

Physicians for Human Rights



Weaponizing Tear Gas: Bahrain's Unprecedented Use of Toxic Chemical Agents Against Civilians

August 2012

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About Physicians for Human Rights

Physicians for Human Rights (PHR) uses medicine and science to investigate and expose human rights violations. We work to prevent rights abuses by seeking justice and holding offenders accountable.

Since 1986, PHR has conducted investigations in more than 40 countries, including on:

- 1987 — Use of toxic chemical agents in South Korea
- 1988 — Iraq's use of chemical weapons against Kurds
- 1988 — Use of toxic chemical agents in West Bank and the Gaza Strip
- 1989 — Use of chemical warfare agents in Soviet Georgia
- 1996 — Exhumation of mass graves in the Balkans
- 1996 — Critical forensic evidence of genocide in Rwanda
- 1999 — Drafting the UN-endorsed guidelines for documentation of torture
- 2004 — Documentation of the genocide in Darfur
- 2008 — US complicity of torture in Iraq, Afghanistan, and Guantánamo Bay
- 2010 — Human experimentation by CIA medical personnel on prisoners in violation of the Nuremberg Code
- 2011 — Violations of medical neutrality in times of armed conflict and civil unrest during the Arab Spring



PHR shared
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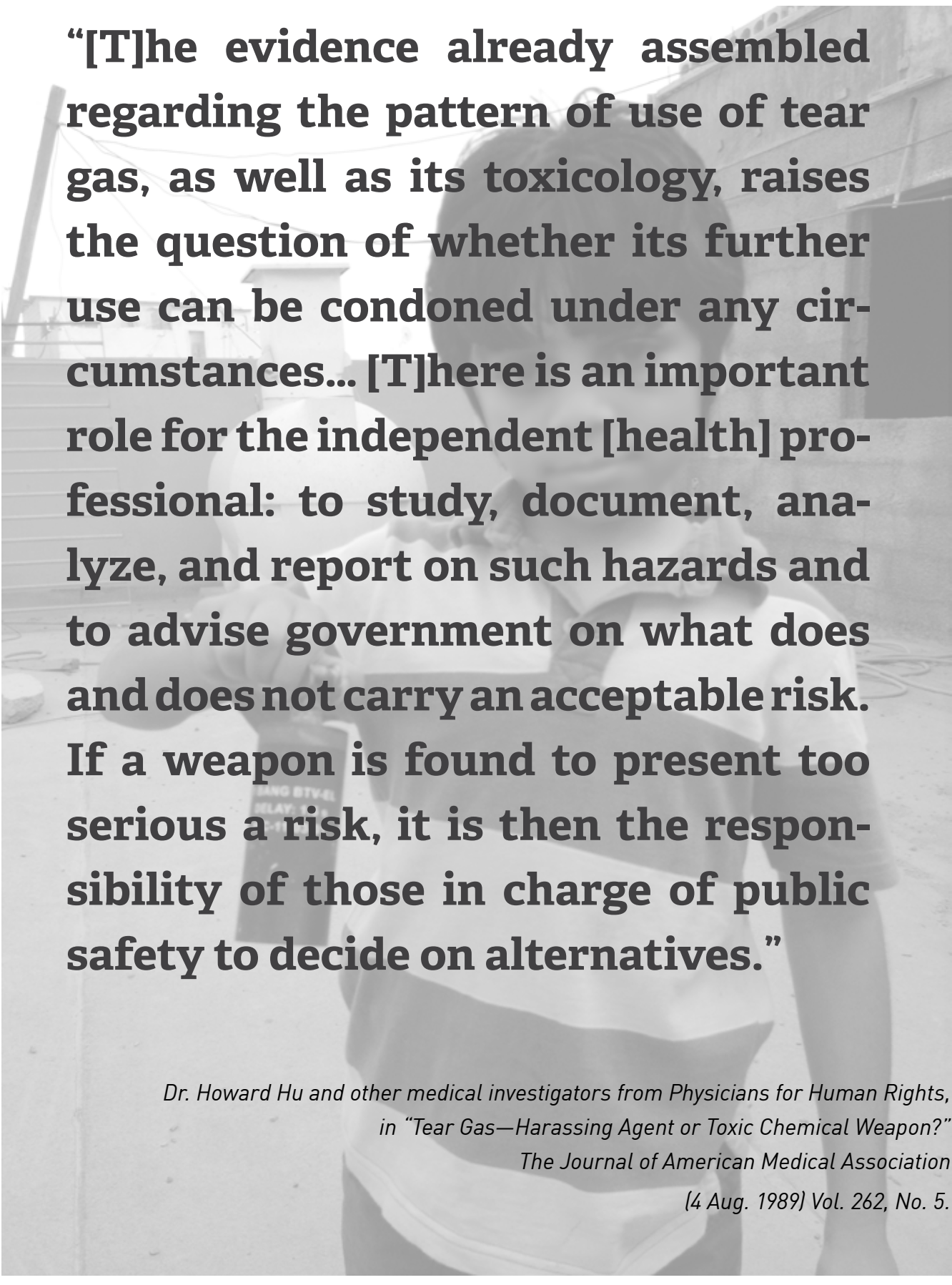
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Cover photo: Bahraini anti-riot police fire tear gas grenades at peaceful and unarmed civilians protesters, including a Shi'a cleric, in June 2012. <http://www.youtube.com/watch?v=Qxaul5hdjqk>.

