Introduction: Personal Protective Equipment for Protest Coverage

When covering protests, journalists face two primary physical threats that require specific protective equipment: chemical irritants and kinetic impact projectiles. Our PPE recommendations are designed to address these distinct hazard categories while acknowledging the critical limitations of available equipment.

PROTECTION AGAINST CHEMICAL AGENTS

Tear gas (CS) and pepper spray (OC) are the most common chemical agents deployed at protests. These irritants target the respiratory system, temporarily incapacitating any individual. Effective protection requires equipment that creates a complete seal around the airways – specifically the nose, mouth, and eyes – to prevent agent penetration.

PROTECTION AGAINST KINETIC IMPACT PROJECTILES

Law enforcement may deploy various less-lethal munitions, including 40mm foam-tipped projectiles, rubber bullets, pepper balls, and bean bag rounds. These projectiles carry significant kinetic energy capable of causing serious injury, including skull fractures, broken bones, eye injuries, and internal trauma. It is critical to understand that full-face respirators and most safety goggles are impact-resistant but not ballistic-rated.

***The respirators and filter cartridges recommended in this guide are NIOSH-approved, meaning they have been tested and certified to meet federal performance standards for respiratory protection.**

Half-Mask Respirator

*Requires separate eye protection (see p.5)

Cartridge/Filter Requirements:
NIOSH Approved:

- ✅ Must include Organic Vapor (OV) cartridge
- ✅ Must include P95 or P100 particulate filter
- ✅ Oil-resistant (P-rated) for OC pepper spray protection

Protects Against:

- ✅ CS tear gas (99%+ with OV + P100)
- ✅ OC pepper spray (95–99.97% depending on P95/P100)
- ✅ Smoke irritants

Full-Mask Respirator

*Must be separately certified for ballistic impact

Cartridge/Filter Requirements:

- ✅ Minimum: ANSI Z87+ (300fps)
- ✅ EN 166 Grade B (394 fps) or higher

Traditional Gas Mask

Filter Requirements:
CBRN Certified:

✅ Chemical, Biological, Radiological, Nuclear protection
✅ CBRN canister, 40mm NATO or NBC filter required

Protects Against:

✅ Chemical warfare agents
✅ Biological agents
✅ Radiological particles
✅ Nuclear fallout
✅ Riot control agents: CS, OC (same protection as OV + P100)

Mask Filter Success and Performance Rates

THREAT	N95 Mask (NIOSH)	Organic Vapor (OV) + P95 Filter	OV + P100 Filter	CBRN Cartridge
OC Pepper Spray	INADEQUATE (60-80%) • NOT oil-rated • Oil degrades filter • Performance unreliable	GOOD (95%) • P95 oil-resistant rated • 95% droplet capture • Reliable performance • OV minimal benefit for OC	EXCELLENT (99.7%) • P100 oil-proof rated • Captures oil droplets • Reliable sustained performance • OV minimal benefit for OC	EXCELLENT (99.7%) • Oil-resistant • Military-grade filtration • Complete protection
CS Tear Gas	MARGINAL (75-85%) • 95% particle capture • NO vapor filtration • Misses 10-20% vapor component • Some irritation likely	GOOD (90-95%) • 95% particle capture • Complete vapor capture • Slight irritation possible	EXCELLENT (99%+) • 99.97% particle capture • Complete vapor capture • No irritation • Complete protection	EXCELLENT (99%+) • 99.97% particle capture • Complete vapor capture • Military-grade protection

Impact Resistant Safety Goggles

We recommend goggles that meet the "impact-resistant" safety rating. This means sealed, anti-fog, and easily adjustable fit.

For Tear Gas (CS) Protection and Pepper Spray (OC):
Words to look for:
❌ DIRECTLY VENTED: Not adequate, does not protect against tear gas
✅ SEALED (non-vented): Highest fog protection
✅ INDIRECTLY VENTED: Good option for fog protection
❌ DIRECTLY VENTED: NO tear gas protection

**If you wear prescription glasses, look for "OTG" (over the glasses)*

For High-Impact or Ballistic Protection:

❌ NOT ADEQUATE:
- Z87 basic impact
- Unrated goggle

✅ HIGH-IMPACT SAFETY RATING:
Minimum Acceptable
- ANSI Z87.1+
- ANSI Z87+
- ·ANSI Z87.1-2010, 2015, or 2020

✅ BALLISTIC RATING:
Preferred - Higher protection
- EN 166 Grade B (394 fps)
- MIL-PRF-32432 (640 fps)
- MIL-DTL-43511D

Methodology and Limitations

The protective equipment comparison table on the following page has been developed based on ANSI Z87.1 - Occupational and Educational Personal Eye and Face Protection Devices impact velocity ratings, along with EN 166 (European standard) and MIL-PRF-32432 (military ballistic eyewear) specifications, where applicable.

