

## Riot Control Agents

**Riot control agents** or water can be used to distract, deter, or disable disorderly people. Usually their effects are temporary and disappear within minutes of exposure. The choice of whether to use a particular riot control agent or water in a given situation is based on the physical characteristics of the target area. Weather, especially wind, affects the employment of riot control agents and water.

Planning is essential for the successful use of riot control agents. The plans must be flexible to accommodate changes in the situation and the weather. Above all, strict accountability and control of the employment of riot control agents is a must. Riot control agents are employed only when the task force commander specifically authorizes their use. Employment must be strictly controlled. Every instance of employment must be duly reported.

Other planning factors are the cause, nature, and extent of a disturbance and the crowd's demeanor and intent.

Based on an analysis of these factors, the commander makes an estimate of the situation. The estimate must be as thorough as time permits. Using the estimate, the commander considers courses of action, selects riot control agents, and determines munitions needs. The main factors in choosing a course of action are the desired effects, the crowd's demeanor and intent, the weather, and the types of munitions available.

Plans also must address security of riot control agents during storage, transportation, and employment. The use of riot control agents must be coordinated with all crowd control forces. Leaders who supervise the employment of riot control agents should have wireless communications equipment.

Civil disturbance operations in cities often take place either on narrow streets or in park areas. Standard control procedures do not work well in such instances. Wind direction, the size of the area, and the proximity of health facilities may preclude the use of large quantities of riot control agents. In such cases it may be necessary to use low concentrations to break a crowd into smaller groups.

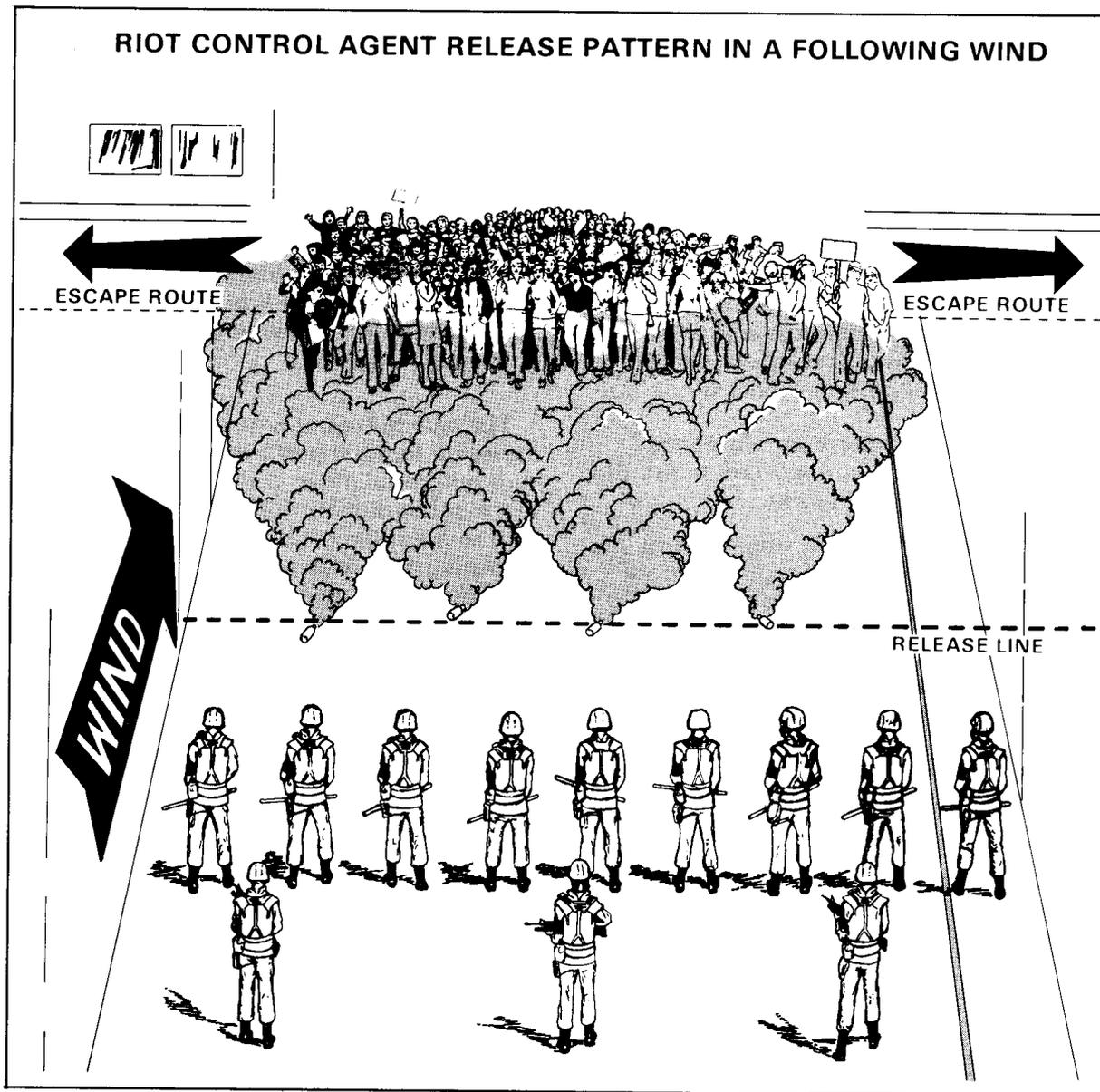
The on-site commander obtains weather forecasts for the operational area. The forecasts must cover the times when dispersal operations will be performed. The commander evaluates the forecasts in conjunction with a map, a detailed reconnaissance, an aerial photograph, or a mosaic study of the terrain in the operational area. Through his evaluation, he estimates the effects of a dispersal operation.