Opposite: Bahraini boy displays one of several exploded tear gas canisters fired into his family's house.
Photo: Richard Sollom, PHR.



“[T]he evidence already assembled regarding the pattern of use of tear gas, as well as its toxicology, raises the question of whether its further use can be condoned under any circumstances... [T]here is an important role for the independent [health] professional: to study, document, analyze, and report on such hazards and to advise government on what does and does not carry an acceptable risk. If a weapon is found to present too serious a risk, it is then the responsibility of those in charge of public safety to decide on alternatives.”

*Dr. Howard Hu and other medical investigators from Physicians for Human Rights,
in “Tear Gas—Harassing Agent or Toxic Chemical Weapon?”
The Journal of American Medical Association
(4 Aug. 1989) Vol. 262, No. 5.*

Acknowledgements

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Acronyms

| | |
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| BICI | Bahrain Independent Commission of Inquiry |
| CIDT | Cruel, inhuman, or degrading treatment |
| CWA | Chemical warfare agent |
| CWC | Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction |
| CS | o-Chlorobenzylidene malononitrile |
| CN | Chloracetophenone |
| CAT | Convention against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment |
| CR | Dibenz [b, f]-1, 4-oxazepine |
| IACHR | Inter-American Commission on Human Rights |
| ICRC | International Committee of the Red Cross |
| ICCPR | International Covenant on Civil and Political Rights |
| ICESCR | International Covenant on Economic, Social and Cultural Rights |
| OC | Oleoresin capsicum |
| PAVA | Pelargonic acid vanillylamide |
| PCSI | Peripheral chemosensory irritant |
| PHR | Physicians for Human Rights |
| MENA | Middle East and North Africa |
| RCA | Riot control agent |



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The tiny Persian Gulf Kingdom of Bahrain still smolders amid ongoing civil unrest 18 months after protesters began calling for political reform. Governments in the region have resorted to lethal force or have precipitated outright civil war in response to the outcries for political reform and human rights in the context of the “Arab awakening.” Bahrain’s Sunni monarchy notably has silenced dissent and punished the opposition by rounding up doctors and peaceful protesters, torturing many of them, filing trumped-up charges, and imposing harsh prison sentences. The vicious crackdown in Bahrain has received global attention and warranted a special international commission of inquiry into Bahrain’s excessive use of force and human rights violations. Throughout this time, Physicians for Human Rights (PHR) has played a leading role in defense of our medical colleagues whose rights have been severely violated in Bahrain.

Less visible is the unusually relentless and indiscriminate campaign that Bahraini authorities have waged against the majority Shi’a population for more than 500 days by weaponizing toxic chemical agents—so called tear gas. In Bahrain, law enforcement officials have deployed this toxic agent to punish protesters, inflict suffering, and suppress dissent. Usually perceived by the public and security forces as a benign tool for crowd control, tear gas, especially when used in large quantities and in enclosed spaces, poses serious health risks and even causes death. Since February 2011, the Bahraini government has unleashed a torrent of these toxic chemical agents against men, women, and children, including the elderly and infirm.

Twenty-five years ago, PHR documented the deleterious and long-term health effects of tear gas used indiscriminately in South Korea against civilian protesters, including toxic pulmonary damage and death, as well as possible miscarriages. As physicians we were then compelled to question whether the further use of these toxic chemical agents could be condoned under any circumstances.

