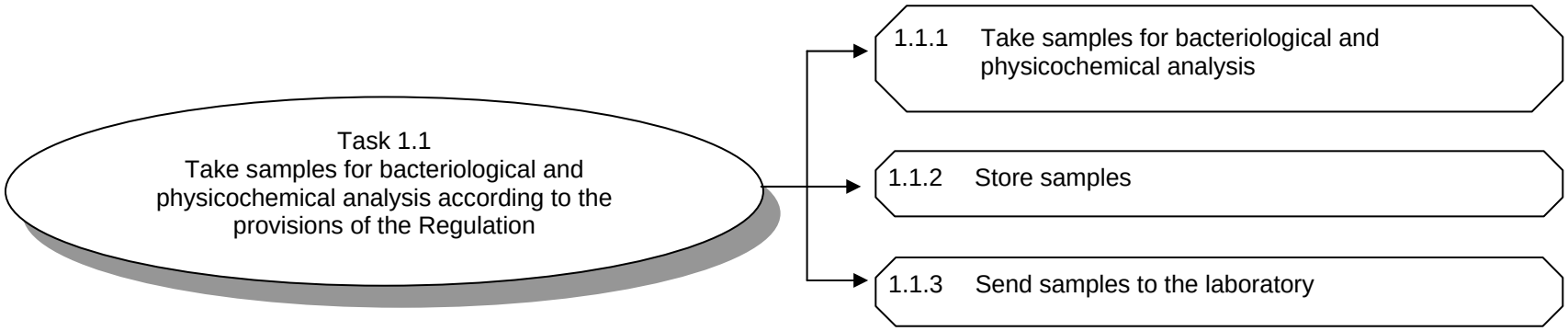
Operation of a Complete Surface Water Treatment Station (P5a)



Module 1

Taking Water Samples

Job Skill:
Take water samples according to the provisions of the Regulation



1. THE APPRENTICE HAS TAKEN SAMPLES IN THE FOLLOWING SITUATIONS. TICK OR SPECIFY:

- Control of raw water treatment ☐
- Control of decantation outlet treatment ☐
- Control of filtration outlet treatment ☐
- Control of reserve outlet treatment ☐
- Control of treatment following disinfection ☐
- Samples taken following consumer's complaint ☐
- Other _____
  _____
  _____

2. COMMENTS OR DETAILS:

_____

_____

_____

_____

_____

_____

Job Skill: Take water samples according to the provisions of the Regulation

Task 1.1 Take samples for bacteriological and physicochemical analysis according to the provisions of the Regulation		
	Steps	**References & Work Aids**
1.1.1 Take samples for bacteriological and physicochemical analysis		
☐	Take samples according to the sample taking method set out in the Regulation	**T** Sample taking and storing procedures **R** Sampling program
1.1.2 Store samples		
☐	Explain proper storage and preservation conditions and how quickly the samples must be sent to the laboratory	**T** Sample taking and storing procedures
☐	Store the samples according to the reference materials provided by the Ministère de l'Environnement	
1.1.3 Send samples to the laboratory		
☐	Fill out the test request form(s) according to the established protocol	**R** Test request forms provided by an accredited laboratory
☐	Send the samples to an accredited laboratory by the time and as per the procedures set out in the Regulation	**T** Sample taking and storing procedures

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

We, the undersigned, hereby certify that the Apprentice has mastered Module 1

"Taking Water Samples"

Signature of the Apprentice _____

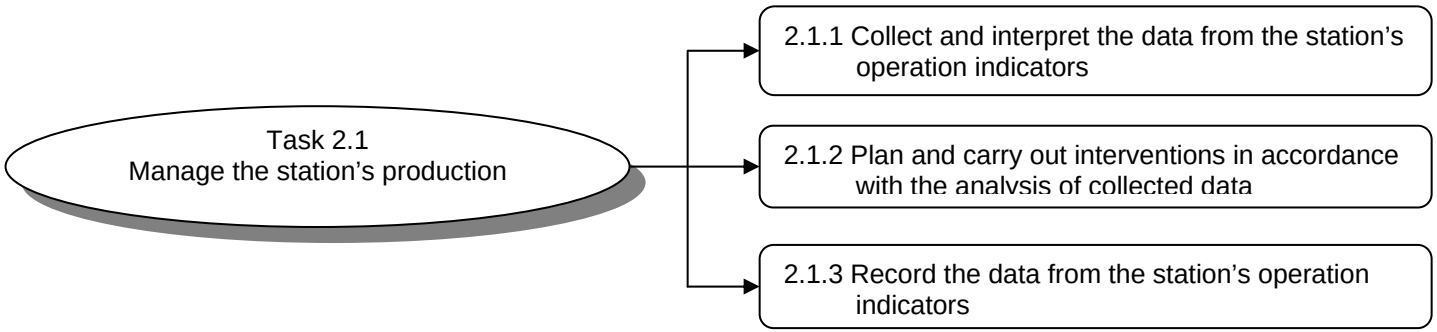
Signature of the Journeyman _____

Date _____ **Signature of the Employer** _____

Module 2

Control of Station Operations

Job Skill:
Control the station's operations



1. The data mandatory under the Regulation respecting the quality of drinking water have been recorded in the Document Log:

   Recordable measures:

   - Residual chlorine ☐
   - pH ☐
   - Temperature ☐
   - Treated water flow rate ☐
   - Turbidity ☐

Job Skill: Control the station's operations

Task 2.1 Manage the station's production		
	Steps	**References & Work Aids**
2.1.1 Collect and interpret the data from the station's operation indicators		
☐	Describe the operation of the control system and its importance for the station's operation	**R** Operation manual
☐	Describe the type of information to be collected to ensure control of the operation and meet water disinfection objectives	**T** Control of operation **R** Regulation respecting the quality of drinking water
☐	Use collected data to assess the station's consumption and production needs	
2.1.2 Plan and carry out interventions in accordance with the analysis of collected data		
☐	Describe the routing of water on the map of the station	**R** Map of station
☐	Locate, on the map of facilities, the main facilities and equipment of the station	
☐	Describe each active equipment	
☐	Explain the importance of the equipment rotation principle	**R** Preventive maintenance program
☐	Verify the operating parameters of the filters and take appropriate measures	
☐	Take appropriate operational measures following an analysis of the collected information (production, volume of water in reserve, water quality, regulations, maintenance, etc.)	**T** Control of operation **R** Operation manual **R** Manufacturer's manuals
2.1.3 Record the data from the station's operation indicators		
☐	Record any noteworthy data in the daily log	**T** Control of operation **R** Operating log
☐	Compile the data in a monthly and annual report	**R** Operator's procedure
☐	Compile and record in a detailed, accurate and legible manner in the document log the required information in accordance with the Regulation's instruction (residual chlorine, pH, temperature, treated water flow rate, turbidity)	**R** Document Log

Journeyman's initials:		**Apprentice's initials:**	

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T: Training aids provided as part of earlier training

We, the undersigned, hereby certify that the Apprentice has mastered Module 2

"Control of Station Operations"

Signature of the Apprentice _____

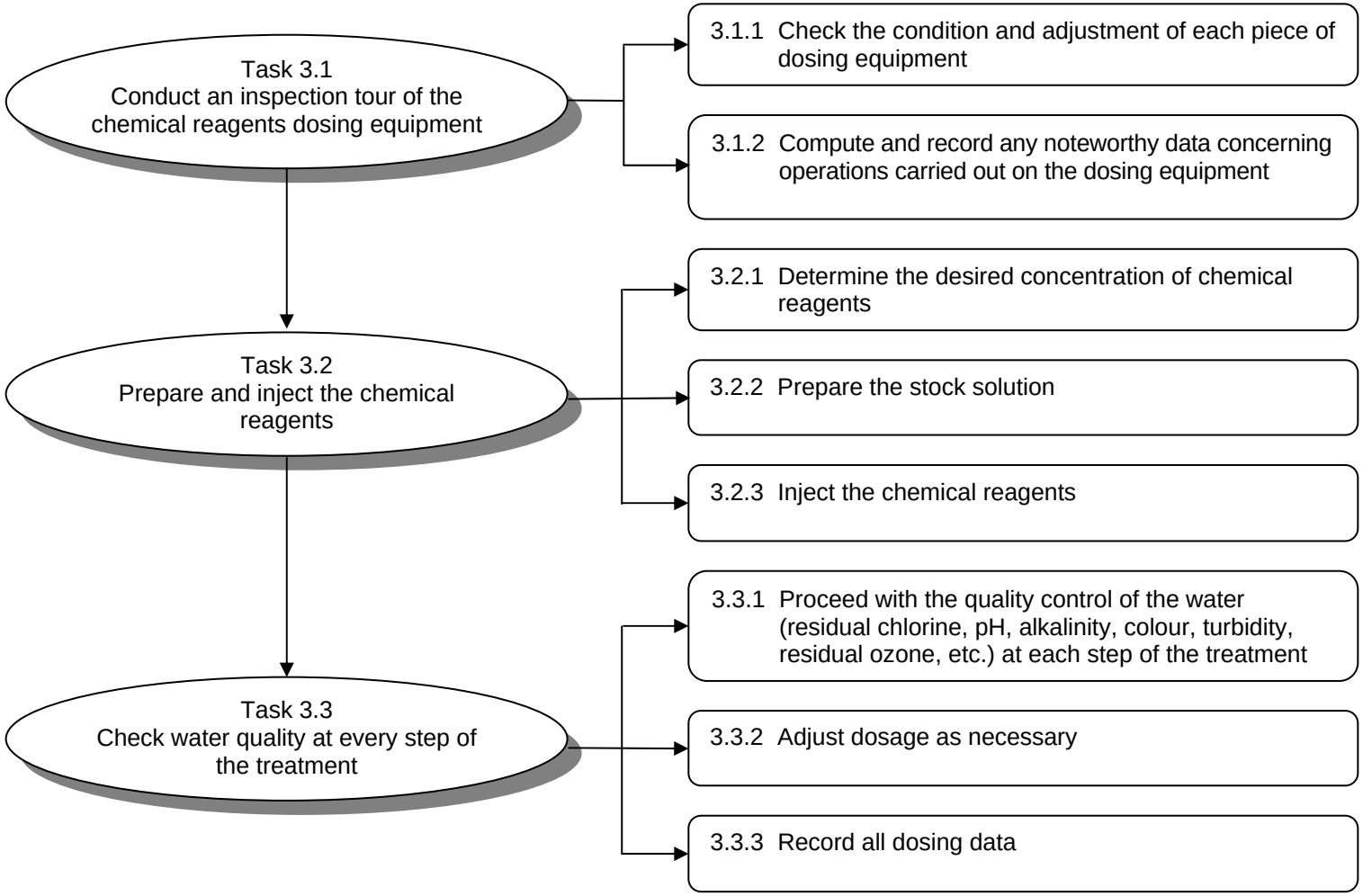
Signature of the Journeyman _____

Date _____ **Signature of the Employer** _____

Module 3

Chemical Reagents Dosing System

Job Skill:
Operate the chemical reagents dosing system



1. THE APPRENTICE HAS WORKED WITH THE FOLLOWING TYPES OF EQUIPMENT AND CHEMICAL REAGENTS:
Enter the dosed product and type of equipment in the spaces provided, e.g., liquid alum/diaphragm pump

Equipment **Products**	**Dosing Pump**	**Volumetric Feeder**	**Saturator Feeder**	**Injection System (Gas)**
Coagulant: (alum, iron chloride, etc.)	/	/	/	/
	/	/	/	/
Flocculant: (polyelectrolyte polymers, etc.)	/	/	/	/
	/	/	/	/
Water softener: (sodium carbonate, etc.)	/	/	/	/
	/	/	/	/
Oxidizing agent: (chlorine, chlorine dioxide, ozone)	/	/	/	/
	/	/	/	/
pH correcting agent: (sodium hydroxide, sulfuric acid, lime, etc.)	/	/	/	/
	/	/	/	/
Corrosion inhibitor: (polyphosphate, etc.)	/	/	/	/
	/	/	/	/

2. THE APPRENTICE HAS LEARNED THIS TASK WHILE DOSING FOR THE FOLLOWING:

Control steps Type of analysis	Raw Water	Decantation Outlet	Filters Outlet	Following Disinfection	Reserve Outlet	Other
pH						
Turbidity						
Residual chlorine						
Alkalinity						
Hardness						
Colour						
Microbiologic						
Other						

3. REMARKS OR DETAILS:

_____

_____

_____

_____

_____

Job Skill: Operate the chemical reagents dosing system

Task 3.1 Conduct an inspection tour of the chemical reagents dosing equipment		
	Steps	**References & Work Aids**
3.1.1	**Check the condition and adjustment of each piece of dosing equipment**	
☐	Describe the operation of each piece of chemical reagents dosing equipment in the station	**R** Manufacturer's manual **T** Chemical reagents **T** Chemical reagents dosing system
☐	Set calibration curves for each type of dosing systems (drop test) used in the station	**R** Calibration procedure
☐	Inspect each piece of equipment according to the established testing procedure	
☐	Describe the appropriate action needed in case of malfunction or discrepancy in normal values and follow instructions	**R** Manufacturer's manual
☐	Describe the preventive maintenance to be provided for each piece of chemical reagents dosing equipment	
3.1.2	**Compute and record any noteworthy data concerning operations carried out on the dosing system**	
☐	Compute and record accurately, precisely and legibly the information about the operation of each piece of dosing equipment	**R** Tour report

