

Respirator Program

PURPOSE

The purpose of the Respirator Program is to ensure that all Advanced Excavating Specialists and Five Rivers Construction employees are protected from exposure to respiratory hazards. Engineering controls such as ventilation and substitution of less toxic materials are the first line of defense. However, engineering controls are not feasible for some operations or do not completely control the identified hazards. In these situations, respirators and other protective equipment must be used. Respirators are also utilized for protection during emergencies.

PROCEDURE

This program applies to all employees who are required to wear respirators during normal work operations and during certain non-routine or emergency operations. Employees participating in the respiratory protection program do so at no cost to them. The expense associated with medical evaluations, training, and respiratory protection equipment will be borne by the company.

Employees who voluntarily choose to use a cartridge style respirator when the respirator is not required are subject to the medical evaluation, cleaning, maintenance, and storage elements only of this program. These individuals will also receive training covering proper procedures for cleaning, maintenance, and storage of their respirators.

RESPIRATOR PROGRAM

Our respirator program administrator is Lower Columbia Occupation Health. Our administrator's duties are to oversee the development of the respiratory program, train employees, and make sure it is carried out at the workplace by all required employees. The administrator will also evaluate the program regularly to make sure adequate protection when job conditions change. Training will be conducted before requiring the employee to use the respirator and refreshed at least annually for all required employees.

SELECTION OF RESPIRATORS

We will evaluate our use of chemicals and that of the surrounding environment at specific job sites which may be hazardous to our employees and verify which respirators must be used by employees at location or positions at these jobsites:

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Employee position or activity	Chemicals or products used	NIOSH approved respirators assigned	When used (routinely, infrequently, or in emergencies)
Operator	Particulates	North 772	Infrequently (when so required)
Laborer	Particulates	North 7700	Infrequently (when so required)

We selected these respirators based on the following information: Guidance from Lower Columbia Occupational Health.

MEDICAL EVALUATIONS

Every employee of this company who must wear a respirator will be provided with a medical evaluation before they are allowed to use the respirator. Our first step is to give medical questionnaire to those employees. Employees are required to fill out the questionnaire in private and send or give them to: *Lower Columbia Occupational Health, 804 Allen Street #1, Kelso, WA 98626; Ph: (360) 414-8818*. Completed questionnaires are confidential and will be sent directly to medical provider without review by management.

If the medical questionnaire indicates to our medical provider that a further medical exam is required, this will be provided at no cost to our employees by a medical physician. We will get a recommendation for this medical provider on whether the employee is medically able to wear a respirator.

Additional medical evaluations will be done in the following situations:

- Our medical provider recommends it.
- Our respirator program administrator decides it is needed.
- An employee shows signs of breathing difficulty.
- Changes in work conditions that increase employee physical stress (such as high temperature or greater physical exertion.)

Medical records and evaluations are made available in accordance with 29 CFR 1910.1020.

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RESPIRATOR FIT-TESTING

All employees who wear tight-fitting respirators will be fit-tested before using their respirator or given a new one. Fit-testing will be repeated annually. Fit-testing will also be done when a different respirator facepiece is chosen, when there is a physical change in an employee's face that would affect fit, or when our employees or medical provider notify us that the fit is unacceptable. No beards are allowed on wearers of tight-fitting respirators. Respirators are chosen for fit-testing following procedures in the WISHA Respirator Rule (Table 11). Fit-testing is not required for loose-fitting, positive pressure (supplies air helmet or hood style) respirators. We do fit-testing using one or more of the following fit-testing protocols (circle protocol you use) or quantitative fit-testing instruments (fill in): Irritant smoke protocol.

The quantitative fit-testing instruments we use are: Smoke tube w/squeeze bulb

Documentation of our fit-testing results are kept at the following location: *Lower Columbia Occupational Health, 804 Allen Street #1, Kelso, WA 98626; Ph: (360) 414-8818*

Our respirators will be checked for proper sealing by the user whenever the respirator is first put on using the procedures recommended by the manufacturer.

RESPIRATOR STORAGE, CLEANING, MAINTENANCE & REPAIR

Our non-disposable respirators will be stored in the following clean locations: Sealed bags on work vehicle.

