**MCRD-CBRN-1001 Employ the Field Protective Mask (FPM)**

**TERMINAL LEARNING OBJECTIVE:**

1. Given a CBRN environment, a field protective mask (SL-3 complete), a CBRN alarm and CBRN incident indicator, or an order to mask, **employ the Field Protective Mask (FPM) within a time limit of nine seconds of the issuance of the alarm**, **CBRN incident indicator, or an order**. (MCRD-CBRN-1001)

**ENABLING LEARNING OBJECTIVES:**

1. Given a list of choices and/or graphic, identify the **nomenclature of the field protective mask** in accordance with TM 09204G/09205G-OI/1. (MCRD-CBRN-1001a)
2. Given a list of choices and/or graphic, identify the **CBRN alarm (vocal, visual, and percussion)** in accordance with TM 09204G/09205G-OI/1. (MCRD-CBRN-1001b)
3. Given a list of choices and/or graphic, identify **indicators of a CBRN incident** in accordance with TM 09204G/09205G-OI/1. (MCRD-CBRN-1001c)
4. Given a CBRN environment, a field protective mask (SL-3 complete), a CBRN alarm and CBRN incident indicator, or an order to mask, **close eyes and stop breathing** in accordance with TM 09204G/09205G-OI/1. (MCRD-CBRN-1001d)
5. Given a CBRN environment, a field protective mask (SL-3 complete), a CBRN alarm and CBRN incident indicator, or an order to mask, **don the field protective mask** in accordance with TM 09204G/09205G-OI/1. (MCRD-CBRN-1001e)
6. Given a CBRN environment, a field protective mask (SL-3 complete), a CBRN alarm and CBRN incident indicator, or an order to mask, **clear the field protective mask** in accordance with TM 09204G/09205G-OI/1. (MCRD-CBRN-1001f)
7. Given a CBRN environment, a field protective mask (SL-3 complete), a CBRN alarm and CBRN incident indicator, or an order to mask, **check mask for proper seal** in accordance with TM 09204G/09205G-OI/1. (MCRD-CBRN-1001g)
8. Given a CBRN environment, a field protective mask (SL-3 complete), a CBRN alarm and CBRN incident indicator, or an order to mask, **sound the alarm to warn others** in accordance with TM 09204G/09205G-OI/1. (MCRD-CBRN-1001h)
9. Given a CBRN environment, a field protective mask (SL-3 complete), a CBRN alarm and CBRN incident indicator, or an order to mask, **remove the mask after the "UNMASK" order is given** in accordance with TM 09204G/09205G-OI/1. (MCRD-CBRN-1001i)
10. Given a CBRN environment, a field protective mask (SL-3 complete), a CBRN alarm and CBRN incident indicator, or an order to mask, **stow the mask** in accordance with TM 09204G/09205G-OI/1. (MCRD-CBRN-1001j)
11. **GENERAL.** The M50 Joint Service General Purpose Mask (JSGPM) is designed to provide 24-hours of continuous face-eye-respiratory Chemical/Biological (CB) and radiological particulates protection, and improve overall mission performance of the Marine. The M50 Joint Service General Purpose Mask (JSGPM) is issued in three sizes: small, medium, and large. A SL-3 complete M50 Joint Service General Purpose Mask (JSGPM) consists of the mask carrier, facepiece assembly, clear outsert assembly, M61 filters, a waterproofing bag, a canteen drinking cap, operator’s cards and individual equipment carrier bag.
	1. The head harness, face piece assembly, eye lens, front module assemble, M61 filters and drink tube coupler and housing are the principal operating components of the M50 Field Protective Mask.
	2. Each facepiece assembly incorporates two filter mounts, left and right, positioned on either side of the mask. Each filter mount integrates a self-sealing disk valve, an inlet disk valve, the valve mounting posts and valve seats and air deflectors. The air deflectors and nose cup control the flow of air throughout the mask. The M61 filters are attached to the filter mount using a twist and lock mechanism.
12. **NOMENCLATURE.**
	1. **Facepiece Assembly:** The face piece assembly is the foundation of the protective mask; everything else is attached to it.
13. The facepiece assembly is made of silicone that forms a comfortable seal on the face and protects the face, eyes, and respiratory tract from CB agents and radiological particulates and toxic industrial chemicals.
14. The facepiece assembly incorporates a flexible, single, polyurethane eye lens; a front module that provides a direct speech capability and integrates the exhalation disk valve, drinking system components, and communications interface; two filter mounts (left and right) that integrate the air inlet/outlet disk valves, self-sealing disk valves, air deflectors; and a nose cup that controls the flow of air throughout the mask.