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

Task 3.2 Prepare and inject the chemical reagents		
	Steps	**References & Work Aids**
3.2.1	**Determine the desired concentration of chemical reagents**	
☐	Describe each chemical reagent used in the station	**T** Chemical reagents
☐	Describe the health and safety risks associated with the use of each chemical reagent	**R** Technical spec sheets
☐	Compute the necessary quantities to be mixed to obtain the desired concentration according to needs	**T** Computation guide for stock solution
3.2.2	**Prepare the stock solution**	
☐	Use the necessary protection equipment	**R** OSH regulations
☐	Prepare the stock solution mix according to the established procedure	**T** Computation guide for stock solution **R** Manufacturer's manual
3.2.3	**Inject the chemical reagents**	
	Proceed with dosing each of the chemical reagent types	**R** Established procedure (drop test) **T** Chemical reagents worksheet **T** Stoichiometric factors, if needed **R** Manufacturer's manual

Journeyman's initials:		**Apprentice's initials:**	

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Task 3.3 Check water quality at every step of the treatment		
	Steps	**References & Work Aids**
3.3.1	**Proceed with the quality control of the water (residual chlorine, pH, alkalinity, colour, turbidity, residual ozone, etc.) at each step of the treatment**	
☐	Describe each step of water quality control in the process	**R** Operator's procedure
☐	Determine the parameters of the water to be checked according to the process control step	**T** Chemical reagents
☐	Describe the effects of adding the chemical reagents used in the process on the water treatment of the station	
☐	Compute and record in the operating log the results obtained in the control steps	**R** Operating log
3.3.2	**Adjust dosage as necessary**	
☐	Analyze the samples taken during the steps of the treatment and compare the results with the operator's objectives	**R** Operator's procedure
☐	Identify the required quantity of chemical reagents	
☐	If necessary, carry out a jar test according to the procedure in effect	**T** Jar test procedure
☐	Adjust dosage according to the results obtained	**R** Procedure in effect (drop test)
☐	Describe the dosage adjustment required for the chemical cleansing of the membrane, if applicable	
3.3.3	**Record all dosing data**	
☐	Provide a detailed, accurate and legible listing of all noteworthy data on the dosage adjustments report	**R** Operating log

Journeyman's initials:		**Apprentice's initials:**	

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T: Training aids provided as part of earlier training

We, the undersigned, hereby certify that the Apprentice has mastered Module 3

"Chemical Reagents Dosing System"

Signature of the Apprentice _____

Signature of the Journeyman _____

Date _____ **Signature of the Employer** _____

Module 4

Raw Water Extraction and Pumping System

Job Skill:
Operate the raw water extraction and pumping system

Task 4.1
Conduct an inspection tour of the raw water extraction facilities

- 4.1.1 Inspect and verify the operation of the surface water extraction system
- 4.1.2 Inspect and verify the condition of the raw water pipes and valves, if applicable

Task 4.2
If applicable, conduct an inspection tour of the raw water pumping facilities

- 4.2.1 Inspect and verify the operation of the screening or raking system, if applicable
- 4.2.2 Inspect and verify the operation of the pumps
- 4.2.3 Inspect and verify the pump flow rate or the number of active pumps according to the station's production capacity
- 4.2.4 Inspect and verify the operation of the valves
- 4.2.5 Inspect and verify the operation of the bleed valves
- 4.2.6 Inspect and verify the operation of the available raw water measuring and control instruments
- 4.2.7 Inspect and verify the raw water storage tanks, if any
- 4.2.8 Carry out the raw water sampling necessary to control the treatment

1. THE APPRENTICE HAS WORKED WITH THE FOLLOWING TYPES OF EQUIPMENT AVAILABLE AT THE STATION. TICK OR SPECIFY:
(Give the type whenever possible)

- Mechanical rakes ❑
- Screens ❑
- Raw water pumps ❑
- Storage tanks ❑
- Valves ❑
- Bleed valves ❑
- Other: _____
  _____
  _____

2. THE APPRENTICE HAS LEARNED TO USE THE FOLLOWING INSTRUMENTS:
(Give the type whenever possible)

- Voltmeter ❑
- Ammeter ❑
- Piezometer ❑
- Flowmeter ❑
- Pressure gauge ❑
- Level alarm or float ❑
- Water level measuring devices ❑
- Other _____
  _____
  _____

Job Skill: Operate the raw water extraction and pumping system

Task 4.1 Conduct an inspection tour of the raw water extraction facilities		
	Steps	**References & Work Aids**
4.1.1 Inspect and verify the operation of the surface water extraction system		
☐	Describe the operation of the surface water extraction system	**R** Map of facilities
☐	Locate the water supply points both on the maps and on site	
☐	Describe the potential risks in facilities with surface water supply, list the means to detect them as well as the checks that must be carried out routinely	**T** Surface water extraction facilities
☐	Describe the inspection tour procedure, including frequency, route and order of verifications	**R** Inspection manual or Tour report
☐	Conduct an inspection tour of the site, observe and identify all abnormal or critical situations	
☐	Describe the appropriate corrective measures according to the situations that may be found.	**T** Surface water extraction facilities
☐	Describe the preventive maintenance needed on the surface water system	**R** Manufacturer's manual
4.1.2 Inspect and verify the condition of the raw water pipes and valves, if applicable		
☐	Locate the raw water pipes and valves both on the maps and on site	**R** Map of facilities
☐	If applicable, conduct a visual inspection of the pipes and valves	**R** Inspection manual or Tour report
☐	Describe the pipe and valve maintenance procedure required by the operator	**R** Operator's procedure

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

Task 4.2 If applicable, conduct an inspection tour of the raw water pumping facilities		
	Steps	**References & Work Aids**
4.2.1 Inspect and verify the operation of the screening or raking system, if applicable		
✓	**A. Verify the rake or screen**	
☐	Describe the raking or screening system operation	
☐	Describe the deterioration factors or indicators of a rake or screen, as well as the consequences of malfunction	**T** Screening and raking
☐	Clean the rake or screen	**R** Manufacturer's manual
☐	Verify the operation of the rake or screen	
☐	If applicable, carry out the appropriate corrective measures using indicator readings	
☐	Identify the potential risks and describe the appropriate corrective measures	**T** Screening and raking
☐	Describe the preventive maintenance needed on the raking or screening system	**R** Manufacturer's manual
☐	**B. Record any noteworthy information on the raking or screening system**	
☐	Provide a detailed, accurate and legible listing of all noteworthy data on the condition of the raking or screening system	**T** Screening and raking **R** Tour sheet

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

4.2.2 Inspect and verify the operation of the pumps		
✔	**A. Verify the pumps**	
☐	Locate the raw water pumping facilities on the map of the station	**R** Map of station
☐	Describe the types of pumps and their main components	**T** Raw water pumps
☐	Explain the normal operating conditions of the pumps (capacity and operating levels) as well as the consequences of malfunction	
☐	Verify the operating and electromechanical parameters of each pump according to the established procedure	**T** Raw water pumps **R** Manufacturer's manual
☐	If applicable, carry out the appropriate corrective measures based on operating parameters	
☐	Identify potential malfunction situations and describe the appropriate corrective measures	
☐	Describe the preventive maintenance needed on the raw water extraction pumps	Maintenance chart (Module 4) **R** Manufacturer's manual
✔	**B. Record any noteworthy information on the pumps**	
☐	Provide a detailed, accurate and legible listing of all noteworthy data on the operation of the pumps	**T** Raw water pumps **R** Tour sheet

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

	Steps	References & Work Aids
4.2.3 Inspect and verify the pump flow rate or the number of active pumps according to the station's production capacity		
✔	**A. Verify the flow rate and pressure of the raw water pumping facilities**	
☐	Describe the station's raw water extraction system	**R** Operation manual
☐	Either onsite or by remote sensing, identify the condition of the pumps	**R** Map of network and map of raw water pumping facilities
☐	Verify the flow rate and pressure according to the operating capacity of the extraction system and production needs	**T** System of units
☐	Verify that the number of active pumps is sufficient for the extraction capacity and production needs	**T** Raw water pumps
☐	Describe the normal operation values and the appropriate measures needed in case of discrepancy	
☐	Identify potential problems that may affect the drinking water production capacity and describe the appropriate corrective measures	
✔	**B. Record any noteworthy information on the pumps**	
☐	Provide a detailed, accurate and legible listing of all noteworthy data on the operating capacity of the pumps	**R** Daily log or Tour report **T** Raw water pumps

Journeyman's initials:		**Apprentice's initials:**	

R: **Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV**

T: **Training aids provided as part of earlier training**

	Steps	References & Work Aids
4.2.4 Inspect and verify the operation of the valves		
☐	Locate the valves of the raw water pumping system on the map of facilities	**R** Map of raw water pumping facilities
☐	Describe the type of valves and explain optimum operating conditions	**T** Valves **R** Manufacturers' manuals
☐	Verify the position of the valves and carry out the appropriate corrective measures	
☐	Verify the condition of the types of valves (maneuverability, force required to operate, seal, noise) and carry out appropriate corrective measures	
☐	Verify and adjust the self-regulating valves, if applicable, to obtain the required pressure or flow rate	
☐	Identify potential problems that may affect production volumes and describe the appropriate corrective measures	
☐	Describe the preventive maintenance needed on the valves	Maintenance chart (Module 4) **R** Manufacturer's manual

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

4.2.5 Inspect and verify the operation of the bleed valves		
☐	Locate the air bleed valves on the map of the raw water pumping facilities	**R** Map of raw water facilities
☐	Describe the operation of the air bleed valves and explain their role in the process	**R** Manufacturer's manual
☐	Verify the operation of the air bleed valves	
☐	Explain the consequences of the presence of air on the operation of the pumps and pipes	**T** Air bleed valves
☐	Describe the preventive maintenance needed on the bleed valves to eliminate potential problems	Maintenance chart (Module 4)
☐	Record any noteworthy information following the inspection of the bleed valves	**R** Tour sheet **T** Air bleed valves
Journeyman's initials:		**Apprentice's initials:**

4.2.6 Inspect and verify the operation of the available raw water measuring and control instruments		
☐	Make a list of all measuring and control instruments used with raw water and explain their role	**R** Manufacturer's manual
☐	Describe the normal operating conditions for each raw water measuring and control instrument	**R** Operation manual
☐	Verify the operating condition of each measuring and control instrument according to the established procedure	**R** Manufacturer's manual **R** Operation manual
☐	Verify the validity of the measurements taken and describe the appropriate measures needed in case of malfunction	
☐	If applicable, calibrate each measuring and control instrument (turbidimeter and others) used with raw water	**R** Manufacturer's manual
☐	Describe the preventive maintenance required on measuring and control instruments	
Journeyman's initials:		**Apprentice's initials:**

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

	Steps	References & Work Aids
4.2.7 Inspect and verify the raw water storage tanks, if any		
✔	**A. Verify the tanks**	
☐	Locate the water tanks on the map of extraction facilities	**R** Map of extraction facilities
☐	Describe the possible physical deterioration factors of the raw water tanks	**T** Storage tanks
☐	Explain the potential risks of contamination as well as their consequences on water quality	
☐	Verify the physical integrity of the tanks, draw conclusions from the findings and, if applicable, take the appropriate corrective measures as per established procedures	**T** Storage tanks **R** OHS confined spaces regulation
☐	Take readings from the raw water level measuring and control instruments in the tanks and compare the results with the critical levels to be complied with	**T** Measuring instruments
☐	If applicable, adjust the flow rate according to tank levels and needs	
☐	Describe the normal operating values and the appropriate measures needed in case of discrepancy	
☐	Identify the potential risks and describe the appropriate corrective measures	**T** Storage tanks
☐	Describe the preventive maintenance needed on the tanks	Maintenance chart (Module 4)
✔	**B. Record any noteworthy information on the tanks**	
☐	Provide a detailed, accurate and legible listing of all noteworthy data on the water level in the raw water tanks	**R** Tour sheet

Journeyman's initials:		**Apprentice's initials:**	

4.2.8 Carry out the raw water sampling necessary to control the treatment		
☐	Take a pumped raw water sample as per established procedures	**T** Sample taking and storing procedures

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

We, the undersigned, hereby certify that the Apprentice has mastered Module 4

"Raw Water Extraction and Pumping System"