Respirators will be cleaned and sanitized according to the manufacturers recommendations or whenever they are visibly dirty by the trained employee. (Does not apply to paper dust masks which are disposed daily.) Respirators will be cleaned according to the manufacturer's instructions or the Respirators Rule cleaning procedures.

All respirators will be inspected before and after every use and during cleaning. In addition, emergency respirators and self-contained tank-type supplied air respirators in storage will be inspected monthly.

Respirators will be inspected for damage, deterioration or improper functioning and repaired or replaced as needed. Repairs and adjustments are done by a certified technician who is trained in respirator maintenance and repair. Supplied air respirators will be checked for proper functioning or regulator and warning devices and amount of air in tanks where used.

When supplied air respirators are used, any needed repairs or adjustments will be done by the manufacturer or technician trained by the manufacture. Our supplied air respirators are maintained and repaired by North Certified technicians.

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On respirators with vapor or gas cartridges, the cartridge will be regularly replaced on the following schedule: As per manufactures recommendations and guidelines.

Type of Respirator	Location or Job Duties	Chemicals in Use	Replacement Schedule

RESPIRATOR USE

The Program Administrator will monitor the work area in order to be aware of the hazards and be aware of changing conditions where employees are using respirators.

Employees will not be allowed to wear respirators with tight-fitting facepieces if they have facial hair (e.g., stubble, bangs) absence of normally worn dentures, facial deformities (e.g., scars, deep skin creases, prominent cheekbones), or other facial features that interfere with the facepiece seal or valve function. Jeweler or headgear that projects under the facepiece seal is also not allowed.

If corrective glasses or other personal protective equipment is worn, it will not interfere with the seal of the facepiece or the face.

A seal check will be preformed every time a tight-fitting respirator is put on.

Employees will be asked about fit, selection, use, maintenance, etc., of their respirator and the environment that they are in.

The program administrator will make sure the NIOSH labels and color-coding on respirator filters and cartridges remain readable and intact during use. The program administrator will also verify that the proper respirators are used for the proper hazard that the worker is exposed to.

Employees will leave the area where respirators are required for any of the following reasons:

- To replace filters or cartridges
- When they smell or taste a chemical inside the respirator
- When they notice a change in breathing resistance

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- To adjust their respirator
- To wash their face or respirator
- If they become ill
- If they experience dizziness, nausea, weakness, breathing difficulty, coughing, sneezing, vomiting, fever, or chills.

The program administrator has identified the following areas or job duties as presenting the potential for IDLH (Immediately Dangerous to Life or Health) conditions: None at this time.

Where any are, or confined space is designated as IDLH, we will provide one or two standby employees outside the area. These standby employees are trained in effective emergency rescue, are equipped with pressure-demand self-contained breathing apparatus (SCBAs), and will be in constant visual, voice or signal line communication with the employees in the IDLH area. The standby employees will notify the administrator before entering the IDLH area, and we will provide the necessary assistance when notified.

HOW TO SELECT THE CORRECT RESPIRATOR

The type and brands of respirators vary widely ranging from simple dust mask to supplied air respirators like the kind firemen wear. Following is the description of the main types of respirators.



Dust Masks (filtering facepieces)

These simple, two strap disposable dust masks are designed only for dusts. They are not as protective as other respirators, but do an adequate job in many cases, unless the dust is really toxic or copious. Don't confuse these two-strap masks with the less protective one-strap dust mask designed only for pollen or non-toxic dust.



Half-Face Air-Purifying Respirator

These respirators are sometimes called “half-face” or “half-mask” respirators since they cover just the nose and mouth. They have removable cartridges that filter out either dust, chemicals, or both. Selecting the correct cartridges is essential since they are designed for particular types of chemicals or dust. A reputable respirator vendor can assist you in selecting the correct cartridges. These cartridges are typically removable and sometimes interchangeable. Cartridges are available for solvents, ammonia, chlorine, acids and other chemicals. The cartridge must be changed out or replaced periodically, especially for chemicals, since they can absorb only so much contaminant before breakthrough occurs. A few cartridges are equipped with end-of-service indicators that show when a cartridge should be replaced. Most cartridges don’t have this indicator and you must develop a change-out schedule to prevent breakthrough. The change-out schedule is based on the chemical concentration, physical work effort, temperature and humidity. Many respirator manufacturers have cartridge change schedule calculators available on the internet.