Important Limitations:

1. No Standardized Riot Projectile Testing: Safety goggles, respirator visors, and impact-resistant helmets are not required to undergo testing with actual less-lethal munitions (pepper balls, 40mm foam projectiles, bean bag rounds) for certification. ANSI Z87+ testing uses standardized steel ball projectiles at specified velocities, not the varied projectile types and impact characteristics encountered in protest environments.

2. Interpretive Guidelines: The adequacy ratings in this table represent our professional interpretation of how equipment rated for specific impact velocities is likely to perform against less-lethal projectiles of comparable kinetic energy. These are informed estimates based on impact physics, not manufacturer guarantees or field test data.

Eye Protection Success and Performance Rates

THREAT	Velocity	Z87 Basic (~50-60 fps)	Z87+ Goggles (250 fps)	Full Face Respirator Z87+ (300 fps)	EN 166 B (394 FPS)	MIL-PRF-32432 (640-660 fps)
Thrown Rocks	40-80 fps	INADEQUATE (upper range)	ADEQUATE	ADEQUATE	ADEQUATE	ADEQUATE
Pepper Balls	280-300 fps	SEVERELY INADEQUATE	EXCEEDED (30-50 fps over)	AT LIMIT (0-20 fps margin)	WITHIN RATING	WITHIN RATING
40mm Foam Projectile	200-300 fps	SEVERELY INADEQUATE	MARGINAL (0-50 fps over)	MARGINAL (0-100 fps margin)	WITHIN RATING	WITHIN RATING
Bean Bag Rounds	200-300 fps	SEVERELY INADEQUATE	MARGINAL (0-50 fps over)	MARGINAL (0-100 fps margin)	WITHIN RATING	WITHIN RATING

Helmets and Head Protection

NOT RECOMMENDED FOR PROTEST COVERAGE:

❌ Traditional Bike Helmets: Single-impact design

- Engineered for one high-energy impact only
- Internal foam (EPS - Expanded Polystyrene) crushes permanently on impact
- Unsafe for repeated strikes common in protest environments

❌ Construction Hard Hats: Minimal side protection and often no rear coverage

- Designed for falling objects from above (tools, debris)
- NOT designed for horizontal projectiles (pepper balls, rocks, batons)

❌ Safety Bump Caps / Baseball Cap Style Hats

- Pepper ball kinetic energy is 10x higher than the caps' safety rating

Helmets and Head Protection (Cont'd)

BALLISTIC HELMET/KEVLAR HELMET: Offers good protection against fragmentation (like shrapnel) and most pistol-caliber threats. Designed to stop small projectiles, shrapnel, and debris rather than high-powered rifle rounds.

NIJ Level IIIA: According to the National Institute of Justice (NIJ) standard 0101.06, Level IIIA helmets can stop handgun rounds up to .44 Magnum and .357 SIG, but they cannot stop rifle rounds. This is the highest rating for soft armor and helmets.

Shape Advantage: While the helmet won't stop large-caliber bullets, its curved shape can sometimes deflect them, reducing the impact compared to a direct hit.

Disadvantages of Kevlar helmets:

- Weight: 3-4 pounds (non-ballistic helmets weigh 0.75-1.1 pounds
- Could be perceived as police/military

NON-BALLISTIC IMPACT-RESISTANT HELMETS: Multi-sport helmets (Skateboard/BMX)

✅ Multi-impact capability
✅ 360° coverage- Full side protection and rear coverage
✅ Non-crushable foam: EPP (Expanded Polypropylene or similar) that recovers after impact

Certification Requirements:

✅ ASTM F1492 (Skate safety standards)
✅ ASTM F1952 (Standard Specification for Downhill Mountain Bike Racing)
✅ EN 1078 (European standard for bicycle helmets - if multi-impact capable)
✅ CPSC 1203 with multi-impact rating

Recommended PPE Products

Safety Goggles:

- NoCry Anti Fog Safety Goggles Over Glasses For Men And Women — ANSI Z87.1 Premium Anti Scratch & UV380
- 3M GoggleGear Eye Protective Goggle 3000 Series
- Sellstrom Odyssey II

Half-Mask Respirator:

- 3M P95 / Organic Vapor Paint Project Reusable Respirator 6311, Large Size, NIOSH-APPROVED
- 3M P100/OV Odor/Particulate Multi-Purpose Reusable Respirator 65021

Full-Mask Respirator:

- 3M Full Facepiece Reusable Respirator 6800, NIOSH, Large Lens, ANSI High Impact Eye Protection

Conventional Gas Mask:

- MIRA SAFETY M Certified CBRN Full Face Gas Mask Reusable Respirator Professional Grade (CM-6M)