Signature of the Apprentice _____

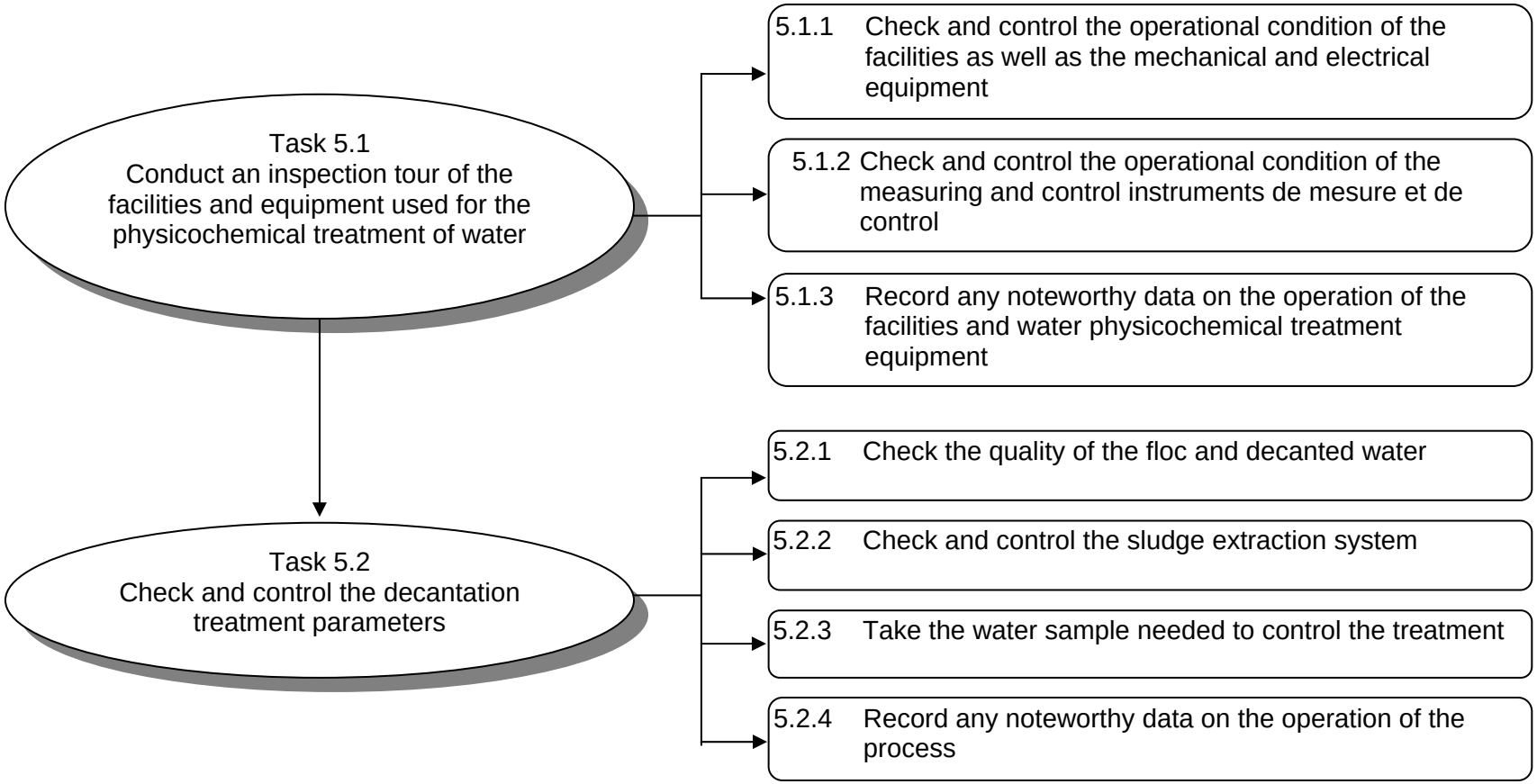
Signature of the Journeyman _____

Date _____ **Signature of the Employer** _____

Module 5

Coagulation-Flocculation-Decantation Treatment System

Job Skill:
Operate the coagulation-flocculation-decantation treatment system



1. THE APPRENTICE HAS WORKED WITH THE FOLLOWING PROCESSES, FACILITIES AND EQUIPMENT:

◊ Types of processes:

- Pulsed sludge bed decantation ❑
- Internal sludge recirculation decantation ❑
- External recirculation lamellar decantation of integrated sludge thickening ❑
- Weighted floc lamellar decantation ❑
- Other: _____

◊ Facilities and equipment:

- Pumps ❑
- Valves ❑
- Agitators ❑
- Air chambers ❑
- Basin ❑
- Chamber ❑
- Booster ❑
- Foot valve ❑
- Other _____

1. THE APPRENTICE HAS LEARNED TO USE THE FOLLOWING INSTRUMENTS:

- pH meter ❑
- Flowmeter ❑
- Pressure gauge ❑
- Turbidimeter ❑
- Specific colour analyzer ❑
- Load analyzer ❑
- Other: _____

2. REMARKS OR DETAILS:

_____

Job Skill: Operate the coagulation-flocculation-decantation treatment system

Task 5.1 Conduct an inspection tour of the facilities and equipment used for the physicochemical treatment of water		
	Steps	**References & Work Aids**
5.1.1 Check and control the operational condition of the facilities as well as the mechanical and electrical equipment		
☐	Describe the types of facilities and the role of each mechanical or electrical equipment in the water physicochemical treatment system	**T** Coagulation-flocculation-decantation **R** Operation manual
☐	Verify the operating parameters of each facility and mechanical or electrical equipment according to the established procedure	**R** Operation manual **R** Tour sheet **R** Manufacturer's manual
☐	Describe the consequences of a malfunction or complete shutdown of the facilities and equipment of the water physicochemical treatment system	
☐	Describe the procedure in effect in case of malfunction of the facility or equipment	
☐	Describe the preventive maintenance needed on the facilities and the water physicochemical treatment equipment	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

	Steps	References & Work Aids
5.1.2 Check and control the operational condition of the measuring and control instruments (turbidimeters, particle charge detectors, pH meters, etc.)		
☐	Make a list of the measuring and control instruments used and describe the role of each in the station's coagulation-flocculation-decantation process	**T** Measuring instruments
☐	Verify the operating condition of each measuring and control instruments according to the established procedure	**R** Manufacturer's manual
☐	Compare the values obtained to the reference values set for proper operation and describe the appropriate measures needed in case of malfunction	
☐	If applicable, calibrate the measuring and control instruments	
☐	Describe the preventive maintenance needed on each of the physicochemical treatment measuring and control instruments	
5.1.3 Record any noteworthy data on the operation of the water physicochemical treatment facilities and equipment		
☐	Provide a detailed, accurate and legible listing of all measures taken on the physicochemical treatment facilities, equipment and measuring and control instruments according to the operator's schedule	**R** Tour sheet **T** Coagulation-flocculation-decantation

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

Task 5.2 Check and control the decantation treatment parameters		
	Steps	**References & Work Aids**
5.2.1 Check the quality of the floc and decanted water		
☐	Describe the operation of the coagulation-flocculation-decantation process used in the station	**T** Coagulation-flocculation-decantation
☐	Describe the operation of the station's settling tank type	**R** Manufacturer's or operation manual
☐	Describe the limit operating values and the appropriate measures needed in case of discrepancy	
☐	Verify and adjust the operating parameters of the process equipment to obtain quality floc and decanted water	
☐	Describe the physical factors that affect the quality of the floc (agitation speed, sludge bed, etc.) and decanted water	**T** Coagulation-flocculation-decantation
☐	Describe the appropriate measures needed in case of poor floc or decanted water quality	
5.2.2 Check and control the sludge extraction system		
☐	Describe the sludge management process according to the type of facility of the station	**T** Coagulation-flocculation-decantation **R** Manufacturer's or operation manual
☐	Make the required adjustments based on controlled parameters	**R** Operator's procedure
5.2.3 Take the water sample needed to control the treatment		
☐	Take a water sample at the settling tank outlet according to the established procedure	**T** Sample taking and storing procedures
5.2.4 Record any noteworthy data on the operation of the process		
☐	Provide a detailed, accurate and legible listing of the operating parameters of the process	**R** Tour sheet **T** Coagulation-flocculation-decantation

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

We, the undersigned, hereby certify that the Apprentice has mastered Module 5

"Coagulation-Flocculation-Decantation Treatment System"

Signature of the Apprentice _____

Signature of the Journeyman _____

Date _____ **Signature of the Employer** _____

Module 6

Filtration and Cleaning Systems

Job Skill:
Operate the filtration and cleaning systems

Task 6.1
Conduct an inspection tour of the filtration and cleaning facilities and equipment

- 6.1.1 Check and control the operational condition of the facilities and mechanical or electrical equipment
- 6.1.2 Check and control the operational condition of the measuring and control instruments
- 6.1.3 Record any noteworthy information on the operation of the filtration and cleaning facilities and equipment

Task 6.2
Check and control the station's filtration and cleaning processes

- 6.2.1 Check and control the filtration quality parameters
- 6.2.2 Clean the filters or membrane
- 6.2.3 Take the water samples necessary to control the treatment
- 6.2.4 Record any noteworthy information on the filtration and cleaning processes

1. THE APPRENTICE HAS WORKED WITH THE FOLLOWING FILTRATION AND CLEANING FACILITIES AND EQUIPMENT:

◊ Types of filtration processes:

- Rapid cleaning intermittent filtration ❑
- Integrated cleaning filtration ❑
- Biological activated carbon filtration ❑
- Precoat filtration (diatomaceous earth) ❑
- Slow sand filtration ❑
- Granular activated carbon filtration ❑
- Direct filtration ❑
- Membrane filtration ❑

◊ Types of equipment:

- Actuator ❑
- Air injector ❑
- Booster ❑
- Cleaning pump ❑
- Control valves ❑
- Other: _____
  _____

◊ Types of cleaning:

- Air and water ❑
- Surface sweep and water ❑

2. THE APPRENTICE HAS LEARNED TO USE THE FOLLOWING INSTRUMENTS:

- Flowmeter ❑
- Pressure indicator ❑
- Loss-of-head gauge ❑
- Other:_____
  _____
  _____

Mandatory instrument according to the Regulation

- Integrated turbidimeter ☐

3. COMMENTS OR DETAILS:

_____

_____

Job Skill: Operate the filtration and cleaning systems

Task 6.1 Conduct an inspection tour of the filtration and cleaning facilities and equipment (ascending, descending or membrane gravity type)		
	Steps	**References & Work Aids**
6.1.1	**Check and control the operational condition of the facilities (filtering units and media, etc.) and mechanical or electrical equipment (valves, compressors, motors, actuators, air booster, air bleed valve, membrane pump, booster pump, etc.)**	
☐	Describe the types of facilities and the role of each piece of mechanical or electrical equipment in the filtration and cleaning system	**T** Filtration and cleaning system **R** Operation manual
☐	Check the operating parameters of each facility and mechanical or electrical equipment according to the established procedure	**R** Operation manual
☐	Describe any possible malfunctions of the filtration and cleaning system	**T** Filtration and cleaning system
☐	Describe the established procedure in case of facility or equipment malfunction	**R** Manufacturer's manual
☐	Describe the preventive maintenance needed on the filtration and cleaning facilities and equipment	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

	Steps	References & Work Aids
6.1.2	**Check and control the operational condition of the measuring and control instruments (turbidimeters, ammeters, voltmeters, pressure gauges, loss-of-head gauges (differential pressure, transmembrane pressure, etc.) and colour detectors (residual $KmnO_4$ analyzer, etc.)**	
☐	Make a list of all measuring and control instruments used and describe their role in the filtration process of the station	**T** Measuring instruments
☐	Describe the normal operating conditions of each measuring and control instrument	**R** Manufacturer's and operation manual
☐	Check the operational condition of each measuring and control instrument according to the established procedure	**R** Manufacturer's manual
☐	Compare the values obtained to the reference values set for proper operation and describe the appropriate measures needed in case of malfunction	
☐	Calibrate any measuring and control instruments	
☐	Describe the preventive maintenance for each of the measuring and control instruments used in the filtration process	
6.1.3	**Record any noteworthy information on the operation of the filtration and cleaning facilities and equipment**	
☐	Provide a detailed, accurate and legible listing of all measures taken on the facilities, equipment and measuring and control instruments of the filtration and cleaning system according to the operator's schedule	**T** Filtration and cleaning systems **R** Tour report

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

Task 6.2 Check and control the station's filtration and cleaning processes		
	Steps	**References & Work Aids**
6.2.1 Check and control the filtration quality parameters (iron, manganese, turbidity, separation rate, duration of filtration cycle, loss of head, permeability rate, conductivity, heterotrophic bacteria, etc.)		
☐	Describe the role of filtration in the water physicochemical treatment process chain	**T** Filtration and cleaning system
☐	Describe the characteristics of filters and filtering media	**R** Manufacturer's and operation manual
☐	Describe the maximum operating capacity of the filters and the appropriate measures needed in case of discrepancy	**R** Manufacturer's and operation manual
☐	Check and control the filtration operating parameters according to the established procedure	**R** Operator's procedure
☐	Describe the preventive measures needed to ensure optimum filtration process operation	**T** Filtration and cleaning systems
6.2.2 Clean the filters or membrane		
☐	Describe the cleaning principles and operational modes (counterflow, integrated, tangential, etc.)	**R** Manufacturer's and operation manual
☐	Describe the parameters that must be controlled for effective cleaning	**T** Filtration and cleaning systems
☐	Describe the consequences of defective cleaning (filtering medium failure, conglomerate, mud balls, filtering medium expansion, etc.)	
☐	Clean the filters or filtering membrane according to the established procedure	**R** Operation manual
☐	Adjust the cleaning water flow rate for optimum cleaning, if applicable	**R** Manufacturer's manual
☐	Adjust the duration of the cleaning steps for optimum cleaning	
☐	Describe the appropriate measures needed in case of discrepancies	
☐	Describe the preventive maintenance required for the filters according to the manufacturer's procedure	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

6.2.3	**Take the water samples necessary to control the treatment**	
☐	Take a water sample at the filters outlet according to the established procedure	**T** Sample taking and storing procedures
6.2.4	**Record any noteworthy information on the filtration and cleaning processes**	
☐	Provide a detailed, accurate and legible listing of the quality follow-up parameters of the filtration and cleaning process	**R** Tour report or operating log **T** Filtration and cleaning system
☐	Compile and log in a detailed, accurate and legible manner turbidity information at the outlet of each filter at the frequency set out in the Regulation	**R** Document log **R** Regulation respecting the quality of drinking water