Full-Face Air-Purifying Respirator

In some situations, you may need or want to use full-face respirators. This type of respirator is used when the air contaminant irritates the eyes. They also provide somewhat higher protection to the lungs since they tend to fit tighter and are less prone to leaking. These respirators also

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have replaceable cartridges that must be changed on a regular basis as described above for half-face respirators.

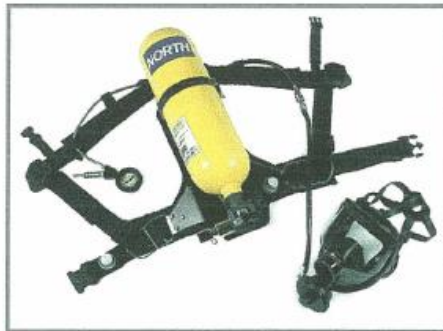


Powered Air Purifying Respirator (PAPR)

Powered Air Purifying Respirators have a battery pack that draws air through replaceable cartridges and blows into a full facepiece, helmet or hood. These respirators are often more comfortable in hot weather, and some can provide more protection, depending on the type. The cartridges must be changed regularly as described for half-face respirators above.



Airline Respirator



Tank-type respirator (SCBA)

Supplies Air Respirators and Self-Contained Breathing Apparatus (SCBA)

In a few situations, you may need to provide a supplied air respirator to your employees. These situations include large chemical spills or leaks, entering a confined space where there is lack of oxygen or high levels of air contaminants, or working around extremely toxic chemicals. They may also be necessary working at hazardous waste sites, during sandblasting or in some spray-painting operations. “Supplied air” means that clean (grade D or better) air is provided by means of an air hose from a compressor or a pressurized DOT approved air tank. Oxygen is not used in compressed air units.

Supplies air respirators are REQUIRED when a respiratory hazard is considered “immediately dangerous to life or health” (also called “IDLH”). Respiratory hazards are classified as IDLH as follows:

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- There is a lack of oxygen (less than 19.5% oxygen)
- There is too much oxygen (more than 23.5% - a fire hazard)
- You know there are toxic chemicals in the air, but you don't know how much
- The amount of chemical in the air is known or expected to be about the IDLH level for that chemical. See the NIOSH Pocket Guide to Chemical Hazard for chemical IDLH levels.

Levels of chemicals above IDLH can occur in confined spaces, or enclosed spaces where there is little or no ventilation.



Emergency Escape Respirators

Emergency escape respirators, as the name implies, can only be used for one thing – to escape or exit from a room or building in an emergency, usually a large chemical release, leak or spill, or when a supplied air respirator fails or runs out of air. An escape respirator is typically a small bottle or tank of air connected to a facepiece that supplies 5-10 minutes of air. Some supplied air respirators will have an auxiliary bottle of air for escape that connects to the existing facepiece.

How do you decide which type of respirator to select? First, it must be the correct type for the air contaminant. Second, it must fit properly. Third, it must provide adequate protection for the amount of chemical in the air. The more toxic or more concentrated the chemical is in the air, the higher the level of protection the respirator must provide.



Different respirators provide different protection. Depending on the amount of chemical in the air, you may need to use a respirator that provides more protection. Respirators are rated by their “assigned protection factor” (APF) which is a number between 10 and 10,000. The higher the number, the greater the protection. A respirator with a protection factor of 10 times the safe limit of that chemical. See Table 5 below.

