TECHNICAL WRITING - CONCEPTUAL AND REFERENCE SAMPLE

Persona: Adult-level readers of science education text.
Sources: *MacGyver* show 'bibles' from ViacomCBS; research on various chemical agents.
Styles: Chicago Manual style, with adjustments based on Weldon Owen Publishing in-house guide.
Editing: Ongoing revisions prior to submission.
Verification: Dr. Rhett Allain, PhD., physics consultant for ViacomCBS.

The Science Behind: Tear Gas

Tear gas is the common term for riot-control agents, but they are not gases. These agents are either an extremely fine solid powder, or a cloud of liquid in aerosol form. Contents include one or more lachrymatory (tear-causing) agents, and other substances that either burn as fuel for, or enhance the effects of, the grenade. There is no one antidote to riot agents. If exposed to riot agents, cover your eyes, remove contacts, and wear goggles and a high-grade respirator or a gas mask. (See *item 092* for an improvised gas mask.)

Lachrymatory Agents

Name	Formula	Effects	Treatment
Oxy-chloro-benzal malononitrile (OC)	$C_{10}H_5ClN_2$	Directly affect nerves in eyes, nose, mouth, and lungs. Causes tears, runny nose, and coughing. Dizziness and disorientation also occur. Symptoms can last more than an hour after exposure.	After exposure, wash skin and hair with soap and water—first cold, followed by warm. Thoroughly wash or discard clothing. Riot agents may remain active in untreated fabric for months.
Di-chloro-enzylidene malononitrile (CS)	$C_{10}H_5ClN_2$		

Adjunct Substances

Name	Formula	Effects
Charcoal (Carbon)	C	Burns in combination to heat and disperse lachrymatory agents and adjunct substances.
Sulfur	S_8	
Potassium Nitrate (saltpeter)	KNO_3	
Potassium Chlorate	$KClO_3$	Devolves into KCl and O_2 when heated.
Potassium Chloride	KCl	Adds to smoke cloud created by riot-control grenade.
Oxygen	0_2	Provides oxidizer to improve combustion.
Table sugar (sucrose)	$C_{12}H_{22}O_{11}$	Melts at low temperature; heats and disperses lachrymatory agents.
Magnesium Carbonate	$MgCO_3$	Neutralizes impurities in mixture.
Carbon Dioxide	CO_2	Helps disperse lachrymatory agent.
Nitrocellulose	$C_6H_9(NO_2)O_5$	Used as binder for lachrymatory and adjunct substances.