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV
T: Training aids provided as part of earlier training

We, the undersigned, hereby certify that the Apprentice has mastered Module 6

"Filtration and Cleaning Systems"

Signature of the Apprentice _____

Signature of the Journeyman _____

Date _____ **Signature of the Employer** _____

Module 7

Disinfection Systems

Job Skill:
Operate one or more disinfection systems (using sodium or calcium hypochlorites, chlorine gas, chlorine dioxide, or ozone)

7 A - Sodium or Calcium Hypochlorite Disinfection System (if applicable)

7 B - Chlorine Gas Disinfection System (if applicable)

7 C - Chlorine Dioxide Disinfection System (if applicable)

7 D - Ozone Disinfection System (if applicable)

1. **THE APPRENTICE HAS WORKED WITH THE FOLLOWING DISINFECTION SYSTEMS:**

	MAJOR EQUIPMENT
7. A Hypochlorites - **Sodium** ☐ - **Calcium** ☐	
7. B Chlorine gas ☐	
7. C Chlorine dioxide ☐	
7. D Ozone ☐	

2. **THE APPRENTICE HAS LEARNED TO USE THE FOLLOWING INSTRUMENTS:**

Compulsory according to the Regulation:

- ◊ Thermometer ☐
- ◊ pH meter ☐
- ◊ Flowmeter ☐
- ◊ Integrated chlorine analyzer ☐

- ◊ Residual chlorine analyzer ☐
- ◊ Residual ozone analyzer ☐
- ◊ Dew point analyzer ☐
- ◊ Pressure indicator ☐
- ◊ Scale ☐
- ◊ Rotameter ☐

Other _____

_____

_____

Note**:** All measuring instruments used must comply with the requirements indicated in the reference book titled “Standard Methods for Examination of Water and Wastewater”

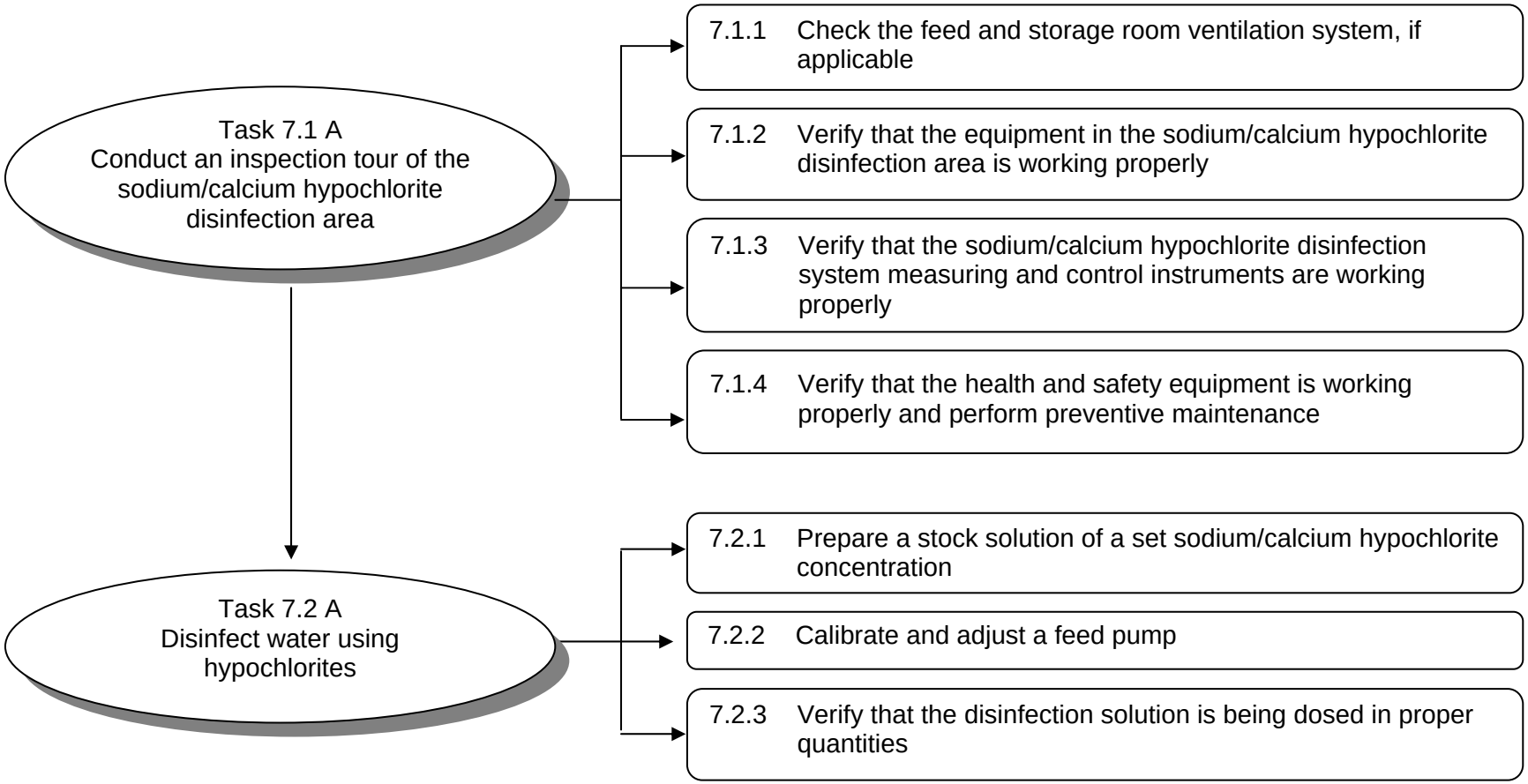
3. **COMMENTS OR DETAILS:**

_____

_____

_____

7. A- Sodium or Calcium Hypochlorite Disinfection System (if applicable)



7. A - Sodium or Calcium Hypochlorite Disinfection System

Task 7.1 A Conduct an inspection tour of the sodium/calcium hypochlorite disinfection area			
Steps		**References & Work Aids**	
7.1.1 Check the feed and storage room ventilation system, if applicable			
☐	Describe the risks related to improper ventilation in feed and storage areas	**R**	OSH and WHMIS regulations
☐	Ensure that the ventilator is working properly and that the feed and storage room is well aerated	**R** **R**	Manufacturer's manual OSH regulations
☐	Describe the preventive maintenance needed to identify potential problems with the ventilation system	 **R**	Maintenance chart (Module 4) Manufacturer's manual
Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

	Steps	References & Work Aids
7.1.2	**Verify that the equipment in the sodium/calcium hypochlorite disinfection area is working properly**	
✔	**A. Ensure that the equipment is working properly**	
☐	Locate the chlorination equipment on the map of the station	**R** Map of station
☐	Give a general explanation of how the equipment works	
☐	Check the physical integrity of the hypochlorite solution storage tanks (e.g., salt deposits)	
☐	Verify the hypochlorite level in the disinfection section storage tanks	
☐	Find the number of active pumps, assess their operational level and flush them as required	
☐	Find the active valves and measure and check their percentage of opening	
☐	Inspect the release valve and pipes and verify that the full dosage of hypochlorite solution is injected into the water to be treated	
☐	Identify potential malfunctions and take the appropriate corrective measures	**R** Hypochlorite disinfection equipment **R** Manufacturer's manual
☐	Describe the preventive maintenance to be provided on the disinfection equipment	**R** Maintenance chart (Module 7) **R** Manufacturer's manual
✔	**B. Record any noteworthy information on disinfection equipment**	
☐	Provide a detailed, accurate and legible listing of all operating parameters of the disinfection equipment examined	**R** Hypochlorite disinfection equipment **R** Operating report

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV
T: Training aids provided as part of earlier training

	Steps	References & Work Aids
7.1.3	**Verify that the chlorine gas disinfection area measuring and control instruments are working properly**	
☐	Describe each of the measuring and control instruments used (integrated and portable chlorine analyzers, pH meter, flowmeter, etc.) and check their operation according to the manufacturer's instructions	**T** Measuring instruments
☐	Describe malfunctions and appropriate measures	**R** Manufacturer's manual
☐	Carry out a reliability test on an integrated and on a portable chlorine analyzer	
☐	Calibrate the integrated chlorine analyzer according to the manufacturer's instructions	
☐	Calibrate the pH meter according to the manufacturer's instructions	
☐	Describe the preventive maintenance required for the chlorine analyzers and pH meter	**R** Manufacturer's manual **T** Maintenance chart (Module 7)

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

Steps		References & Work Aids
7.1.4 Verify that the health and safety equipment is working properly and give preventive maintenance		
☐	Check the operation and accessibility of all required health and safety equipment: shower, eyewash, safety goggles, self-contained breathing apparatus, extinguisher, apron, etc.	**R** Health and safety procedures in effect (handling drinking water treatment equipment, facilities and products)
☐	Describe the preventive maintenance needed on health and safety equipment	**T** Maintenance chart (Module 7)
Journeyman's initials:		**Apprentice's initials:**

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

Task 7.2 A Disinfect water using hypochlorites			
Steps		**References & Work Aids**	
7.2.1 Prepare a stock solution of a set sodium/calcium hypochlorite concentration			
☐	Describe the risks associated with handling a hypochlorite solution and the required safety conditions (wearing gloves, goggles, apron, etc.)	**R** WHMIS, OSH regulations	
☐	Periodically drain and clean the disinfection solution tank		
☐	Compute the amount of disinfectant required to reach the desired concentration level and meet the needs	**T** Calculating effective dosage	
☐	Prepare the hypochlorite stock solution from a concentrated hypochlorite solution according to the disinfection procedure		
Journeyman's initials:		**Apprentice's initials:**	
7.2.2 Calibrate and adjust a feed pump			
☐	Identify the type of pump and its mode of operation (variable or single speed, presence of needle valve, instrument loop, type of controls, etc.)	**R** Manufacturer's manual	
☐	Calibrate the pump for various operating range levels		
☐	Determine the proper disinfectant solution flow rate	**T** Calculating effective dosage	
☐	Identify the optimum working capacity of each type of pump and adjust it accordingly	**R** Manufacturer's manual	
☐	After calibration or adjustment, verify that the hypochlorite dosage is as required		
Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

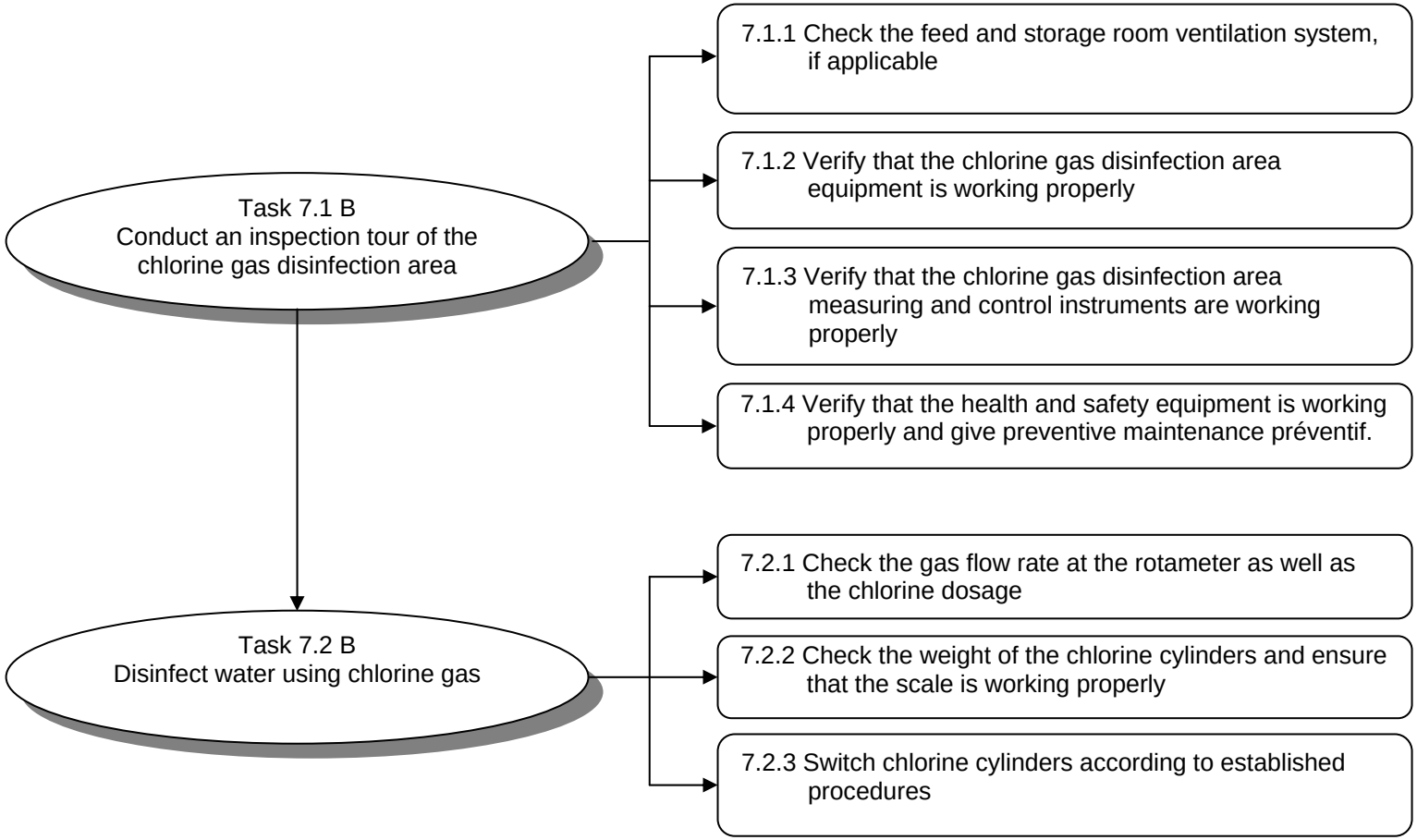
	Steps	References & Work Aids
7.2.3	**Verify that the disinfection solution is being dosed in proper quantities**	
✔	**A. Check dosage of disinfectant solution in compliance with the standard set out in the Regulation in effect**	
☐	Describe the effects of the chlorine water solution on microorganisms	
☐	Describe the effects and consequences of nitrogenous and organic matter on water chlorination	
☐	Describe the impact of pH, temperature and contact time on the disinfecting action of chlorine	
☐	Verify and adjust the disinfectant solution to ensure that standards are being met (amount of free residual chlorine leaving the station)	**R** Regulation respecting the quality of drinking water **T** Calculating effective dosage
☐	Verify the quality of the chlorine provided (e.g., agreement with supplier, test when in doubt)	
☐	Describe possible dosing equipment malfunctions and appropriate corrective action	**R** Hypochlorite disinfection equipment
✔	**B. Record any noteworthy information on dosage**	
☐	Provide a detailed, accurate and legible listing of all noteworthy data on dosage	**R** Hypochlorite disinfection equipment **R** Operating report