* 1. **Head Harness:** The head harness is the adjustable straps that are attached to the face piece assembly. When adjusted properly, they will secure the face piece assembly to your face creating an airtight seal.
1. The head harness consists of a skull cap, and elasticized brow straps, temple straps, and cheek straps.
	1. **Clear Outsert Assembly:** The clear outsert assembly provides the eye lens protection against scratching or other damage.
		1. It has the same contour as the eye lens and clips over the eye lens using outsert locking tabs that will not interfere with vision.
		2. The clear outsert is issued with an outsert pouch which can also be used to clean the mask. The clear outsert will be stowed attached to the mask; the outsert pouch will be stowed in the outsert pocket located on the outside of the mask carrier.
		3. Use of the clear outsert or sunlight outsert provides additional ballistic protection.
	2. **Front Module:** The front module consists of a plastic housing (Front Module Main Body) that integrates the inlet/outlet disk valve and drinking system components.
	3. **Outlet Valve Cover Assembly:** The outlet valve cover assembly fits over the front module main body protecting the drinking system and outlet disk valve. It has a communications port cover to protect the communications port.
		1. The outlet valve cover is dark gray in color.
		2. The design of the cover provides a direct speech capability.
	4. **Inlet/Outlet Disk Valves:** There are three inlet/outlet disk valves contained in the facepiece assembly.
		1. One is located between the outlet valve cover assembly and the front module main body assembly**.** It serves as anoutlet valve disk releases exhaled air and prevents unfiltered air from entering the facepiece assembly.
		2. The other two are located in the interior of the facepiece assembly and are attached to the rear of the left and right filter mounts. They serve as inlet disk valves and permit filtered air to enter the mask and allow you to breath.
		3. The inlet/outlet disk valves are black in color for identification purposes.
	5. **Self-Sealing Disk Valve:** There are two self-sealing disk valves in the facepiece assembly. They are located on the exterior of the facepiece assembly and attach to the front of the left and right filter mounts. The M61 filters are attached to the filter mounts using a twist and lock mechanism.
		1. When the filter is attached to the filter mount, it opens the self-sealing disk valve permitting filtered air to pass through the inlet disk valve during inhalation.
		2. When the filter is removed, the self-sealing disk valve closes, preventing air from entering into the mask.
		3. The self-sealing disk valves are clear in color for identification purposes.
	6. **Drinking System:** The drinking system is integrated into the front module main body and consists of an external drinking tube fitted with a drinking cap to link to the canteen and an internal drinking tube fitted inside the mask. A lever arrangement opens the drinking tube safety shutoff valve and causes the internal drinking tube to swing to the wearer’s mouth.
	7. **Filters:** Twin M61 filters, one installed on each side of the mask, provide protection from CBRN agents. The M61 filters contain an activated carbon media and a high efficiency particulate filter. A time patch assembly is located on the back of the M61 filter. Filter alignment marks are applied to both the M61filters and the facepiece assembly.
		1. **Filter Mounts, Left and Right:** The filter mounts are designed to allow quick installation and removal of the M61 filter, and integrates an inlet/outlet disk valve (black), a self-sealing disk valve (clear) and the air deflectors. The filter mounts are attached to the facepiece assembly using a filter mount clamp ring on the inside of the facepiece assembly.
2. When the filter is attached to the filter mount, it opens the self-sealing disk valve permitting filtered air to pass through the inlet disk valve into the mask during inhalation.
3. When the filter is removed, the self-sealing disk valve closes preventing air from entering into the mask.
4. The filters can be installed and removed rapidly while wearing Mission Oriented Protective Posture (MOPP) or Chemical Protective Ensemble (CPE) gloves.
	1. **Air Deflectors:** Air Deflectors are attached to each filter mount clamp ring inside of the facepiece assembly and aligned over the air deflector alignment posts.