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Table 5 Assigned Protection Factors (APF) for Respirator Types	
<i>If the respirator is a(n)...</i>	<i>Then the APF is...</i>
Air-purifying respirator with a: <ul style="list-style-type: none"> • Quarter-mask • Half-facepiece. This category includes filtering facepiece and elastomeric facepiece • Full-facepiece 	5 10 50
Powered air-purifying respirator (PAPR) with a: <ul style="list-style-type: none"> • Loose-fitting facepiece • Half-facepiece • Full-facepiece • Hood or helmet Note: PAPRs with helmets/hoods may receive an APF of 1000 only when you have evidence that testing of these respirators demonstrates performance at a level of protection of 1,000 or greater. Such evidence must be provided by the respirator manufacturer. This level of performance can best be demonstrated by performing a workplace protection factor (WPF) or simulated workplace protection factor (SWPF) study or equivalent testing.	25 50 1000 25/1000 (See note)
Airline respirator with a: <ul style="list-style-type: none"> • Half facepiece and designed to operate in demand mode • Loose-fitting facepiece and designed to operate in continuous flow mode • Half-facepiece and designed to operate in continuous flow mode • Half-facepiece and designed to operate in pressure demand or other positive pressure mode • Full-facepiece and designed to operate in demand mode • Full-facepiece and designed to operate in continuous flow mode • Full-facepiece and designed to operate in pressure-demand or other positive pressure mode • Helmet or hood and designed to operate in continuous flow mode Note: Air-line respirators with helmets/hoods designed to operate in continuous flow mode may receive an APF of 1000 when you have evidence that testing of these respirators demonstrates performance at a level of protection of 1000 or greater. Such evidence must be provided by the respirator manufacturer. This level of performance can best be demonstrated by performing a workplace protection factor (WPF) or simulated workplace protection factor (SWPF) study or equivalent testing.	10 25 50 50 50 1000 1000 25/1000 (See note)
Self-contained breathing apparatus (SCBA) with a tight fitting: <ul style="list-style-type: none"> • Half-facepiece and designed to operate in demand mode • Full-facepiece and designed to operate in demand mode • Full-facepiece and designed to operate in in pressure-demand mode or other positive pressure mode (e.g. open/closed circuit) • Helmet or hood and designed to operate demand mode • Helmet or hood and designed to operate in pressure demand or other positive pressure mode (e.g. open/closed circuit) 	10 50 10,000 50 10,000
Combination respirators <ul style="list-style-type: none"> • When using a combination respirator such as an air-line respirator with an air-purifying filter, you must make sure the APF is appropriate to the mode of operation in which the respirator is used 	
Escape respirator <ul style="list-style-type: none"> • APFs in this table do not apply to respirators used solely for escape. To select escape respirators, go to Step 8 of this section. 	

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Use Table 6 below to select air-purifying respirator for particle, vapor, or gas contaminants.	
Table 6 Requirements for Selecting Air-Purifying Respirators	
If the contaminant is a:	Then:
Gas or vapor 	Provide a respirator with canisters or cartridges equipped with a NIOSH-certified, end-of-service-life indicator (ESLI) (note: there are just a few of these) or If a canister or cartridge with an ESLI is not available, develop a cartridge change schedule to make sure the canisters or cartridges are replaced before they are no longer effective (note: most cartridge respirators fit in this category) or Select an air-supplying respirator
Particle, such as a dust, spray, mist, fog, fume, or aerosol 	Select respirators with filters certified to be at least 95% efficient by NIOSH. For example, N95s, R99s, P100s, or High Efficiency Particulate Air filters (HEPA) or You may select respirators NIOSH certified as “dust and mist,” “dust, fume, or mist,” or “pesticides.” You can only use these respirators if particles primarily have a mass median aerodynamic diameter of at least 2 micrometers. Note: These latter respirators are no longer sold for occupation use, but some employers may still be using them.

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HOW TO EVALUATE YOUR WORKPLACE FOR EMPLOYEE EXPOSURE TO CHEMICALS

Respirators are required when employees are exposed (can inhale) chemicals or dust in the air that are at harmful levels. These can include vapors from handling solvents, spray-painting, dust from grinding or sanding, or welding fumes. If you manage a small crew, you're probably quite familiar with each employee's job, what chemicals they use or how much welding, spray painting, grinding, or sanding they do. Your employees may have told you that the chemical odors or dust bothered them or that they were worried about their chemical exposure. You may have switched to less hazardous chemicals. Or you may have no alternative but to use more hazardous chemicals to do the job or make your product. But without some knowledge of the amount of chemical or dust in the air in the workplace, you cannot know whether your employees are exposed to harmful amounts of chemicals they use.