The extensive and persistent use of this so-called nonlethal chemical agent now in Bahrain—unprecedented in the 100-year history of tear gas use against civilians throughout the world—compels PHR once again to call the world’s attention to the known and still unknown serious health consequences of tear gas, including death. As human rights advocates and health professionals, we are ethically obligated to highlight the toxic and lethal effects of tear gas and its indiscriminate and illegal use in Bahrain.

Methods

This report’s findings are based on field research that PHR conducted in Bahrain (7-12 April 2012) to investigate excessive use of force by law enforcement officials since June 2011—the end of Bahrain’s state of emergency. The medico-legal team (Richard Sollom, MA, MPH and Holly Atkinson, MD) conducted 102 in-depth interviews with Bahrainis who reported human rights violations, corroborating eyewitnesses to these alleged events, civil society leaders, and government officials. Other forms of corroboration that PHR conducted or utilized in this study include: Physical examinations, evaluation of medical records, and review of radiographic, photographic, and video evidence. In addition, this report contains results from an analysis of 28 countries whose security forces have deployed toxic chemical agents against civilians in situations of civil unrest.

Findings

This report documents two interconnected means by which the Bahraini government unlawfully uses toxic chemical agents against civilians: (1) Government authorities have routinely violated every U.N. principle governing police use of force. (2) Bahraini law enforcement officials have also effectively transformed toxic chemical agents into weapons used to assail Shi'a civilians inside their homes and cars.

Bahraini government violates UN principles on the use of force during protests

While current international law allows governments to use some chemical agents for crowd control purposes, Bahraini law enforcement officials routinely violate every U.N. principle of their use. Specifically, PHR documents in this report that Bahraini authorities:

- (1) Fail to exercise restraint before resorting to force;
- (2) Use disproportionate force when responding to protesters; and
- (3) Fail to minimize damage and injury to demonstrators.

Such unrestrained use of toxic chemical agents against civilians has caused superfluous—and sometimes life-threatening—harm to men, women, and children in Bahrain. Injured protesters whom PHR investigators examined suffered from blunt force trauma and lacerations to the head, torso, and limbs due to the impact of metal canisters being fired at them by law enforcement officials at close range.

Police hit one bystander in the head with a tear gas canister while he was walking near the site of a protest in Karanah, causing a fractured skull and intracranial hemorrhaging. “You’re lucky to have survived,” the doctor who performed the CT scan told this victim, “Others from the same injury have died.”

Bahraini government violates human rights law by weaponizing toxic chemical agents

Equally unprecedented is the Government of Bahrain’s transformation of toxic chemical agents into weapons used methodically to attack Shi’a civilians inside their homes and cars. Such unprovoked and flagrant assaults on families—who pose no threat to the safety of others—flout international human rights law and constitute torture, cruel, and inhuman treatment. Specifically, the report documents that Bahraini law enforcement officials:

- (1) Subject men, women, children, vulnerable, disabled and elderly persons to torture, cruel, and inhuman treatment;
- (2) Unlawfully enter families’ homes and destroy property;
- (3) Intentionally commit acts that impair people’s health; and
- (4) Discriminate against one religious sect by targeting Shi’a neighborhoods.

The weaponized toxic chemical agent attacks against Bahraini civilians are intentional—and may be official policy—because of the frequency of the attacks by officials throughout the police force and the lack of accountability for those who perpetrate the attacks.

Two sisters from Shela told PHR investigators that police shot tear gas canisters directly into their home on five separate occasions. On the second occasion, they reported police ripped protective covers off of the family’s air conditioners and pulled sealant away from the windows from the outside, before throwing tear gas canisters through a window and yelling,

“If you want freedom, come out to us.” They reported that in the third incident, police broke through the front door and threw a tear gas canister into their home.

PHR investigators also interviewed several members of a large family—ages 3 to 65—who were forced from their home after police stormed it, attempted to abduct a 15-year-old boy, and fired canisters containing toxic chemical agents into the house causing a 14-year-old girl to fall unconscious. Law enforcement officials then reportedly surrounded the exits, inhibiting escape.

Such attacks appear to discriminate against Bahrain’s Shi’a majority population. Preliminary analysis of data suggests that the majority of Shi’a neighborhoods (comprising 80% of all neighborhoods in Bahrain) have been exposed to toxic chemical agent attacks at least once per week since February 2011. Sunni-dominated neighborhoods have largely remained free from toxic chemical agent attacks.

Bahrain’s misuse of toxic chemical agents endangers the health of civilians and causes severe and long-term pain and suffering

Physicians for Human Rights warns that the ongoing 18-month siege and widespread use of toxic chemical agents against a civilian population has caused inestimable physical harm and will continue to inflict as yet unknown negative health effects among this population. Bahraini law enforcement officials’ persistent targeting civilians in enclosed spaces may lead to serious long-term health consequences, including miscarriages and severe respiratory distress resulting in premature death.