* + 1. During inhalation, the negative pressure created inside the mask opens the inlet valves and pulls filtered air into the mask. The air deflectors and nose cup guide the airflow across the eye lens to enable defogging.
		2. Air then passes through the vent in the top of the nose cup and into the wearer’s respiratory tract.
	1. **Nose Cup Assembly**: Inside the face piece assembly is the nose cup. The nose cup assists in controlling the flow of air throughout the mask to minimize fogging of the eye lenses during breathing. The nose cup size (S, M, L) and the internal drink tube alignment arrow are located on the left interior side of the nose cup.
		1. During exhalation, the positive pressure created inside the mask closes the inlet valves and opens the outlet valve housed in the front module main body assembly. The nose cup channels the moist expired air directly through the outlet valve to the outside environment.
1. **COMPONENTS AND ACCESSORIES:** When you are issued a M50 Joint Service General Purpose Mask (JSGPM), you will receive certain components and accessories to increase its effectiveness.
	1. **Carrier**: The M50 Joint Service General Purpose Mask (JSGPM) carrier provides for storage, protection, and carrying of the facepiece assembly, clear outsert assembly, sunlight outsert assembly (if issued), operator cards, waterproofing bag, and water canteen cap. The carrier protective sleeve is used to prevent sand, dust, and other particles that could potentially damage the mask from entering the carrier.
	2. **Waterproof Bag**: The waterproofing bag is used to keep the mask dry when required by climate and mission, for example, a river crossing.
	3. **Canteen Drinking Cap:** The canteen drinking cap replaces the M1 canteen cap and provides the capability to connect the drink coupler to the user’s canteen for drinking purposes.
	4. **Operator’s Cards**.
	5. **Optical Inserts**: Optical inserts are available by medical prescription for personnel who must wear glasses.
		1. Optical inserts are available by medical prescription for personnel who must wear glasses.
		2. **DO NOT wear contact lenses (soft or hard) while wearing the mask.** Inadequate oxygen supply to the corneal surface, exposure to dust, dirt, and smoke or gas may cause serious vision loss or eye damage.
	6. **Individual Equipment Carrier Bag**. Individual Equipment Carrier Bag: The individual equipment carrier bag provides for the storage of select Additional Authorization List (AAL) items.
	7. **M291 Skin Decontamination Kit**. The M291 kit consists of a wallet-like carrying pouch containing six individual decontamination packets; enough to do three complete skin decontaminations. The kit allows personnel to decontaminate their skin through physical removal, absorption, or neutralization of toxic agents with no long-term harmful effects.
	8. **M295 Individual Equipment Decontamination Kit**. The M295 kit allows personnel to decontaminate their individual equipment through physical removal and absorption of chemical agents. The M295 kit can decontaminate approximately 1,200square feet. Decontamination is accomplished through sorption of contamination by both the kit non-woven polyester pad and by the decontaminating powder. (**Note**: It is not approved for skin decontamination.)
2. **TYPES OF CRBN THREATS.** CBRN stands for chemical, biological, radiological, and nuclear (CBRN). There are three main types of CBRN threats that we will talk about today: Chemical Agents, Biological Agents and Nuclear Threats.
	1. **Chemical Agents**. Chemical agents are categorized as nerve, blister, blood, incapacitating, choking, vomiting, and riot control.
		1. Chemical agents may be disseminated as vapors, solids, liquids, or gases (depending on the temperature); and they may cause casualties in multiple physical states. For example, an agent may be disseminated as a liquid casualty hazard from a delivery vehicle, yet remain a vapor hazard if the agent has high volatility or off-gases from a porous surface during high temperatures.
		2. Personnel can be exposed to chemical agents through breathing (inhalation), the skin, and the eyes. The casualty-producing effects of chemical agents can occur within seconds, minutes, or hours. For example, nerve agents are quick-acting and can cause casualty-producing effects within minutes. Alternatively, blister agents can take hours to cause their casualty-producing effects.
	2. **Biological Agents**. Biological agents can be disseminated as aerosols, liquid droplets, or dry powders. Biological agents can enter the body through the skin, respiratory tract, and digestive tract. Attacks with biological agents can be very subtle or direct, if favorable weather conditions prevail. In some circumstances, an individual will not know a biological attack has occurred. Symptoms can appear from minutes to days after an attack has occurred.