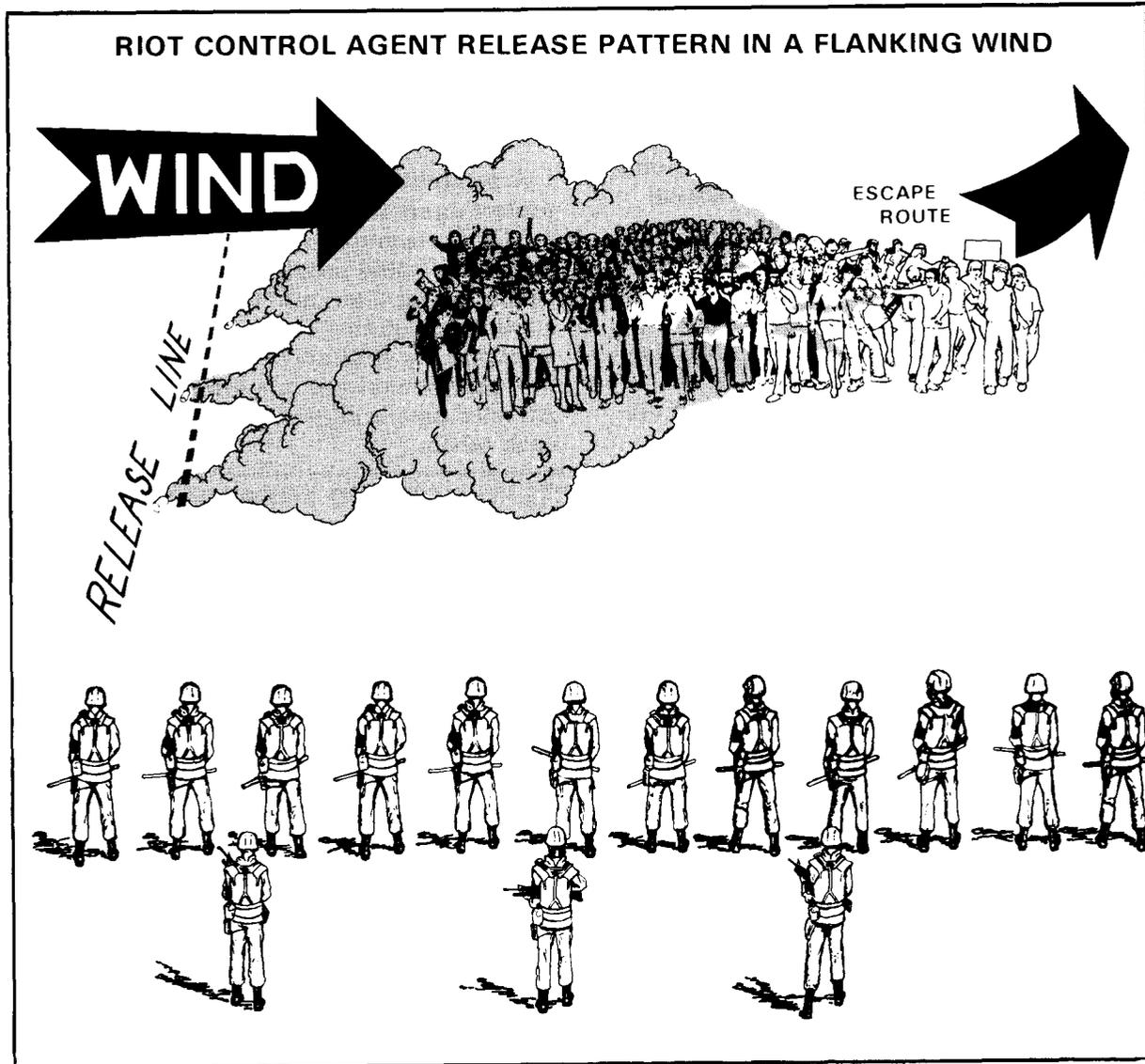
When dealing with large crowds, the control force's objective is to disperse the crowd and to move it in a specific direction, usually away from the disturbance area. Against large crowds, riot control agents usually are employed to cover the target area with a cloud of sufficient strength to produce decisive results. Once the proper concentration is reached, the control force must maintain that concentration until the crowd has been dispersed. When dispersers are used, the dispersal team maintains the

concentration by moving the disperser along the release line at an even rate. They maintain the concentration by repeating the application as necessary.