Journeyman's initials:		**Apprentice's initials:**	

R: **Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV**

T: **Training aids provided as part of earlier training**

7. B- Chlorine Gas Disinfection System (if applicable)



7. B - Chlorine Gas Disinfection System

Task 7.1 B Conduct an inspection tour of the chlorine gas disinfection area		
	Steps	**References & Work Aids**
7.1.1	**Check the feed and storage room ventilation system, if applicable**	
☐	Describe the risks associated with poor aeration in feed and storage rooms	**R** OSH regulations
☐	Ensure that the ventilator is working properly and that the feed and storage room is well aerated	**R** Manufacturer's manual **R** OSH regulations
☐	Describe the preventive maintenance needed to identify potential problems with the ventilation system	**R** Maintenance chart (Module 7) **R** Manufacturer's manual

Journeyman's initials:		**Apprentice's initials:**	

R: **Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV**

T: **Training aids provided as part of earlier training**

	Steps	References & Work Aids
7.1.2	**Verify that the chlorine gas disinfection area equipment is working properly**	
✔	**A. Verify the gas cylinder switchover operation**	
☐	Test the switchover operation as specified by the manufacturer and as per existing procedures	**R** Manufacturer's manual
☐	Identify any possible malfunction, analyze causes and indicate appropriate corrective measures	
✔	**B. Check the chlorine gas leak detector and the chlorine regulating vent**	
☐	Describe how the chlorine gas leak detector, regulator vent and related equipment work	**R** Manufacturer's manual
☐	Verify whether the system reacts to the presence of chlorine gas according to detection procedures	**R** OSH regulations
☐	Verify that the vacuum regulator vent and associated equipment do not emit chlorine into the air	
☐	Describe possible malfunctions and appropriate corrective action	**R** WHMIS and OSH regulations **R** Manufacturer's manual (Leak procedure)
✔	**C. Verify the chlorine injection system**	
☐	Describe how the chlorine gas injector works in water	**R** Manufacturer's manual
☐	Check the chlorine injection system and related equipment (e.g., venturi, pressurization pump)	
☐	Check for malfunction and take any remedial action necessary	

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

	Steps	References & Work Aids
7.1.3	**Verify that the chlorine gas disinfection area measuring and control instruments are working properly**	
☐	Describe each of the measuring and control instruments used (integrated and portable chlorine analyzers, pH meter, flowmeter, etc.) and check their operation according to the manufacturer's instructions	**R** Measuring instruments
☐	Describe malfunctions and appropriate measures	**R** Manufacturer's manual
☐	Carry out a reliability test on an integrated and on a portable chlorine analyzer	
☐	Calibrate the integrated chlorine analyzer according to the manufacturer's instructions	
☐	Calibrate the pH meter according to the manufacturer's instructions	
☐	Describe the preventive maintenance required for the chlorine analyzers and pH meter	**R** Manufacturer's manual **R** Maintenance chart (Module 7)

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

Steps		References & Work Aids
7.1.4 Verify that the health and safety equipment is working properly and give preventive maintenance		
☐	Check the operation and accessibility of all required health and safety equipment: shower, eyewash, safety goggles, self-contained breathing apparatus, extinguisher, apron, etc.	**R** Health and safety procedures in effect (handling drinking water treatment equipment, facilities and products)
☐	Describe the preventive maintenance needed on health and safety equipment	**R** Maintenance chart (Module 7)

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

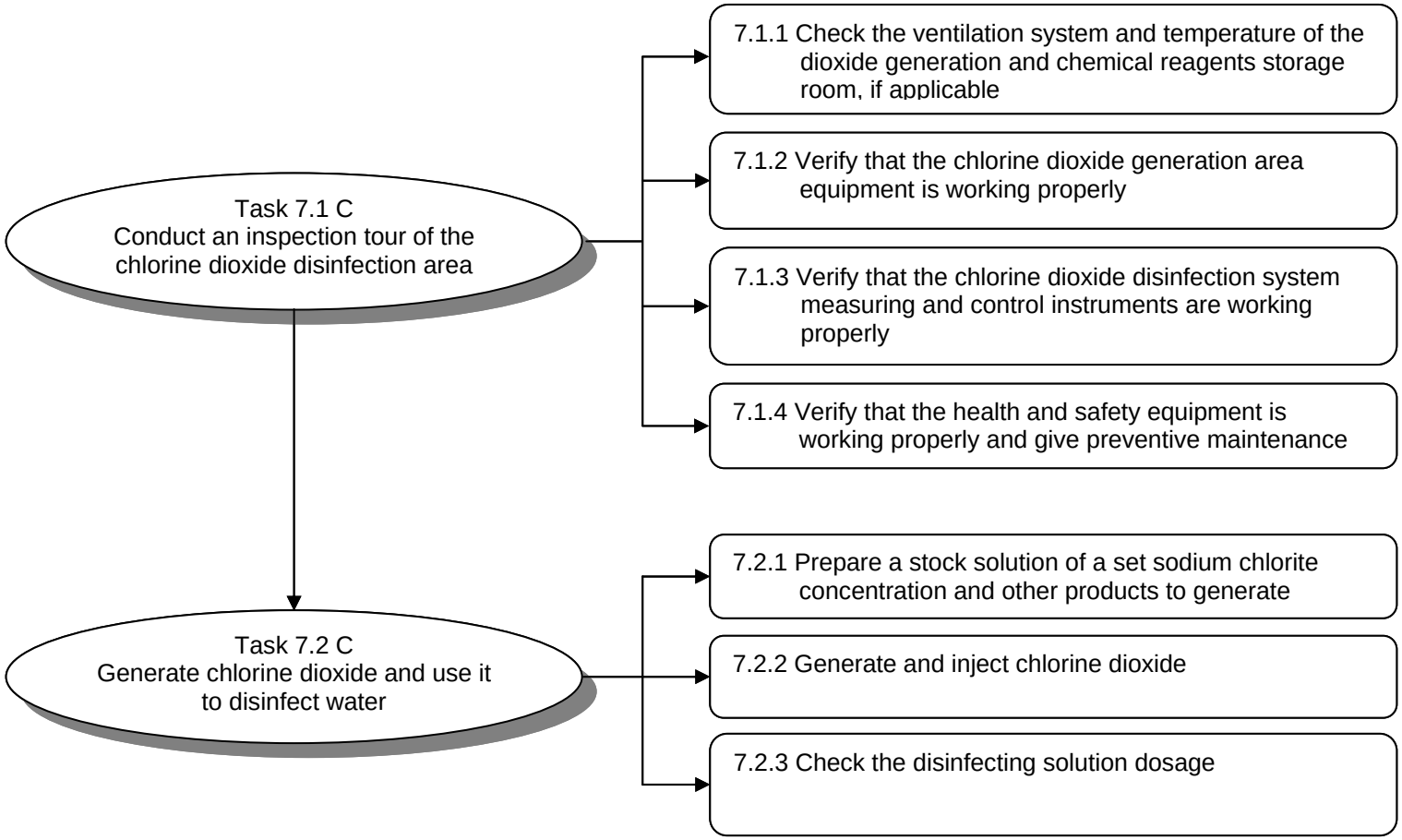
Task 7.2 B Disinfect water using chlorine gas		
	Steps	**References & Work Aids**
7.2.1 Check the gas flow rate at the rotameter as well as the chlorine dosage		
☐	Take gas flow rate readings	
☐	Verify and calibrate the gas flow rate to ensure proper dosage	**R** Manufacturer's manual
☐	Inspect the bottom of the cylinders for signs of frost	
☐	Calculate the amount of gas remaining and the number of cylinders in stock	
☐	Check for possible malfunctions and take any appropriate measures	**R** Manufacturer's manual
☐	Describe the preventive maintenance needed on the rotameter	**R** Maintenance chart (Module 7) **R** Manufacturer's manual
☐	Provide a detailed, accurate and legible listing of dosage values attained	**R** Daily log or Tour report **R** Chlorine gas disinfection equipment
7.2.2 Check the weight of the chlorine cylinders and ensure that the scale is working properly		
☐	Ensure that the scale is working properly	
☐	Check the weight of the cylinders to determine how much chlorine has been used	**R** Manufacturer's manual
☐	Describe malfunctions and appropriate measures	
☐	Describe the preventive maintenance needed to identify potential problems with the scale	**R** Maintenance chart (Module 7) **R** Manufacturer's manual
☐	Provide a detailed, accurate and legible listing of the weight measurements taken	**R** Daily log or Tour report **R** Chlorine gas disinfection equipment
7.2.3 Switch chlorine cylinders according to established procedures		
☐	Describe the risks associated with handling chlorine gas and the required safety conditions (wearing gloves, goggles, apron, etc.)	**R** WHMIS, OSH, emergency measures plan
☐	Handle cylinders using the tools and accessories indicated in the manufacturer's instructions and safety regulations	**R** Manufacturer's manual **R** Safety regulations (WHMIS, OSH)
☐	Describe possible malfunctions and appropriate action	

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

7. C- Chlorine Dioxide Disinfection System (if applicable)



7. C - Chlorine Dioxide Disinfection System

Task 7.1 C Conduct an inspection tour of the chlorine dioxide disinfection area		
	Steps	**References & Work Aids**
7.1.1	**Check the ventilation system and temperature of the dioxide generation and chemical reagents storage room, if applicable**	
☐	Describe the risks associated with poor aeration or temperature in the dioxide generation and chemical reagents storage area	**R** OSH regulations
☐	Ensure that the ventilator is working properly and that the dioxide generation and chemical reagents storage room is well aerated	**R** Manufacturer's manual **R** OSH regulations
☐	Describe the preventive maintenance needed to identify potential problems with the ventilation system	**R** Maintenance chart (Module 7) **R** Manufacturer's manual

Journeyman's initials:		**Apprentice's initials:**	

R: **Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV**

T: **Training aids provided as part of earlier training**

	Steps	References & Work Aids
7.1.2	**Verify that the chlorine dioxide generation area equipment is working properly**	
✔	**A. Verify the operation of the equipment**	
☐	Locate the chlorine dioxide generator on the map of the station	**R** Manufacturer's manual
☐	Give a general explanation of how the dioxide generator works	**R** Operation manual
☐	Describe the consequences of a generator equipment malfunction or complete shutdown	**F** Chlorine dioxide generation equipment
☐	Check the physical integrity of the sodium chlorite solution tanks	
☐	Verify the sodium chlorite solution level in the generation area tanks	
☐	Find the number of active pumps, ensure they are working properly and flush them as required	
☐	Find the active valves and check their percentage of opening	
☐	Inspect the back pressure and release valves and verify that the full dosage of sodium chlorite solution is injected into the generator	
☐	Describe possible malfunctions and appropriate corrective measures	**F** Chlorine dioxide generation equipment **R** Manufacturer's manual
☐	Describe the preventive maintenance needed on the chlorine dioxide generation equipment	
✔	**B. Record any noteworthy information on the chlorine dioxide generation equipment**	
☐	Provide a detailed, accurate and legible listing of all the operating parameters of the chlorine dioxide generation equipment	**F** Chlorine dioxide generation equipment **R** Tour report

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

	Steps	References & Work Aids
7.1.3 Verify that the chlorine dioxide disinfection system measuring and control instruments are working properly		
☐	Describe each of the measuring and control instruments used (integrated and portable chlorine analyzers, pH meter, flowmeter, etc.) and check their operation according to the manufacturer's instructions	**R** Measuring instruments
☐	Describe malfunctions and appropriate measures	**R** Manufacturer's manual
☐	Carry out a reliability test on an integrated and on a portable chlorine analyzer	
☐	Calibrate the integrated chlorine analyzer according to the manufacturer's instructions	
☐	Calibrate the pH meter according to the manufacturer's instructions	
☐	Describe the preventive maintenance required for the chlorine analyzers and pH meter	
Journeyman's initials:		**Apprentice's initials:**