 Biological agents are best thought of as either pathogens or toxins.

* + 1. Pathogens. Pathogens are living organisms. As such, they require certain conditions of temperature, humidity, protection from sunlight, and a susceptible host population.

The duration period of this incubation could last from hours to days. Pathogens can be disseminated in wet or dry form or by vectors (e.g., mosquitoes). Additionally, some pathogens are contagious and can be spread from individual to individual; therefore, personnel not in the initial area of attack could become casualties. Following a large-scale dissemination of a biological agent, an initial disease outbreak of epidemic proportions might occur.

* + 1. Toxins. Toxins are poisons naturally produced through the activities of living organisms. Some toxins can now be artificially synthesized (e.g., powder form) and disseminated in liquid or dry form. Generally, toxins do not cause immediate casualty producing effects, and any casualties will arise hours to days after exposure. Unlike pathogens, toxins are not contagious.
			1. Treatment of biological agent casualties requires medical assistance as soon as possible. Further, symptoms associated with some toxins mimic other illness or chemical-casualty symptoms. Biological agent symptoms may include:
1. Dizziness, mental confusion, or double or blurred vision.
2. Skin tingling, numbness, paralysis, or convulsions.
3. Formation of rashes or blisters.
4. Coughing, fever, aching muscles, fatigue, and difficulty in swallowing.
5. Nausea, vomiting, and/or diarrhea.
6. Bleeding from body openings or blood in urine, stool, or sputum (spit).
7. Shock (symptoms appear in minutes or hours after the toxin attack).
	1. **Nuclear Threats.** A nuclear attack can cause blast, thermal, and radiation effects. One primary concern should be protection from gamma and neutron radiation. If at all possible, it is important that as much distance as possible be placed between the individual and the nuclear blast.
		1. Gamma radiation protection requires thick layers of dense or heavy shielding material, such as lead, iron, or stone.

Personnel must make defensive preparations to protect themselves; the effective use of terrain and shelter is very important. The best protection remains an area below ground with some sort of overhead cover.

1. **INDICATORS OF A CBRN ATTACK.**
	1. Indicators of a CBRN attack include:
		1. A chemical cloud
		2. A distinctive Odor
		3. Mist or fog sprayed by aircraft or aerosol generators.
		4. A mysterious illness (many individuals sick for unknown reasons).
		5. Mass casualties with flu-like symptoms — fever, sore throat, skin rash/blisters, mental abnormalities, pneumonia, diarrhea, dysentery, hemorrhaging, or jaundice.
		6. Large numbers of insects or unusual insects.
		7. Large numbers of dead or strange-acting (wild and domestic) animals.
		8. Unexploded bomblets found in the area.
2. **TYPES OF CBRN ALARMS.** There are several different ways to warn others of a chemical/biological attack:
	1. **Vocal**. The universal command to put the gas mask on is GAS-GAS-GAS. The word “GAS” is repeated three times.
	2. **Visual**. Sound the alarm to warn others. Immediately execute the hand-and-arm signal for “GAS, GAS, GAS”” in order to warn all in the area of a CBRN threat or contamination in the area and to don and clear their M50 Joint Service General Purpose Mask (JSGPM).



* + 1. The arms are extended straight out to the side and the hands are made into fists. As the word “GAS” is said, bend the arms at the elbows so the fists are placed to the ears. **Repeat three times**.
	1. **Percussion**:
		1. Metal on Metal. Metal triangles are used to give the CBRN alarm by striking them together repeatedly. **Strike three times.**
		2. Sirens, intermittent horns, biological/chemical alarm systems, or other devices as outlined by the unit’s standard operating procedures (SOP). **Sound three times.**
1. **FITTING THE FIELD PROTECTIVE MASK.** Before the M50 Joint Service General Purpose Mask (JSGPM) can be donned and cleared, adjustments must first be made to the head harness so that it fits properly. The following are the steps to take in order to properly fit your M50 Joint Service General Purpose Mask (JSGPM):
	1. Completely loosen all head harness straps and then pull the head harness over the front of the face piece assembly.
	2. Put your chin in the pocket and hold the face piece assembly against your face.
	3. Grab the harness tab and pull down the head harness as far as possible ensuring that the head harness is centered on the crown of the head and the temple straps are approximately parallel to the ground.
	4. Grab the loose end of the cheek straps, one at a time, and pull until strap feels tight to the user. Both straps should be approximately equal length when complete.