The control force must have a follow-up plan for exploiting the advantage gained by employment of riot control agents. Clear escape routes prevent panic and the melee that may result as the crowd scrambles for

an exit. Public address systems may be used to direct the crowd to the escape route. They also may be used to give first aid instructions. It may be necessary to move masked troops into the target area to disperse lingering groups, to prevent regrouping, or to prevent further illegal activity. During follow-up operations, troops must be ready to help unconscious or incapacitated people in the contaminated area.





Small groups of 25 to 50 people may gather during disorders and throw objects at cars or congregate near stores that have been partially looted. Patrols can employ low-volume riot control grenades to break up small groups and temporarily prevent further misconduct. This low volume use of riot control agents enables a few troops to disperse a group without calling for more manpower and equipment. The limited use of an agent must be preceded by a careful assessment of the composition and mood of the group. If the group is highly motivated or inclined to violence, a small amount of

agent may only provoke an attack on the outnumbered patrol. High-pressure water can be effective for moving small groups on a narrow front, such as a street, and for defending a barricade or a roadblock.

When used against rioters, riot control agents must be used in sufficient quantities to produce an immediate, decisive effect. Troops using the agents must provide avenues of escape for the crowd. Except for extreme emergencies, riot control agents are not used when hospital patients or school children may be affected.

The riot control agent CS comes in two forms: a pyrotechnic mixture and a powder. It has a pungent pepperlike odor. Its persistency varies according to wind conditions. In powder form, it has greater persistency when there is no wind or when it is dispersed in wooded terrain. Its effects occur within a few seconds after exposure.

As a pyrotechnic mixture, CS is dispersed by means of an M47 hand grenade or a 40-millimeter cartridge and the M203 or M79 grenade launcher. When using the M203 or M79 and the 40-millimeter cartridge, the troops must be warned that, because of the projectile's high velocity, *it can cause*

*serious injury or death at close range.* Troops must exercise extreme caution when using this munition. In the powder form, CS is dispersed by means of the M47 hand grenade and by mechanical dispersers.

A protective mask and field clothing protect against the effects of CS. First aid for CS contamination is rendered by moving affected people to uncontaminated areas, facing them into the wind, and cautioning against rubbing the eyes or touching the genitals or mucous membranes. Showers provide further relief. Affected people should be kept away from each other.

RIOT CONTROL AGENT CHARACTERISTICS AND TREATMENT		
	CS	CR
<b>DELIVERY MEANS</b>	Delivered by hand grenades, rifle grenades, ring airfoil soft projectiles, or as a dry spray by M33A1 or M5 disperser	Delivered as a wet spray or stream by M33A1 or M36 disperser
<b>EMPLOYMENT CONDITIONS</b>	Has greatest effect when there is little or no wind; effectiveness greatly diminished by rain	Is effective under all conditions except high winds; effectiveness only slightly diminished by rain
<b>PERSISTENCY</b>	Varies according to wind conditions; powder form persists longer in still air and in wooded terrain Is not to be used in buildings, near hospitals, or in areas where lingering contamination could cause problems	Lingers in air, long lasting, and less likely windblown; extremely persistent on surfaces Is not to be used in buildings, near hospitals, or in areas where lingering contamination could cause problems
<b>TIME TO MAXIMUM EFFECT</b>	Requires 20 to 60 seconds	Acts immediately on exposed areas
<b>DURATION OF EFFECTS</b>	Lasts 5 to 10 minutes	Lasts a few minutes when victim is moved to an uncontaminated area
<b>EFFECTS</b>	Causes extreme burning sensation in the eyes, abundant flow of tears, coughing, breathing difficulty, tightness in chest, involuntary closing of eyes, stinging sensation on moist skin areas, sinus and nasal drip, and nausea and vomiting on exposure to high concentrations, especially when ingested	Causes irritation of nose and throat; stinging sensation of skin; and irritation of respiratory system, including coughing, chest pains, and feeling of suffocation
<b>MINIMUM PROTECTION</b>	Requires protective mask and field clothing	Requires protective mask, hood, and rubber gloves
<b>FIRST AID</b>	Move victim to uncontaminated area, face victim into wind, caution victim not to rub eyes; keep affected people well apart; have victim shower first with cool water for 3 to 5 minutes, then proceed with normal showering, for gross contamination, flush body with large amounts of cool water, then wash with a 5% sodium bisulfite solution (except in and around eyes), and flush again with water (a 1% solution of sodium carbonate or of sodium bicarbonate may be substituted for the sodium bisulfite solution)	Move victim to uncontaminated area, flush eyes with water, check eyes for abrasions, shower well or wash and scrub exposed areas with soap and water; get victim to doctor if reaction persists  <b>WARNING:</b> Household bleach (sodium hypochlorite solution) is NOT to be used in wash or rinse water to decontaminate clothing, equipment, or people. CR and household bleach react to produce a harmful vapor

## GRENADES

There are two types of riot control grenades in the Army inventory, a burning type and a bursting type. In a wind of about 6 miles per hour, a burning-type grenade can cover an area about 5 meters wide to a downwind distance up to 25 meters. At the same wind speed, a bursting-type grenade can cover an area about 10 meters wide to a downwind distance up to 25 meters.