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

Steps		References & Work Aids
7.1.4 Verify that the health and safety equipment is working properly and give preventive maintenance		
☐	Check the operation and accessibility of all required health and safety equipment: shower, eyewash, safety goggles, self-contained breathing apparatus, extinguisher, apron, etc.	**R** Health and safety procedures in effect (handling drinking water treatment equipment, facilities and products)
☐	Describe the preventive maintenance needed on health and safety equipment	**R** Maintenance chart (Module 7)

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

Task 7.2 C Generate chlorine dioxide and use it to disinfect water			
	Steps	**References & Work Aids**	
7.2.1 Prepare a stock solution of a set sodium chlorite concentration and other products to generate dioxide			
☐	Describe the risks associated with handling various products and the required safety conditions (wearing gloves, goggles, apron, etc.)	**R** WHMIS, OSH safety regulations	
☐	Periodically drain and clean the sodium chlorite solution tank		
☐	Compute the necessary quantities to be mixed to obtain the desired concentration according to needs	**F** Computation guide for stock solution	
☐	Prepare the stock solution of sodium chlorite and other necessary products		
☐	Verify the quality of the chlorine dioxide produced	**R** Design guide	
Journeyman's initials:		**Apprentice's initials:**	
7.2.2 Generate and inject chlorine dioxide			
☐	Describe the types of pumps and their operation (variable or single speed, presence of instrument loop, type of control, etc.)	**R** Manufacturer's manual	
☐	Describe the consequences of a malfunction or complete shutdown of a dosing pump		
☐	Identify the type of generator and adjust it to the optimum level for the required concentration	**F** Table of multiplicative factors for instant dosage **R** Manufacturer's manual	
☐	Check the generation efficiency of the chlorine dioxide produced	**R** Design guide	
☐	Adjust required chlorine dioxide dosage		
☐	Inject the chlorine dioxide		
Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

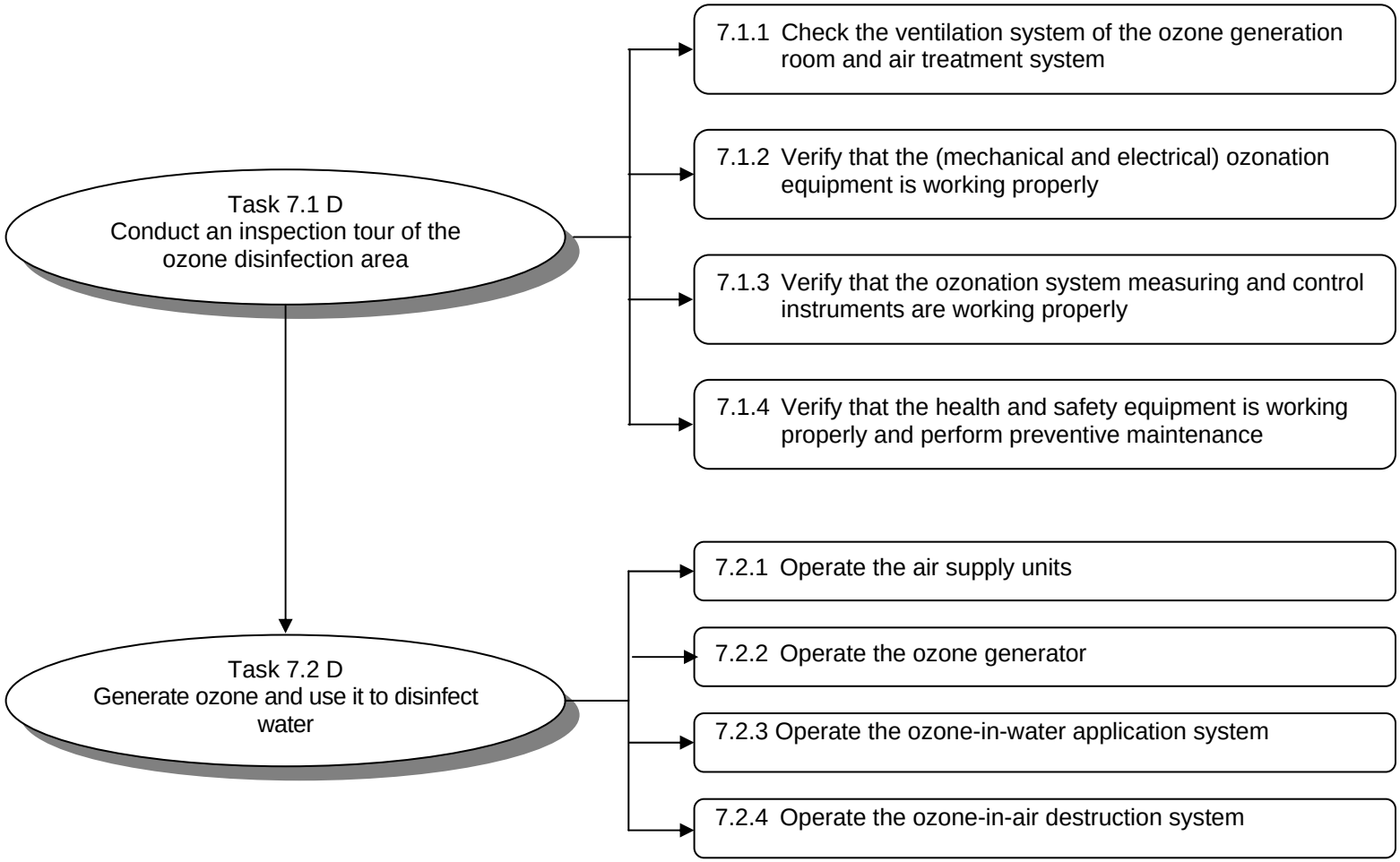
	Steps	References & Work Aids
7.2.3	**Check dinsinfecting solution dosage**	
☐	Describe the effects of chlorine dioxide on microorganisms in water	
☐	Describe the impact that pH, temperature and contact time has on the disinfecting action of chlorine dioxide	
☐	Verify and adjust the dosage of the disinfecting solution to ensure that standards are being met (amount of free residual chlorine leaving the station)	**F** Regulation respecting the quality of drinking water (removal log concept) **F** Calculating effective dosage
☐	Describe possible dosing equipment malfunction and appropriate corrective action	**F** Chlorine dioxide generation equipment
✔	**B. Record any noteworthy information on dosage**	
☐	Provide a detailed, accurate and legible listing of all noteworthy information on dosage in the Operating log	**F** Chlorine dioxide generation equipment **R** Operating log

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

7 D- Ozone Disinfection System (if applicable)



7 D - Ozone Disinfection System

Task 7.1 D Conduct an inspection tour of the ozone disinfection area		
	Steps	**References & Work Aids**
7.1.1 Check the ventilation system of the ozone generation and air treatment system room		
☐	Describe the hazards related to improper ventilation or temperature in the ozone generation and air treatment system room	**R** OSH regulations
☐	Ensure that the ventilator is working properly and that the ozone generation and air treatment system room is well aerated	**R** Manufacturer's manual **R** OSH regulations
☐	Describe the preventive maintenance needed to identify potential problems with the ventilation system	**R** Maintenance chart (Module 7) **R** Manufacturer's manual

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

7.1.2 Check the operation of the (mechanical and electrical) ozonation equipment		
✔	**A. Check the mechanical and electrical ozonation equipment**	
☐	Describe each piece of ozone disinfection system equipment and its role in the disinfection process	**R** Ozone generation equipment **R** Map of station
☐	Give a general explanation of how each piece of ozonation equipment works	**R** Manufacturer's and operation manual **R** Tour report **R** Production chart
☐	Check the physical integrity of the ozone generator	
☐	Check residual ozone concentration in the storage tanks	
☐	Check the operating parameters of each piece of ozonation equipment according to the established procedure	
☐	Describe possible malfunctions for each piece of ozonation and ozone destruction system equipment and appropriate corrective measures	
☐	Describe the preventive maintenance needed on each piece of ozonation and ozone destruction equipment	
✔	**B. Record any noteworthy information on the ozone disinfection system equipment**	
☐	Provide a detailed, accurate and legible listing of all operating parameters of the ozone disinfection system equipment	**R** Ozone generation equipment **R** Tour report

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

	Steps	References & Work Aids
7.1.3	**Check the operation of the ozone disinfection system measuring and control instruments (temperature and pressure sensors, detectors, analyzers, etc.)**	
☐	Make a list of each of the measuring and control instruments used and describe their role in the ozone disinfection system	**R** Ozonation system measuring instruments
☐	Describe the normal operating conditions of each measuring and control instrument	**R** Manufacturer's and user's manual
☐	Check the operating condition of each measuring and control instrument according to established procedures	**R** Manufacturer's manual
☐	Compare the values obtained to the reference values set for proper operation and describe appropriate measures needed in case of malfunction	
☐	Calibrate the measuring and control instruments	
☐	Describe the preventive maintenance for each of the measuring and control instruments used in the ozone disinfection system	

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

	Steps	References & Work Aids
7.1.4	**Check the operation of the health and safety equipment and provide preventive maintenance**	
✔	**A. Check the ozone leak detector**	
☐	Indicate the limits of ozone concentration in the air to which a worker may be exposed	**R** WHMIS regulations
☐	Describe the operation of the ozone leak detector, regulating vent and associated equipment	
☐	Make sure the system reacts to the presence of ozone according to the detection methods	**R** Manufacturer's manual
☐	Measure residual ozone concentration in the air	**R** OSH regulations
☐	Describe possible malfunctions and take any appropriate corrective action	**R** WHMIS and OSH regulations **R** Manufacturer's manual (leak procedure)
✔	**B. Proceed with health and safety equipment operational tests according to the established procedure**	
☐	Check the operation and accessibility of all required health and safety equipment	**R** Health and safety procedures in effect (handling drinking water treatment equipment, facilities and products)
☐	Describe the preventive maintenance needed on health and safety equipment	**R** Maintenance chart (Module 7)

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

Task 7.2 D Generate ozone and use it to disinfect water			
	Steps	**References & Work Aids**	
7.2.1 Operate the air supply units			
☐	Describe the operation of the ozone generators' air supply units and their role in the process		
☐	Describe the risks associated with the use of liquid oxygen	**R** WHMIS regulations	
☐	Describe the normal operating conditions of air supply units	**R** Manufacturer's manual	
☐	Operate the liquid oxygen supply system according to the manufacturer's recommendations		
☐	Measure and adjust the operating parameters of the air supply units as needed		
Journeyman's initials:		**Apprentice's initials:**	
7.2.2 Operate the ozone generator			
☐	Describe the operation of the ozone generator and its role in the process		
☐	Describe the risks associated with the operation of the ozone generator	**R** WHMIS regulations	
☐	Describe the normal operating conditions of the ozone generator	**R** Operation manual	
☐	Operate the power equipment according to the manufacturer's recommendations	**R** Manufacturer's manual	
☐	Adjust the voltage according to the desired residual		
☐	Adjust the air or liquid oxygen flow rate, temperature and pressure		
☐	Adjust the cooling water flow rate		
☐	Check the concentration of the ozone produced, if applicable		
☐	Check the ozone transfer efficiency in water		
Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

7.2.3 Operate the ozone-in-water application system		
✔	**A. Check ozone dosage in compliance with the standard provided by the Regulation in effect**	
☐	Describe the effects of ozone-in-water on microorganisms	
☐	Describe the operation of the ozone-in-water application system and explain its role in the process	**R** WHMIS regulations
☐	Describe the effect of temperature and contact time on the disinfecting action of ozone	**R** Manufacturer's manual
☐	Check and adjust ozone dosage to guarantee that disinfection objectives are met	**R** Regulation respecting the quality of drinking water
☐	Operate the ozone application equipment according to the manufacturer's recommendations	**R** Manufacturer's manual
☐	Describe the possible malfunctions of the ozone application equipment and identify appropriate corrective action	**R** Ozone generation equipment **R** Manufacturer's manual
✔	**B. Record any noteworthy information on dosage**	
☐	Provide a detailed, accurate and legible listing of all noteworthy data on ozone-in-water dosage	**R** Ozone generation equipment **R** Operating report

Journeyman's initials:		**Apprentice's initials:**	

7.2.4 Operate the ozone-in-air destruction system		
☐	Describe the ozone to oxygen decomposition process	
☐	Identify the ozone concentration limits at the vent	**R** WHMIS regulations
☐	Operate the equipment according to the manufacturer's recommendations	**R** Manufacturer's manual
☐	If applicable, check the residual ozone concentration at the effluent of the destructor	

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV
T: Training aids provided as part of earlier training

We, the undersigned, hereby certify that the Apprentice has mastered Module 7

"Disinfection Systems"