**NOTE:** When the brow straps are tightened and secured in the brow strap covers, and the temple straps have been tightened, note their position for future reference.

* 1. Pull the brow straps until tight and secure in brow strap covers. Straps should be approximately equal length when complete.
	2. Grasp the temple straps and pull them until the mask is comfortable, but tight against the face, ensuring the temple straps are above the ears and approximately parallel to the ground. Straps should be approximately equal length when complete.
	3. Alter the length of brow straps by moving the temple and cheek straps up or down to position correctly above and below ears.
	4. Release the mask assembly. The mask assembly should not slip down. If mask assembly slips, readjust the straps as necessary until mask assembly remains in place.
	5. Conduct negative pressure test by placing palms of hands over both M61 filter inlet ports and breathe in. The mask assembly should collapse against the user’s face and remain so while holding breath. If it does, mask assembly is fitted properly.
	6. If the mask assembly does not collapse, check for loose hair, clothing, or other matter that may be caught in between the face piece assembly and your face.
		1. Ensure head harness is pulled down as far as possible on back of head.
		2. Ensure edges of mask are flat against the user’s face and not rolled under.
1. **DON AND CLEARING THE M50 JOINT SERVICE GENERAL PURPOSE MASK (JSGPM).** Upon hearing or seeing a CBRNalarm/signal for “GAS”, execute the following steps to properly don and clear your M50 Joint Service General Purpose Mask (JSGPM) in nine seconds or less:
	1. Close your eyes and stop breathing.

**NOTE:** This does not mean take one more breath.

* 1. If worn, remove your eyeglasses.
	2. Hold your service rifle between your legs, remove your helmet, and place it on the muzzle of your weapon.
	3. Open your field protective carrier with your left hand.

With your right hand, grab your face piece assembly and remove it from carrier.

* 1. Raise the mask to your face and place your chin firmly in the chin pocket.
	2. Grab the donning tab and pull the head harness over your head. Be sure your ears are between the temple straps and cheek straps.
	3. Pull down the head harness at the back as far as possible so that the brow straps are tight and temple straps are approximately parallel to the ground.

**NOTE**: The temple and brow straps have already been adjusted during initial fitting, so additional adjustments need to be made.

* 1. Be sure skull cap is centered on the back of your head.
	2. Tighten the cheek straps one at a time, ensuring the straps lay flat against your head.
	3. Clear your face piece assembly by sealing the outlet disk valve by placing one hand over the outlet valve cover assembly. Blow out hard to ensure that any contaminated air is forced out around the edges of the mask assembly
	4. Conduct a negative pressure test. With both hands, locate and cover M61 filter air inlet passages on both filters and breathe in. The mask should collapse against your face and remain so while you hold your breath.

* + 1. If it does, your mask is airtight.
		2. If the mask does not collapse, check for hair, clothing, or other matter between mask and your face and clear again
	1. Resume breathing.
	2. Put on your helmet/cover. Be sure not to upset the seal between your face piece assembly and the side of your face when putting on your helmet.
	3. Close your mask carrier.
	4. Continue with your mission.
1. **UNMASKING:** Upon hearing the command “ALL CLEAR, UNMASK,” execute the following steps to properly remove your M50 Joint Service General Purpose Mask (JSGPM):