Burning-type CS grenades and agent dispersers are the means usually employed against large crowds. Bursting-type grenades may be used for psychological effect or to discourage crowd members from trying to throw back grenades.

Burning grenades are thrown by hand or delivered by a grenade launcher to the upwind side of the crowd. Burning grenades must not be thrown into a crowd because they can be picked up and thrown back. Bursting grenades are thrown into the air so that they burst several feet above the crowd.

When the control force is in almost direct contact with the crowd, burning grenades are not used. Either the grenades will be thrown back at the control force or the front ranks of the crowd will be driven into the control force. In this situation, dispersers are used if conditions favor their use behind disturbance control lines.



## DISPERSERS

Dispersers provide commanders with a means of disseminating riot control agents in sufficient quantities to provide effective coverage in a variety of situations and conditions. But their use is limited to outdoor areas. Control force leaders must

be careful when employing riot control agents in confined areas and in areas with restricted avenues of escape. Dispersers usually are transported by soldiers, by 1/4-ton or larger vehicles, or by helicopters. When transported on the ground, the

dispersers may be directly integrated into the crowd control formations. Or they may be operated in direct support of civil disturbance operations. Helicopter-mounted dispersers are used in close conjunction with the control force. The exact placement of the aircraft with respect to the formation is determined by current wind direction and speed and by physical obstacles that may restrict the movement and positioning of the aircraft.

All unit members should know the operation and employment capabilities of the riot control agent dispersers. But the unit must depend on specially selected and trained soldiers. The criteria for selecting disperser operators include initiative, ability to learn, and the ability to deal with large numbers of agitated people calmly.

The disperser operator works under the immediate control and direction of an officer or an NCO. Riot control agents are released only on the direct orders of the commander. If the commander is not fully qualified in employing riot control agents, a qualified officer must be designated to determine the appropriate time, place, and amount of agent to be released and to issue appropriate commands to the operators.

Disperser operators and dispersal team members must be well qualified in their primary MOS and thoroughly trained in riot control operations. Preferably, they should receive special training in the use of riot control agents.

Riot control agent dispersers can release a large amount of riot control agent in a very short time. Operators must be especially careful to avoid releasing intolerable concentrations of the agents. The operators must determine the average release rate for each disperser in terms of pounds of the agent released per second. The dispersers are not used to deliver riot control agents directly into a closed structure except in extreme circumstances.

Commands are given the disperser operators by voice or by hand and arm

signals. The troop commander maintains radio contact with the officer or NCO who is in command of the crowd control formation or of the disperser operators.

Troops who are involved in filling, operating, or transporting dispersers wear ordinary field uniforms with collar and cuffs buttoned and trouser legs tucked into their boots. They also wear a protective mask, a hood, and rubber gloves for protection.

The commander must decide which riot control agent will be used in each disperser before the mission begins. Wet and dry agents cannot be interchanged in the same disperser during a civil disturbance mission. Not only must nozzles be changed, but the whole system must be decontaminated before changing types of agents. For further information on decontamination procedures, see FM 3-5.

To ensure the dispersers operate properly, operators must perform inspections and maintenance systematically each time the equipment is used. They also service the equipment periodically whether it has been used or not. Because of the corrosive effects of some riot control agents, the agents must be removed from the surface of dispersers and the vehicles or helicopters that dispersed the agents. Detailed maintenance, inspection, and repair instructions can be found in the applicable technical publications.

## M36 DISPERSER

The M36 disperser, like other aerosol irritant dispersers, serves as an alternative to traditional weapons, such as nightsticks, riot batons, and firearms. As with other riot control weapons, the M36 must be backed at all times by troops with weapons of greater force.

The M36 disperser is a lightweight, aluminum and plastic container filled with pressurized CR solution. It is small enough to be carried and operated with one hand.

To use the M36, the soldier holds the can upright, aims at the person's face, and presses the activator button. The stream of wet CR vaporizes. It causes a temporary, reflexive closing of the eyes, tearing, and a burning sensation on the skin and in the upper respiratory tract.

The most effective way to use the M36 is in one-second bursts. The maximum range is 10 to 12 feet. This allows the soldier to adjust his aim with a minimum waste of the riot control agent. The soldier must not spray a person for *more than five seconds when closer than 3 feet*. After being subdued, the person can best be decontaminated by facing the wind or by generous flushing with water for several minutes.

See FM 8-285 for more information on first aid procedures.