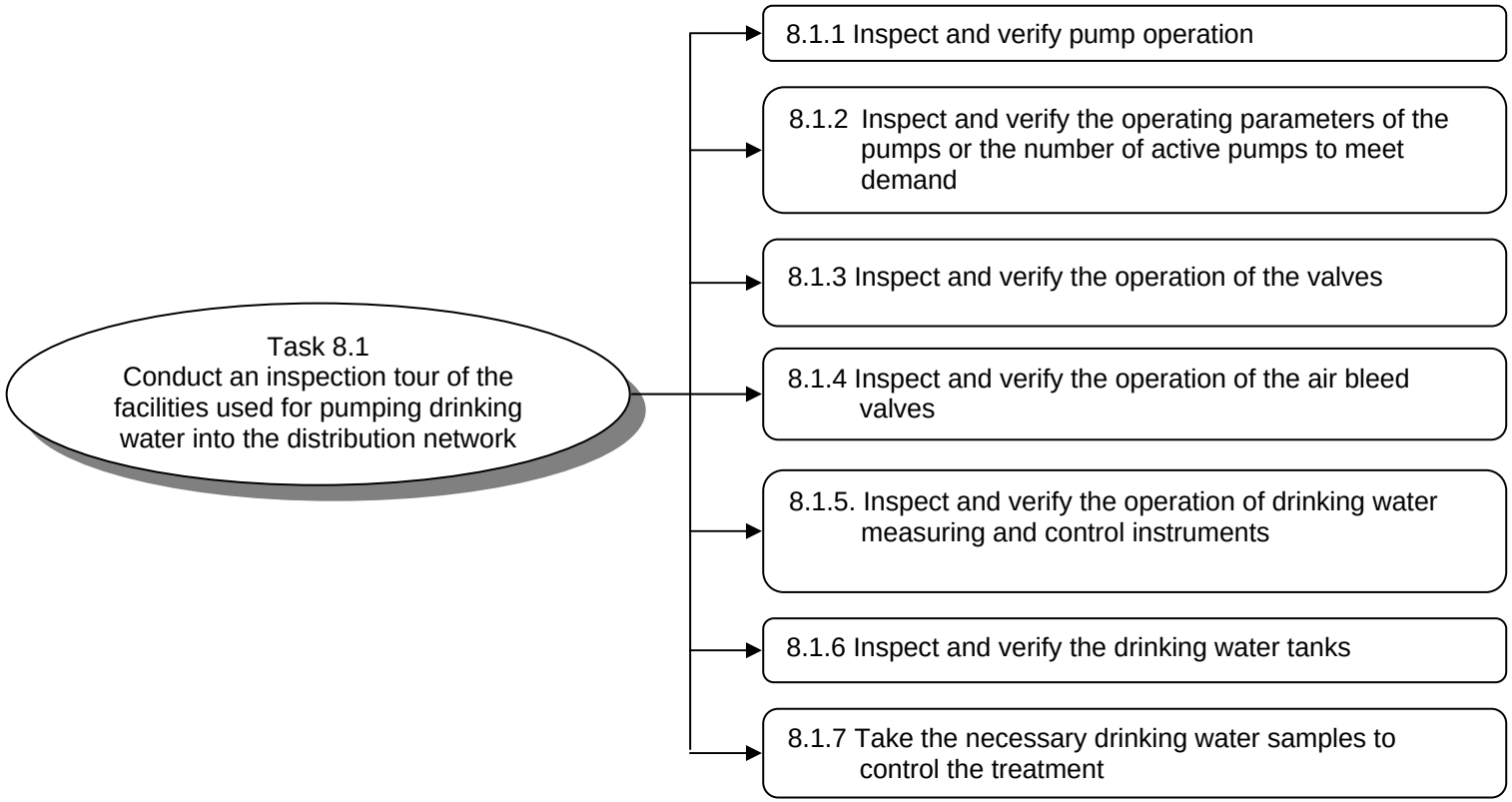
Signature of the Apprentice _____

Signature of the Journeyman _____

Date _____ **Signature of the Employer** _____

Module 8
Pumping Drinking Water into the Distribution Network

Job Skill:
Operate the system used for pumping drinking water into the distribution network



1. THE APPRENTICE HAS WORKED WITH THE FOLLOWING TYPES OF EQUIPMENT. TICK OR SPECIFY:

- Drinking water pumps ❑
- Valves ❑
- Air bleed valves ❑
- Other: _____
  _____

2. THE APPRENTICE HAS LEARNED TO USE THE FOLLOWING INSTRUMENTS. TICK OR SPECIFY:

- Flowmeter ❑
- Pressure indicator ❑
- Water level alarm or float ❑
- Water level measuring devices ❑
- Integrated analyzers:
  - Turbidimeter ❑
  - pH meter ❑
  - Thermometer ❑
- Other _____
  _____
  _____

3. COMMENTS OR DETAILS:

_____

_____

_____

Job Skill: Operate the system used for pumping drinking water into the distribution network

	Task 8.1 Conduct an inspection tour of the facilities used for pumping drinking water into the distribution network	
	Steps	**References & Work Aids**
	8.1.1 Inspect and test the operation of the pumps	
✔	**A. Verify the pumps**	
☐	Locate the drinking water pumping facilities on the map of the station	**R** Map of station
☐	Describe the types of pumps and their main components	
☐	Explain the normal operating conditions of the pumps (capacity and operating range) and the consequences of malfunction	
☐	Identify the measuring and control instruments associated with the pumps and describe how they work	**T** Measuring instruments
☐	Take readings from the measuring and control instruments and compare the results with reference values to verify that the pumps are working properly	**R** Manufacturer's manual (pump curve)
☐	Verify the operating and electromechanical parameters of each pump according to the established procedure	**T** Drinking water pumps
☐	If applicable, take the appropriate corrective measures required based on the parameters obtained	**T** Drinking water pumps **R** Manufacturer's manual
☐	Identify potential pump malfunctions and the appropriate corrective measures	
☐	Describe the preventive maintenance needed on the drinking water pumps	**R** Maintenance chart (Module 8) **R** Manufacturer's manual
✔	**B. Record any noteworthy data on the drinking water pumps**	
☐	Provide a detailed, accurate and legible listing of the operating parameters of the drinking water pumps	**R** Tour sheet **T** Drinking water pumps

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

	Steps	References & Work Aids
8.1.2 Inspect and verify the operating parameters of the pumps or the number of active pumps to meet demand		
✔	**A. Verify the flow rate and pressure of the drinking water pumping facilities**	
☐	Describe the pumping system and the output needed to meet demand	**R** Operation manual
☐	Assess, onsite or by remote sensing, the condition of the pumps	**R** Map of facilities
☐	Verify and adjust flow rate and pressure to meet demand and comply with established procedures	**T** System of units **R** Operator's procedure
☐	Describe normal operating values and the appropriate measures in case of discrepancy	**T** Drinking water pumps
☐	Identify potential problems that may affect drinking water distribution capacity and describe the appropriate corrective measures	
✔	**B. Record any noteworthy data on the drinking water pumps**	
☐	Provide a detailed, accurate and legible listing of the drinking water pump operating parameters	**R** Tour sheet **T** Drinking water pumps
Journeyman's initials:		**Apprentice's initials:**

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

	Steps	References & Work Aids
8.1.3 Inspect and verify the operation of the valves		
✔	**A. Verify the operation of the valves**	
☐	Locate the drinking water pumping system valves on the map of the station	**R** Map of station
☐	Describe the types of valves and explain their optimum operating conditions	**T** Valves **R** Manufacturer's manuals
☐	Ascertain that the valves are properly positioned and take the appropriate corrective measures	**R** Manufacturer's manual
☐	Examine the condition of the valves according to type (maneuverability, pressure required, seal, noise) and take the appropriate corrective measures	
☐	If applicable, verify and adjust the self-regulating valves to obtain the required pressure or flow rate	
☐	Identify potential problems that may affect the flow rate of drinking water distribution and describe the appropriate corrective measures	**T** Valves
☐	Describe the preventive maintenance needed on the valves	**R** Maintenance chart (Module 8) **R** Manufacturer's manual

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

8.1.4 Inspect and verify the operation of the air bleed valves		
☐	Locate the air bleed valves on the map of drinking water pumping facilities	**R** Map of drinking water facilities
☐	Describe the operation of the air bleed valves and explain their role	**R** Manufacturer's manual
☐	Verify the operation of the air bleed valves	
☐	Explain the consequences of the presence of air on the operation of the pumps, pipes and integrated analyzers	**T** Air bleed valves
☐	Describe the preventive maintenance needed on the air bleed valves to eliminate possible problems	**R** Maintenance chart (Module 8)
☐	Record any noteworthy data following the inspection of the air bleed valves	**T** Air bleed valves **R** Tour sheet

Journeyman's initials:		**Apprentice's initials:**	

8.1.5 Inspect and verify the operation of drinking water measuring and control instruments (floats, sensors, flowmeter, pH meter, turbidimeter, etc.)		
☐	Make a list of all drinking water measuring and control instruments used and explain their role	**T** Measuring instruments **R** Manufacturer's manual
☐	Describe the normal operating conditions of the drinking water measuring and control instruments	**R** Operation manual
☐	Verify the operating condition of measuring and control instruments according to the established procedure	
☐	Verify the validity of the measures taken and describe the appropriate measures needed in case of malfunction	
☐	Calibrate the measuring and control instruments (turbidimeter and others) used with drinking water	
☐	Describe the preventive maintenance needed on measuring and control instruments	

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

	Steps	References & Work Aids
8.1.6 Inspect and verify the drinking water tanks		
✔	**A. Verify the tanks**	
☐	Locate the water tanks on the map of the station	**R** Map of station
☐	Explain the role played by the tanks in drinking water distribution	
☐	Describe the possible physical deterioration factors of drinking water tanks	**T** Storage tanks
☐	Explain the potential risks of contamination as well as their consequences on water quality	
☐	Verify the physical integrity of the equipment of the tanks and, if applicable, carry out appropriate corrective measures according to the established procedure	**T** Storage tanks **R** OHS confined spaces regulation
☐	Describe the normal operating values and the appropriate measures needed in case of discrepancy	
☐	Describe potential risks and appropriate corrective measures	**T** Storage tanks
☐	Describe the preventive maintenance needed on the tanks	**R** Maintenance chart (Module 8)
✔	**B. Record any noteworthy data on the tanks**	
☐	Provide a detailed, accurate and legible listing of the noteworthy data on the water level of drinking water tanks	**R** Tour sheet
Journeyman's initials:		**Apprentice's initials:**
8.1.7 Take the necessary drinking water samples to control the treatment		
☐	Take a water sample at the sampling points given by the procedure in effect	**T** Sample taking and storing procedure
Journeyman's initials:		**Apprentice's initials:**

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

We, the undersigned, hereby certify that the Apprentice has mastered Module 8

"Pumping Drinking Water into the Distribution Network"

Signature of the Apprentice _____

Signature of the Journeyman _____

Date _____ **Signature of the Employer**_____

Module 9

Building Services Systems

Job Skill:
Operate building services systems

Task 9.1
Control the operation of the available building services systems (electricity, heating, ventilation, compressed air)

- 9.1.1 Control the main electric power supply system (Hydro-Québec)
- 9.1.2 Control the standby electrical system (generator)
- 9.1.3 Control the heating and ventilation systems
- 9.1.4 Control the compressed air system

1. THE APPRENTICE HAS TAKEN SAMPLES IN THE FOLLOWING SITUATIONS. TICK OR SPECIFY:

- ☐ Main electric power supply system (Hydro-Québec)
- ☐ Standby electrical system (generator)
- ☐ Heating system
- ☐ Ventilation system
- ☐ Compressed air system

2. COMMENTS OR DETAILS ON THE SYSTEMS USED:

_____

_____

_____

_____

_____

Job Skill: Operate building services systems

Task 9.1 Control the operation of the available building services systems (electricity, heating, ventilation, compressed air)			
Steps		**References & Work Aids**	
9.1.1 Control the main electric power supply system (Hydro-Québec)			
☐	Describe the operation of the station's main electric power supply system	**R** Operation manual	
☐	Use the various indicators (phase, amperage, voltage) to ensure that the main electric power supply system operates properly		
☐	Periodically check the condition of the main electric power supply system components, if applicable		
☐	If possible, describe and apply the main electric power supply start/stop procedure	**R** Electrical safety standards	
☐	Describe the measures needed and the safety procedure that must be complied with to insulate equipment to be repaired from the power supply system		
Journeyman's initials:		**Apprentice's initials:**	
9.1.2 Control the standby electrical system (generator)			
☐	Name the equipment connected to the generator and explain the consequences of a power failure	**R** Operation manual **R** Electrical safety standards	
☐	Describe the start/stop procedure (simulate a power failure) of the standby electrical system (generator) in case of power failure	**R** Station's start/stop procedure in case of power failure **R** Electrical safety standards	
☐	Take readings from the generator's instruments and on/off indicators and take appropriate corrective action	**R** Manufacturer's manual	
☐	Describe the preventive maintenance required for the generator	Maintenance chart (Module 4) **R** Manufacturer's manual	
Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

	Steps	References & Work Aids
9.1.3	**Control the heating and ventilation systems**	
☐	Ensure that the heating and ventilation systems work properly and take appropriate corrective action	**R** Manufacturer's manual Maintenance chart (Module 4)
☐	Explain the consequences of defective operation or failure of these systems	
☐	Check the condition of the filters and take appropriate corrective actions	**R** Manufacturer's manual Maintenance chart (Module 4)
☐	Describe the preventive maintenance required for the heating and ventilation systems	
Journeyman's initials:		**Apprentice's initials:**
9.1.4	**Control the compressed air systems**	
☐	Describe the operation of the compressed air network and its components	**R** Manufacturer's manual
☐	Name the equipment connected to the compressed air systems	**R** Operation manual
☐	Explain the consequences and causes of a malfunction of these systems	
☐	Flush the air compressor storage tank and the network air valve, if applicable	
☐	Describe the preventive maintenance required for the compressed air systems	**R** Manufacturer's manual Maintenance chart (Module 4)
Journeyman's initials:		**Apprentice's initials:**