Just about every chemical has its toxic amount or level that will make a person sick. Even too much table salt can be harmful. On the other hand, highly toxic chemicals can be used without harm to employees if handled properly. Most commonly used chemicals have safe limits or "permissible exposure limits" in the air that if exceeded will cause harm. To view the list of chemicals with WISHA permissible exposure limits, please visit [WAC 296-841-20025](#). If these limits are exceeded, you are required to take steps to protect your employees from the air exposure. If the levels cannot be reduced below the permissible exposure limits by ventilation, changes in the process or reduction in the length of time of exposure, then you must provide respirators to exposed employees.

The best way to accurately determine the levels of chemicals or dust in the air is to do some type of air sampling. There are a variety of instruments and devices for measuring air contaminants. Some are simple and cheap; most are quite expensive. The methods for doing air sampling accurately are usually fairly complicated and should not be done by a layperson. Air sampling can be done by WISHA industrial hygiene consultants at your request. This is a free service and will not result in a citation or penalty or a report to WISHA safety inspectors. To request this service, contact the nearest Department of Labor & Industries Office. You can also have a private industrial hygiene consultant conduct air sampling. They can be found under "industrial hygiene services" in Yellow Pages.

If you belong to a trade association or industry group, that organization may have information on common chemical hazards and methods of controls. The material safety data sheets for products used also provide information about the hazards of the chemicals, permissible exposure limits, methods of controls and recommended respirators.

Sample Respirator Training Record

Employee Name (Printed)

I certify that I have been trained in the use of the following respirator(s):

This training included the inspection procedures, fitting, maintenance, and limitations of the above respirator(s). I understand how the respirator operates and provides protection. I further certify that I have heard the explanation of the respirator(s) as described above and I understand the instructions relevant to use, cleaning, disinfecting and the limitations of the respirator(s).

Employee Signature

Instructor Signature

Date

Employer-Provided Information for Medical Evaluations

This form may be used by the employer to give to your medical provider, information on respirator used by your employees, but it is not a required form. You can consult directly with your medical provider and discuss the information below.

You must also give the medical provider a copy of your written respiratory program and a copy of the Respirator Rule.

Specific Respirator Use Information

Employee Name: _____

Company Name: _____

Employee Job Title: _____

Company Address: _____

Company contact person & phone number: _____

1. Will the employee be wearing protective clothing and/or equipment (other than the respirator) when using the respirator?

Yes / No _____ If "Yes," describe protective clothing and/or equipment:

2. Will the employee be working under hot conditions (temperature exceeding 77°F)?

Yes / No _____ If "Yes," describe nature of work and duration:

3. Will the employee be working under humid conditions? Yes / No _____

4. Describe any special or hazardous conditions the employee could encounter when using the respirator (for example, confined spaces, life-threatening gasses):

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Specific Respirator Use Information, Continued

Check Box	Respirator Type	Face / Head Cover Type (half or full face, helmet, or hood)	Frequency of Use (hours per day, week, or month)	Work Effort Light, Moderate, Heavy (see descriptions below)	Respirator Wt.
	Disposable facepiece particulate filter (N, R or P series)	½ facepiece			
	Mask with replaceable filter or cartridge				
	Mask with canister				
	Powered air-purifying respirator (PAPR)				
	Air line, continuous flow				
	Air line, negative pressure demand				
	Air line, positive pressure demand				
	SCBA, negative pressure demand				
	SCBA, positive pressure demand				

Work Effort Descriptions

Examples of **light work effort** are sitting while writing, typing, drafting, or performing light assembly work; or standing while operating a drill press (1-3 lbs.) or controlling machines.

Examples of **moderate work effort** are sitting while nailing or filing; driving a truck or bus in urban traffic; standing while drilling, nailing, performing assembly work, or transferring a moderate load (about 35 lbs.) at trunk level; walking on a level surface about 2 mph or down a 5-degree grade about 3 mph; or pushing a wheelbarrow with a heavy load (about 100 lbs.) on a level surface.

Examples of **heavy work effort** are lifting a heavy load (about 50lbs.) from the floor to your waist or shoulder; working on a loading dock; shoveling; standing; standing while bricklaying or chipping castings; walking up an 8-degree grade about 2 mph; climbing stairs with a heavy load (about 50lbs.).

Criteria for deciding whether one or two standby employees are needed at an IDLH location.