Troops using the M36 must be thoroughly trained in the use and hazards of the disperser. Training must include situations in which the M36 may be used, how to use it, a demonstration of the stream trajectory, safety requirements, and decontamination procedures. Because the use of the M36 does not cause immediate incapacitation, training on tactics and disperser limitations is necessary.

The disperser is carried and stored in a compact vinyl case with a sna button and a belt loop. The ammo pouch may be used as a field expedient carrying case.



### M33A1 DISPERSER

The M33A1 disperser is a lightweight, portable riot control agent disperser that uses either dry or wet riot control agents. The agent is released through a nozzle on a hand-held gun assembly. Different nozzles are used for the powder and the liquid. The special nozzle for the wet agent allows the

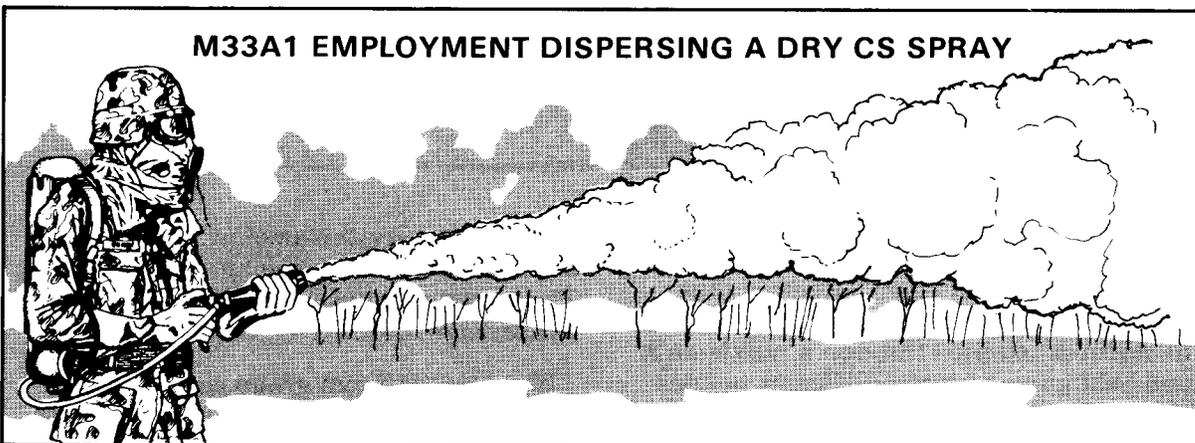
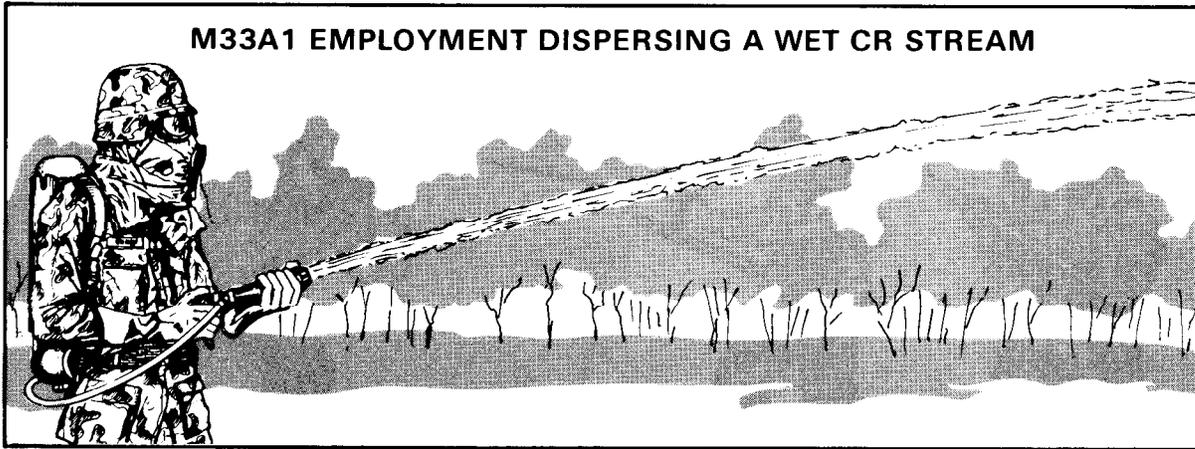
operator to vary the amount and range of the solution by choosing spray or stream. The operator controls dispersal by varying the pressure on the trigger.