PHR spoke with two families who had family members who allegedly died from complications related to toxic chemical agent exposure. In both cases, deceased individuals were only exposed to toxic chemical agents in the privacy of their homes, and died despite treatment in the hospital. PHR met with relatives of Muhammad, a young asthmatic man from a Shi’a village, who died of acute respiratory failure following 25 days of hospitalization after exposure to toxic chemical agents. Muhammad’s family reported that he was routinely exposed to tear gas and sought medical care in private hospitals, but never told doctors about his severe adverse reactions to the gas for fear of being reported to authorities and sent to prison.

Policy recommendations

Countries like Bahrain that have so profoundly abused tear gas as a means to preemptively assault civilians should lose access to these toxic chemical agents. All other countries that have deployed these chemicals as per U.N. principles and with due respect for human life and dignity should reevaluate their use given the dangerous health consequences wrought by tear gas and should utilize these agents with extreme caution.

To the Government of Bahrain:

- End all attacks on civilians, including tear gas attacks on civilians and homes.
- Given the harmful effects of tear gas misuse in the country, suspend all use of tear gas until such time as the Government of Bahrain conducts a full and impartial investigation of the events detailed in this report, retrains the national security forces in the proper use of tear gas, and holds the perpetrators of excessive or improper use of force accountable. After such initial benchmarks are met, adhere to United Nations guidelines on the use of force and to the Bahraini penal code in order to stem future misuse of tear gas.

- Establish an independent body consisting of individuals familiar with human rights and legal norms regarding the use of force to investigate the deliberate misuse of toxic chemical agents in Bahrain.
- Disclose information about the varieties of toxic chemical agents used by law enforcement officials in Bahrain, given the disturbing evidence of the harmful effects of toxic chemical agents from PHR's investigation as well as the BICI Report. This information will be important to the current treatment of exposed Bahraini citizens, and to drive future scientific research on the effects of all toxic chemical agents.
- Allow scientists, health professionals, and epidemiologists to conduct critical toxicological and survey research on the use and effects of tear gas in Bahrain.

To the international community:

- Suspend global exports of tear gas and its relevant precursor chemical agents to Bahrain until such time as the Government of Bahrain conducts a full and impartial investigation of the events detailed in this report, retrains the national security forces in the proper use of tear gas, and holds the perpetrators of excessive or improper use of force accountable.
- Convene an interdisciplinary group of health professionals, lawyers, law enforcement officials, and public health experts to draft guiding principles on the proper use of all toxic chemical agents, especially those classified as lachrymatory agents, and to determine whether the application and toxicity of certain lachrymatory agents necessitate re-classification under the Chemical Weapons Convention.
- Support scientific research into the health effects of tear gas, including research on the possible connection to miscarriage and/or genetic disorders as well as long-term respiratory sequelae of excessive exposure.
- Review international, regional, national, and local guidelines on tear gas use and ensure that they follow the parameters of the UN Guidelines on the Use of Force, including mechanisms for accountability for misuse.

To the United States:

- Continue to deny export licenses for tear gas to Bahrain until the Government of Bahrain adheres to UN Guidelines on the Use of Force regarding its tear gas use, investigates the weaponization of tear gas, and establishes accountability for law enforcement officials who use excessive force or otherwise violate the UN Guidelines.
- Revoke tear gas licenses for other countries that show warning signs of improper use of tear gas or other riot control items against peaceful civilians.
- As a matter of policy, ensure that all tear gas and related materials are listed on the State Department's US Munitions List, given the fatal consequences of the improper use of tear gas.
- Provide stricter end-use monitoring of tear gas and related materials through the Department of Defense.
- Ensure that any military assistance to Bahrain comports with the Leahy Law and section 502(b) of the Foreign Assistance Act of 1961.
- Fully support international efforts to draft guiding principles on the proper use of all toxic chemical agents, and lead the international community in supporting scientific research on the health effects of these agents.

This report's findings are based on field research that Physicians for Human Rights conducted in Bahrain (7-12 April 2012) to investigate reported violations of medical neutrality and excessive use of force by law enforcement officials¹ in Bahrain during the previous year. Extensive desk research (using Lexis-Nexis, ProQuest, and PubMed databases) supplemented this analysis. The PHR team was comprised of Richard Sollom, Deputy Director at PHR, and Holly Atkinson, Assistant Professor of Medicine and Director of the Human Rights Program at Mount Sinai School of Medicine, and Assistant Professor of Public Health at Weill Medical College of Cornell University.