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

We, the undersigned, hereby certify that the Apprentice has mastered Module 9

"Building Services Systems"

Signature of the Apprentice _____

Signature of the Journeyman _____

Date _____ **Signature of the Employer**_____

Module 10
Stock Management

Job Skill:
Manage inventory

Task 10.1
Take inventory and order the materials and products needed

- 10.1.1 Verify product expiry dates
- 10.1.2 Identify the plant's usual requirements
- 10.1.3 Order or have someone order the products needed
- 10.1.4 Compare shipment with order

Job Skill: Manage inventory

Task 10.1 Take inventory and order the materials and products needed		
	Steps	**References & Work Aids**
10.1.1 Verify product expiry dates		
☐	Explain the consequences of treating drinking water with expired products	**R** Technical spec sheets provided with the products
☐	Ensure that products are classified and stored according to expiry dates and in adequate storage conditions	**R** WHMIS spec sheets
10.1.2 Identify the plant's usual requirements		
☐	Make a list of the materials needed for daily operations: equipment, essential parts, analysis and treatment chemical reagents, measuring and control instruments for current activities	
☐	Explain the basic principles of taking inventory for products in use	**T** Stock management principles
☐	Ensure that the quantity of stored chemical reagents and disinfecting products is sufficient until the following delivery	
☐	Determine the plant's needs and keep the inventory current by verifying stock levels	
10.1.3 Order or have someone order the products needed		
☐	Prepare or have someone prepare an order according to the procedures in effect	**R** Internal procedure in effect
10.1.4 Compare shipment with order		
☐	Verify the quantity and quality of the products received against the order form and invoice	**R** Internal procedure in effect
☐	Ensure stock rotation	

Journeyman's initials:		**Apprentice's initials:**	

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

We, the undersigned, hereby certify that the Apprentice has mastered Module 10

"Stock Management"

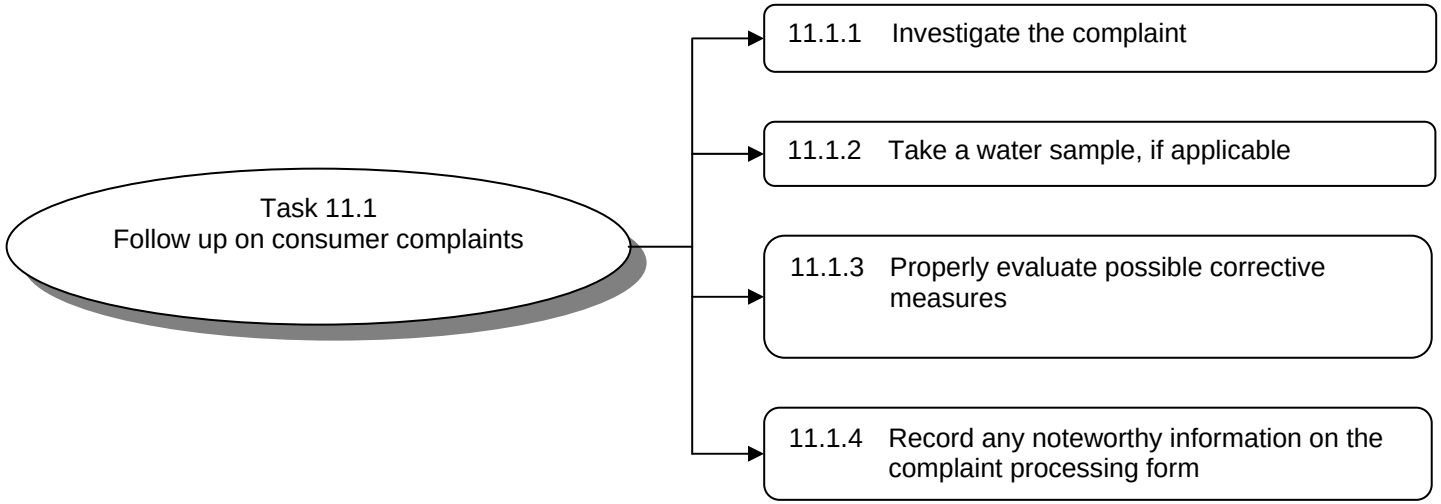
Signature of the Apprentice _____

Signature of the Journeyman _____

Date _____ **Signature of the Employer**_____

Module 11
Processing Complaints

Job Skill:
Process complaints



Job Skill: Process complaints

Task 11.1 Follow up on consumer complaints		
	Steps	**References & Work Aids**
11.1.1 Investigate the complaint		
☐	Explain the importance of processing complaints	
☐	Explain how the problem should be identified and assess the seriousness of the complaint (information from the consumer, other similar complaints, supply source, etc.)	**R** Internal procedures
☐	Describe the various types of complaints and their probable causes	**T** Evaluating complaints
☐	Describe the checks to be carried out for each complaint	
11.1.2 Take a water sample, if applicable		
☐	Take a sample if the situation cannot be corrected immediately	**T** Sample taking and storing procedures
☐	Describe the physicochemical or microbiological parameters to be measured, according to the nature of the complaint	**R** Laboratory form
☐	Send the sample to the laboratory along with the form listing the required tests	**R** Laboratory form
☐	Describe the procedure used to notify consumers of test results	**R** Internal procedures
11.1.3 Properly evaluate possible corrective measures		
☐	Describe the abnormal situations most likely to occur and explain the appropriate short term corrective measures or long term preventive measures that should be implemented by the filer of the complaint or plant operator, according to the nature of the complaint	**T** Evaluating complaints
11.1.4 Record any noteworthy information on the complaint processing form		
☐	Provide a detailed, accurate and legible listing of all noteworthy data in order to properly document the complaint	**R** Complaint processing form
Journeyman's initials:		**Apprentice's initials:**

R: Reference materials provided by the plant manager/apprentice; general apprenticeship documents from MENV

T: Training aids provided as part of earlier training

We, the undersigned, hereby certify that the Apprentice has mastered Module 11

"Processing Complaints"

Signature of the Apprentice _____

Signature of the Journeyman _____

Date _____ **Signature of the Employer** _____

MAINTENANCE CHARTS

Modules 4 - 7 - 8

P5a – Module 4

RAW WATER EXTRACTION AND PUMPING SYSTEM

	PREVENTIVE MAINTENANCE				
	1	2	3	4	5
	Check	Clean	Lubricate	Adjust	Calibrate
PROCESS MECHANICS					
Pumps	✓		✓		
Valves					
Actuating valve (manual, electrical, pneumatic, hydraulic)	✓	✓	✓	✓	
Self-regulated valve	✓	✓	✓	✓	
Water tanks	✓	✓			
Air bleed valves	✓	✓			
BUILDING MECHANICS					
Generator	✓	✓	✓		
Heating and ventilation systems					
Air filters	✓	✓			
Grill	✓	✓			
Belts	✓			✓	
Louvers	✓	✓	✓	✓	
Heating system	✓	✓	✓		
Compressed air system					
Compressor	✓				
Belts	✓			✓	
Filters	✓	✓			
Oil	✓			✓	
INSTRUMENTATION-CONTROL					
Flow meter	✓	✓			✓
Pressure indicator	✓				
Level alarm or float	✓	✓			
Level measuring devices	✓	✓		✓	

P5a - Module 7

DISINFECTION SYSTEMS

	PREVENTIVE MAINTENANCE				
	1	2	3	4	5
	Check	Clean	Lubricate	Adjust	Calibrate
PROCESS MECHANICS					
Sodium/calcium hypochlorite disinfection station					
Hypochlorite solution tank	✓	✓			
Blender (calcium)	✓	✓	✓		
Injector	✓	✓			
Foot valve	✓	✓			
Release valve	✓	✓			
Pipes	✓	✓			
Dosing pump	✓	✓	✓	✓	✓
Gas chlorine equipment[1]					
Screen	✓				
Foot and pressure release valve	✓				
Vacuum regulator	✓				
Heater	✓				
Chlorinator (hydroejector, pressure indicator)	✓				
BUILDING MECHANICS					
Feed and storage room ventilation system					
Air filters	✓	✓			
Grill	✓	✓			
Belts	✓			✓	
Louvers	✓	✓	✓	✓	
INSTRUMENTATION-CONTROL					
Rotameter	✓	✓			
Scale	✓		✓	✓	
Residual chlorine analyzer (integrated and portable)	✓	✓		✓	✓
pH meter	✓	✓		✓	✓
Flowmeter	✓	✓			✓
SAFETY					
Health and safety equipment					
Shower	✓	✓			
Eyewash	✓	✓			
Safety goggles	✓	✓			
Self-contained breathing apparatus	✓	✓			
Extinguisher	✓				
Gas detectors	✓				

1. Duplicates must be kept in stock

P5a - Module 8

PUMPING DRINKING WATER INTO THE DISTRIBUTION NETWORK

	PREVENTIVE MAINTENANCE				
	1	2	3	4	5
	Check	Clean	Lubricate	Adjust	Calibrate
PROCESS MECHANICS					
Pumps	✓		✓		
Valves					
Actuating valve (manual, electrical, pneumatic, hydraulic)	✓	✓	✓	✓	
Self-regulated valve	✓	✓	✓	✓	
Water tanks	✓	✓			
Air bleed valves	✓	✓			
INSTRUMENTATION-CONTROL					
Piezometer	✓				
Flow meter	✓	✓			✓
Pressure indicator	✓				
Level alarm or float	✓	✓			
Level measuring devices	✓	✓		✓	✓

TABLES

SUMMARY TABLES (P5a)

JOB SKILL	STEPS					
1. Take water samples according to the provisions of the Regulation	1.1 Take samples for bacteriological and physicochemical analysis according to the provisions of the Regulation					
2. Control the station's operations	2.1 Manage the station's production					
3. Operate the chemical reagents dosing system	3.1 Conduct an inspection tour of the chemical reagents dosing equipment	3.2 Prepare and inject the chemical reagents	3.3 Check water quality at every step of the treatment			

SUMMARY TABLES (P5a)

JOB SKILL	STEPS					
4. Operate the raw water extraction and pumping system	4.1 Conduct an inspection tour of the raw water extraction facilities	4.2 If applicable, conduct an inspection tour of the raw water pumping facilities				
5. Operate the coagulation-flocculation-decantation treatment system	5.1 Conduct an inspection tour of the facilities and equipment used for the physicochemical treatment of water	5.2 Check and control the decantation treatment parameters				
6. Operate the filtration and cleaning systems	6.1 Conduct an inspection tour of the filtration and cleaning facilities and equipment	6.2 Check and control the station's filtration and cleaning processes				

SUMMARY TABLES (P5a)

JOB SKILL	STEPS						
7. Operate one or more disinfection systems (using sodium or calcium hypochlorites, chlorine gas, chlorine dioxide or ozone)	7 A Sodium or Calcium Hypochlorite Disinfection System	7.1 A Conduct an inspection tour of the sodium/ calcium hypochlorite disinfection area	7.2 A Disinfect water using hypochlorites				
	7 B Chlorine Gas Disinfection System	7.1 B Conduct an inspection tour of the chlorine gas disinfection area	7.2 B Disinfect water using chlorine gas				
	7 C Chlorine Dioxide Disinfection System	7.1 C Conduct an inspection tour of the chlorine dioxide disinfection area	7.2 C Generate chlorine dioxide and use it to disinfect water				
	7 D Ozone Disinfection System	7.1 D Conduct an inspection tour of the ozone disinfection area	7.2 D Generate ozone and use it to disinfect water				

SUMMARY TABLES (P5a)

JOB SKILL	STEPS					
8. Operate the system used for pumping drinking water into the distribution network	8.1 Conduct an inspection tour of the facilities used for pumping drinking water into the distribution network					
9. Operate building services systems	9.1 Control the operation of the available building services systems (electricity, heating, ventilation, compressed air)					
10. Manage inventory	10.1 Take inventory and order the materials and products needed					
11. Process complaints	11.1 Follow up on consumer complaints					

Name of Apprentice:	Emploi-Québec File #:

(P5a) WORKPLACE APPRENTICESHIP PROGRAM

MODULE					
	To Acquire	To Be Verified	Signature of Emploi-Québec Representative	Date	Agreement (No.)
Taking Water Samples					
Control of Station Operations					
Chemical Reagents Dosing System					
Raw Water Extraction and Pumping System					
Coagulation-Flocculation-Decantation Treatment System					
Filtration and Cleaning Systems					
Disinfection Systems					
Pumping Drinking Water into the Distribution Network					
Building Services Systems					
Stock Management					
Processing Complaints					

EMPLOYER		
Name		
Address		
City	Postal code	Phone
Name of Journeyman		
Agreement	Start Date	End Date

EMPLOYER		
Name		
Address		
City	Postal code	Phone
Name of Journeyman		
Agreement	Start Date	End Date

EMPLOYER		
Name		
Address		
City	Postal code	Phone
Name of Journeyman		
Agreement	Start Date	End Date