The hose and gun group controls the amount of riot control agent released. The agent may be released in a continuous

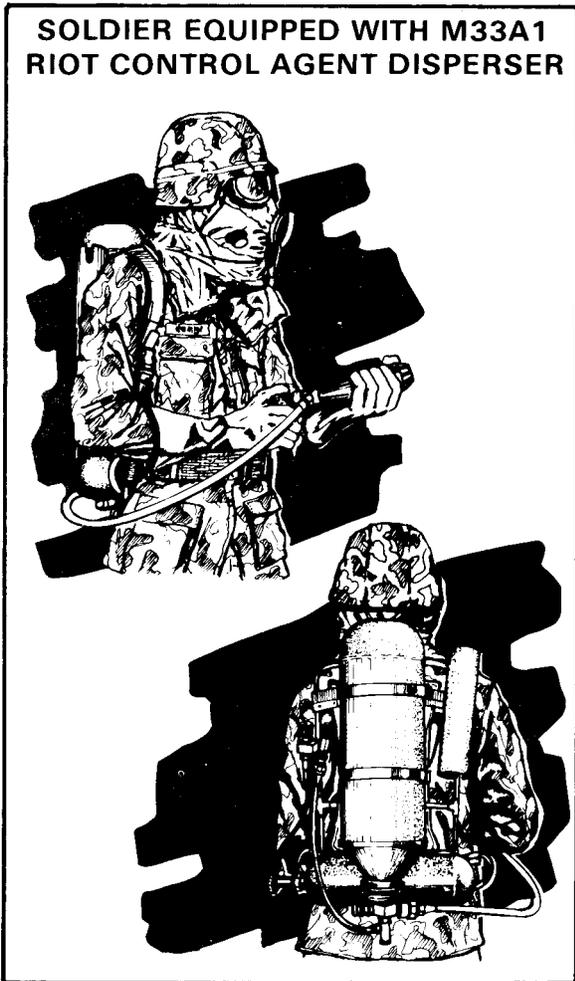
stream or spray or in short bursts ranging from less than one second to several seconds. Operators must determine the particular release rate for each disperser that they operate, both for talc and for riot control agents.

Worn as a backpack, the M33A1 looks and functions like the portable M33 disperser. The difference lies in the units' capabilities. The M33A1 disperser's modular design allows quick replacement of empty agent and pressure containers. The M33A1 can use either dry or wet agents without having to modify the unit itself. The M33A1 is replacing the M33 on a one-for-one basis as the M33s wear out.

The effective use of the M33A1 depends on a following or slightly quartering wind with a speed of less than 20 miles per hour.

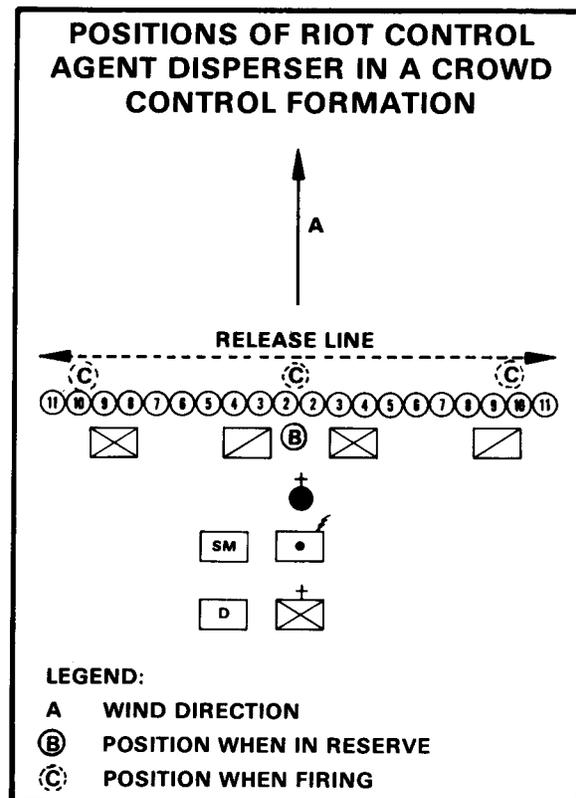


Optimum wind speed is 3 to 5 miles per hour. Usually, the use of this disperser is backed up by other dispersers to ensure adequate coverage of the target area.



The agent tank and the air pressure bottle both have a quick-disconnect capability. But unless there are sufficient tanks and bottles available, the disperser may be out of action for a period of time, depending on the location of the compressor and the soldiers' ability to reload and repressurize the disperser. Because of its compactness, portability, and low cost, the M33A1 provides the user with an immediately available and very effective crowd control weapon.

The disperser operator may be positioned in front of, as a part of, or behind the crowd control formation. Proximity to the crowd and the disperser's role determine where the disperser is placed. When riot control agents are employed in advance of a close approach by the crowd control formation, the disperser operator may be a part of, or slightly in front of the formation. These positions give the operator the greatest freedom in using the disperser. It also minimizes troop exposure. Freedom to move right and left may help to disperse a more uniform cloud over the target. It also allows, to a limited extent, coverage over specific sections of the target area. If the disperser is to be held in reserve, the operator is positioned from one to several feet behind the center of the formation. From this position, the operator can quickly move to the front of the formation. When the disperser is not being used, the operator moves behind the formation for protection from thrown objects.