* 1. Hold your service rifle between your legs, remove your helmet, and place it on the muzzle of your weapon.
	2. Loosen your cheek straps only. Place one hand in front of the communications port to hold the face piece assembly on your face while the other hand grasps the donning tab. Pull the head harness over the front of the face piece assembly and remove face piece.
	3. Stow your field protective mask in carrier.
	4. Put your helmet back on and continue with your mission.
1. **CLEANING RESPONSIBILITIES:**
	1. **Cleaning the M50 Joint Service General Purpose Mask (JSGPM):** When cleaning the face piece, use only potable water. Clean your face piece assembly and outserts using a clean cloth and non-abrasive soap. DO NOT use hot or boiling water to clean the mask; damage to the mask may result. Use warm(comfortable to the touch) water.
		1. Remove the head harness and clear outsert assembly.
		2. Remove the filters, inlet disk valves, self-sealing disk valves and air deflectors from the filter mounts.
		3. Remove the outlet valve cover assembly and outlet disk valve.
		4. Dip an outsert pouch in warm soapy water and wring pouch almost dry.
		5. Clean outlet valve cover assembly, outlet disk valve, inlet disk valves, air deflectors, self-sealing disk valves, and head harness with the outsert pouch.
		6. Remove any greasy or oily substances from your face piece assembly by wiping it with an outsert pouch.
		7. Rinse by dipping the outsert pouch in warm clear water, wring almost dry and wipe the mask and components with the clean water; allow to air dry.
		8. Hand the head harness to air dry.
		9. Ensure all components are entirely dry before stowing.
2. **STOWING THE M50 JOINT SERVICE GENERAL PURPOSE MASK (JSGPM):** Properly stowing your field protective mask will ensure that it remains serviceable and easily accessible whenever you may need to use it. The following steps will be used when stowing your field protective mask in its carrier:
	1. Check that your face piece assembly is dry and free of oils and solvents before stowing.
	2. Hold the face piece assembly in a horizontal position.
	3. Before stowing the mask, ensure that the cheek straps are not positioned below the M61 filters. Cheek straps positioned below the filters may stretch the mask causing improper chin placement; may induce buckling in the brow region causing improper seal.
	4. Hold the face piece assembly upright and put it in the carrier with the lenses facing away from your body.
	5. Stow the other outserts, waterproof bag, and operator’s card in the inside pockets of the carrier.
	6. Close the field protective mask carrier.
	7. Store the closed carrier in a cool, dry, dark place, preferably by the hook on the short strap.
3. **MOPP**
	1. **Mission-Oriented Protective Posture (MOPP): (10 MIN)** - MOPP is a flexible system of protection against chemical agents, which is used in chemical warfare to facilitate mission accomplishment. Because of body heat buildup and basic human needs, the over garment can’t be worn for an indefinite period. MOPP however, gives the commander and staff a range of choices of levels of chemical protection for their units, from no protection at all to full protection.
	2. **Limitations of Mission-Oriented Protective Posture**
		1. Heat Exhaustion - Individuals working at a heavy work rate, while in protective gear, may experience heat exhaustion (dizziness and fainting) at any time especially during periods of high temperatures.
		2. Work Rate - Consideration of such factors as mask breathing resistance, increase in body temperature from work energy and solar heat, and psychological and physiological stress.
		3. Five Senses - Involving the senses or related functions such as manual dexterity, visual acuity, and voice communication will operate at varying decreased levels of efficiency.
		4. Personal Needs - Individuals can be in full chemical protection for indefinite periods and still attend to certain personal needs such as eating, caring for wounds, personal hygiene, sleep, and elimination of body waste.
		5. Eating - The ability of troops to eat in an NBC environment depends on the type and extent of contamination. Some of the available options are as follows:
			1. If the troops are in a contaminated area, move them into a collective protection facility.
			2. Postpone meals until a clean area is reached.
	3. **Levels of Mission-Oriented Protective Posture** - There are four levels of MOPP.
		1. MOPP Level #1 - This level of protection is established when the general warning is given and the threat of NBC warfare exists.
			1. Mask and hood are carried
			2. Over garment is worn open or closed
			3. Over boots are carried
			4. Gloves are carried
		2. MOPP Level #2 - This level of protection should be established during tactical situation that requires units to cross terrain where the previous use of chemical agents is unknown.
			1. Mask and hood are carried
			2. Over garment is worn open or closed
			3. Over boots are worn
			4. Gloves are carried
		3. MOPP Level #3 - This level of protection should be established when units are on the move and a chemical attack is possible.
			1. Mask and hood are worn, hood open or closed, based on temperature.
			2. Over garment is worn and closed
			3. Over boots are worn
			4. Gloves are carried
		4. MOPP Level #4 - This level of protection should be established when a unit will be operating within an area of contamination, or if there is an imminent threat of attack.
			1. Mask and hood are worn and closed
			2. Over garment is worn and closed
			3. Over boots are worn
			4. Gloves are worn.