WAC 296-842-19005

Provide standby assistance in immediately dangerous to life or health (IDLH) conditions.

You must:

- Provide at least two standby employees outside the IDLH area.

Note: You need only one standby employee **if** the IDLH condition is well characterized, will remain stable **and** you can show one employee can adequately do **all** of the following:

- Monitor employees in the IDLH area
- Implement communication
- Initiate rescue duties

Seal Check Procedures (from Respirator Rule)

Table 21
User Seal Check Procedure

Important Information for Employees:

- You need to conduct a seal check each time you put your respirator on before you enter the respirator use area. The purpose of a seal check is to make sure your respirator (which has been previously fit tested by your employer) is properly positioned on you face to prevent leakage during use and to detect functional problems.
- The procedure below has two parts; a positive pressure check and a negative pressure check. You must complete both parts each time. It should only take a few seconds to perform, once you learn it.
 - If you can't pass both parts, your respirator is not functioning properly, see your supervisor for further instructions.

Positive Pressure Check:

1. Remove exhalation valve cover, if removable.
2. Cover the exhalation valve completely with the palm of your hand while exhaling gently to inflate the facepiece slightly.
3. The respirator facepiece should remain inflated (indicating a build-up of positive pressure and no outward leakage).
 - If you detect no leakage, replace the exhalation valve cover (if removed), and proceed to conduct the negative pressure check.
 - If you detect evidence of leakage, reposition the respirator (after removing and inspecting it), and try the positive pressure check again.

Negative Pressure Check:

4. Completely cover the inhalation opening(s) on the cartridges or canister with the palm(s) of your hands while inhaling gently to collapse the facepiece slightly.
 - If you can't use the palm(s) of your hands to effectively cover the inhalation openings on the cartridges or canisters, you may use:
 - Filter seal(s) (if available)
 - Or
 - Thin rubber gloves
5. Once the facepiece is collapsed, hold your breath for 10 seconds while keeping the inhalation openings covered.
6. The facepiece should remain slightly collapsed (indicating negative pressure and no inward leakage)
 - If you detect no evidence of leakage, the tightness of the facepiece is considered adequate, the procedure is complete, and you may now use the respirator.
 - If you detect leakage, reposition the respirator (after removing and inspecting it) and repeat both the positive and negative test fit checks.

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Table 20 Respirator Cleaning Procedure	
Step	Task
1.	Remove filters, cartridges, canisters, speaking diaphragms, demand and pressure valve assemblies, hoses, or any components recommended by the manufacturer. <ul style="list-style-type: none"> • Discard or repair any defective parts
2.	Wash components in warm (43°C [110°F] maximum) water with a mild detergent or with a cleaner recommended by the manufacturer. <ul style="list-style-type: none"> • A stiff bristle (not wire) brush may be used to help remove the dirt. • If the detergent or cleaner doesn't contain a disinfecting agent, respirator components should be immersed for 2 minutes in one of the following: <ul style="list-style-type: none"> ○ A bleach solution (concentrating of 50 parts per million of chlorine). Make this by adding approximately one milliliter of laundry bleach to one liter of water at 43°C (110°F) ○ A solution of iodine (50 parts per million iodine). Make this in two steps: <ul style="list-style-type: none"> ▪ First, make a tincture of iodine by adding 6-8 grams of solid ammonium iodide and/or potassium iodide to 100 cc of 45% alcohol approximately. ▪ Second, ad 0.8 milliliters of the tincture to one liter of water at 43°C (110°F) to get the final solution. • Other commercially available cleansers of equivalent disinfectant quality when used as directed, if their use is recommended or approved by the respirator manufacturer.
3.	Rince components thoroughly in clean, warm (43°C [110°F] maximum), preferably, running water. Note: The importance of thorough rinsing can't be overemphasized. Detergents or disinfectants that dry on facepieces could cause dermatitis. In addition, some disinfectants may cause deterioration of rubber or corrosion of metal parts, if not completely removed.
4.	Drain components.
5.	Air-dry components or hand dry components with clean, lint-free cloth.
6.	Reassemble the facepiece components. <ul style="list-style-type: none"> • Replace filters, cartridges, and canisters, if necessary (for testing)
7.	Test the respirator to make sure all components are working properly.