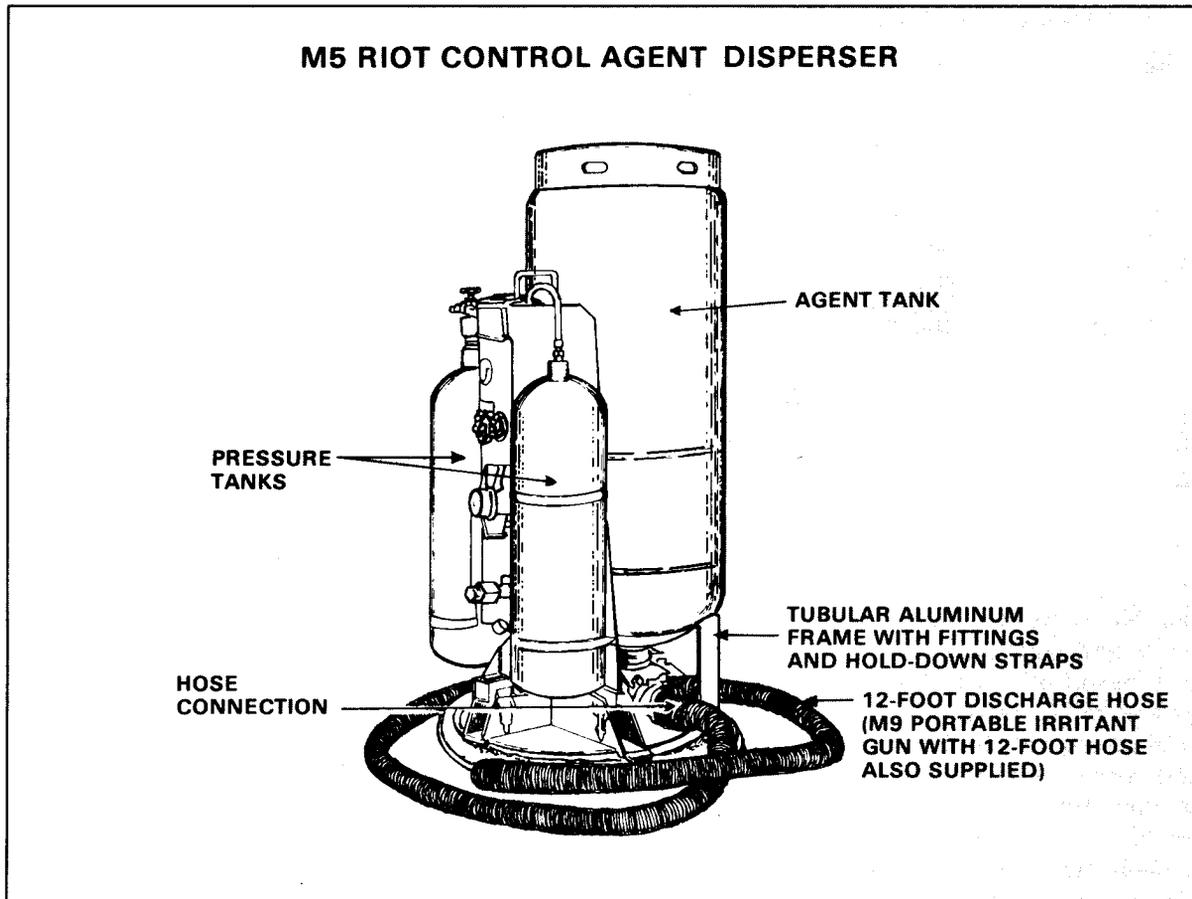
The optimum distance for firing the disperser to produce the greatest effect depends on the wind speed and the operator's freedom of movement across the front of the target area. Generally, the distance of the agent release point or line from the target area ranges from 15 meters to 100 meters or more depending on wind speed. As wind speed increases, dilution of the powder becomes more rapid. When this occurs, the distance between the target area and the release point must be reduced to place an effective concentration on the target.

Factors that affect the amount of a particular agent needed to produce an effective concentration are too varied to permit exact guidance. However, the operator must understand the agent's effectiveness, the amount that can be

released in a given time, and the makeup and determination of the crowd. The operator also must closely observe the agent's dispersal pattern and effect on the target. Too heavy a concentration may result in reaching a tolerance inconsistent with objectives. Too weak a concentration, particularly against an organized and determined group, may encourage more violence.

### M5 DISPERSER

The M5 riot control agent disperser consists of an M9 portable disperser gun for vehicles or a delivery hose for helicopters, a tank that holds approximately 50 pounds of CS, a hose assembly, a pressure tank, and a pressure regulator. These components are mounted on a tubular frame. The complete unit measures approximately 4 feet by 2.5 feet by 2 feet.



The M5 disperser has an effective range of 12 meters when dispersed with the M9 gun during calm winds. It is effective to 46 meters when dispersed from a helicopter at an absolute altitude of 24 to 30 meters. The duration of fire per fill is two minutes with the M9 gun and 20 seconds with the helicopter delivery hose. The disperser plus the agent weighs approximately 210 pounds. The M5 disperser can be mounted on a helicopter or on a 1/4-ton or larger vehicle. See TM 3-1040-220-12&P for more information.

The M5 disperser provides an air-to-ground dispersal capability when mounted in a helicopter. Situations best suited for the employment of the helicopter-mounted M5 include large-scale civil disturbances requiring large quantities of riot control agents and conditions that prevent its use on the ground.

When a helicopter is used, the agent can be released from either a hovering position above or on the windward side of the target area or along a line above or on the windward side of the target. When mounted on a vehicle and employed against open-area targets, the disperser is operated from positions slightly in front of or in the crowd control formation.

The release of riot control agents from a helicopter must be far enough in front of the crowd control formation that the agent dissipates shortly before the formation arrives. The location of the release point or line with respect to the target is determined by wind speed and direction and by physical obstacles. Other factors include the effects of the rotor wash on dispersal and the ground speed of the helicopter.

Initial release of the agent when hovering over the target is accomplished in short bursts of three to five seconds duration. The operator watches the crowd's reactions to determine the number and length of subsequent bursts. When hovering to the windward side of the target, the same procedure

is followed, except the agent may be released in slightly longer bursts. Release of an agent along a line must begin in time to assure coverage of the side of the target being approached. Dispersal must cease shortly before reaching the far side of the target. This helps avoid dispersal over areas other than the target. The exact moments for beginning and for ceasing the release are governed by the helicopter's speed and by wind speed and direction. Operating dispersers from a helicopter while it is hovering or flying at speeds less than effective translational lift speed when in ground effect may contaminate the helicopter, the crew, and the occupants due to circulation of the agent in the rotor wash. Therefore, *either the pilot or the co-pilot must wear a protective mask.*

The agent may be released from one or more stationary ground positions or along a line on the windward side of the target. When released from a stationary point, the agent is dispersed in intermittent bursts as the gun muzzle is swung through an approximate  $160^\circ$  arc to the front. When dispersed along a line, the agent may be released continuously or intermittently, depending on the agent used, the rate of movement, and the wind factors.

Commanders and disperser operators must ensure that the target area is not covered with an intolerable concentration of riot control agents. This is particularly true when the wind lies calm and when the target area is partially enclosed by buildings. Also, the operator must remember that 1 pound of CS is the equivalent of five bursting-type CS grenades and, further, that 50 pounds of CS can be released in two minutes or less with the M5.

The M9 gun group is used when mounted with the M5 on a vehicle. The M9 permits close control of the amounts of agent released. Operators must determine the release rate for each disperser that they operate.

Each M5 dispersal team has three members: a commander who is an officer, an operator who is an NCO, and an assistant

operator. Inclusion of the vehicle driver the helicopter pilot as a member of the team is desirable, but not mandatory.

<b>DUTIES OF M5 DISPERSAL TEAM</b>	
<b>TEAM COMMANDER</b>	<ul style="list-style-type: none"><li>• Supervises operation, employment, and maintenance of the M5 disperser.</li><li>• Reconnoiters target area and prepares employment plans.</li><li>• Supervises movement of equipment to operation site and assigns soldiers to specific jobs.</li><li>• Selects the release point or line.</li><li>• Controls the amount of riot control agent released.</li><li>• Observes and evaluates dispersed agent to ensure proper coverage and concentrations without interfering with the control force's mission.</li><li>• Teaches or demonstrates operating techniques and procedures.</li><li>• Supervises and conducts team training.</li><li>• Supervises the preparation of records and reports related to the disperser's operation.</li></ul>
<b>OPERATOR AND ASSISTANT OPERATOR</b>	<ul style="list-style-type: none"><li>• Operate and maintain the disperser.</li><li>• Operate and adjust the disperser to get the best possible control agent dispersal pattern.</li><li>• Inspect and test defective equipment or components to determine types and causes of malfunction, extent of repairs needed, and quality of repair work performed.</li><li>• Clean, make minor adjustments, and replace defective parts using common hand tools.</li><li>• Make final adjustments to equipment for optimum operation.</li><li>• Estimate needs for maintenance supplies.</li></ul>

## WATER

When using water, a number of factors must be considered. The Army does not have a water-dispersing system that is specifically designed for use in civil disturbance operations. Such a system can be improvised from existing equipment. The use of a large water tank—750 to 1,000 gallons—and a powerful water pump mounted on a truck with a high-pressure hose and a nozzle capable of searching and traversing enables troops to employ water as they advance. By having at least two such water trucks, one can be kept in reserve.

Employing water as a high-trajectory weapon, like rainfall, is highly effective

during cold weather. When using water, as with other measures of force, certain restraints must be applied. Troops try to avoid using water on innocent bystanders like women and children. When water is used, the troops must provide the crowd with escape routes. Troops employing water must be protected by formations and, in some instances, by shields. The more severe use of water, the flat trajectory application, is employed only when necessary. Because fire departments are associated with saving lives and property rather than maintaining law and order, *fire department equipment must not be used for crowd control and dispersal.*