The team conducted 102 semi-structured interviews with Bahrainis who reported human rights violations, corroborating eyewitnesses to these alleged events, civil society leaders, and government officials. To select these information-rich cases, field researchers conducted purposeful sampling to garner both cases that highlighted individual human rights violations (intensity sampling) as well as cases that described cross-cutting themes (heterogeneity sampling). Chain (or snowball) sampling was employed to locate corroborating witnesses, who were interviewed independently from the original source, for probative evidence. Other forms of corroboration that PHR conducted or utilized in this study include:

- (5) Physical examinations by a PHR physician of victims of reported human rights violations
- (6) Evaluation of medical records of victims of reported human rights violations
- (7) Visual verification of actual locations of reported human rights violations
- (8) Review of photographic, radiographic, and video evidence

Interviewees were deemed credible (and data from their testimony was included in this report) if they purported to witness the event, gave a consistent account of events following repeated probes, and reported events that coincided with dates and times of known events.

To ensure consistency, investigators followed a semi-structured interview format with probes detailing the who, what, why, when, where, and how a reported human rights violation took place. To allow for unanticipated issues to arise, investigators combined semi-structured questions with open-ended interviewing. Interviews were conducted in English or with Arabic interpreters and were held in private settings, often in the witnesses' homes. In-depth interviews lasted between 60 and 90 minutes. PHR investigators obtained oral, informed consent from each participant following a detailed explanation of PHR, the purpose of the investigation, and the potential benefits and risks of participation. All interviews were made anonymous by removing identifying information from the interview record. An Ethics Review Board convened by PHR approved this study. To minimize the impact on their physical, mental, and social integrity, interviewees in this report are referred to under single-name pseudonyms, and some identifying information has been removed.

By its nature this study is subject to limitations in duration, scope, and access. The April 2012 field investigation was relatively short in duration as the research team's travel was limited; the Government of Bahrain only permitted investigators to enter the country for a five-day period. The Government of Bahrain has withheld key data that would contribute to full analysis of all reported violations throughout the country, such as information on types of toxic chemical agents with severe and possibly lethal effects used on civilian populations. Notwithstanding these limitations, the study produced sufficient firm data on which to make informed recommendations.

1. PHR uses the term *law enforcement officials* to mean "all officers of the law, whether appointed or elected, who exercise police powers, especially the powers of arrest or detention." U.N. Code of Conduct for Law Enforcement Officials art. 1(a), U.N. Doc. A/34/46 (17 Dec. 1979).

Background

Bahraini protesters calling for political and economic reform began to march on the streets of Bahrain's capital Manama in early 2011. Mostly young and Shi'a,² they planned their first demonstration³ for 14 February.⁴ Inspired by recent protests in Egypt and Tunisia, Bahraini protesters camped in Pearl Square, the nation's symbolic center.⁵ These unarmed citizens peacefully called for a new constitution, an elected government, greater authority for Parliament, greater political freedom, and the elimination of discrimination by minority Sunnis in the ruling class against the majority Shi'a population.⁶

Patterns of toxic chemical agent misuse in Bahrain

The Bahraini government responded to protests with violence and minimal concessions. In response to the unrest, government law enforcement officials attacked unarmed protesters with toxic chemical agents,⁷ rubber bullets,⁸ and birdshot.⁹ In the first days of the protests, several people died and dozens were wounded.¹⁰ As protests continued, Bahrain's law enforcement officials began to use toxic chemical agents routinely against civilians.¹¹ In April 2011, PHR investigators documented cases where Bahraini forces launched toxic chemical agents in enclosed spaces, including homes.¹²

In March 2011, the King of Bahrain declared a three-month state of emergency as pro-democracy protests spread.¹³ Even under a state of emergency, which authorized Bahrain's armed

2. Kenneth Katzman, Congressional Research Service, *Bahrain: Reform, Security, and U.S. Policy* 7, 21 Mar. 2011, <http://www.fas.org/sgp/crs/mideast/95-1013.pdf>.
3. This report uses the terms *demonstration*, *protest*, and *assembly* interchangeably.
4. According to the Bahrain Youth Society for Human Rights, "Bahrain Youth Society for Human Rights will monitor human rights violations against demonstrators and foreigners in Bahrain, on February 14, 2011, where a group of young people asking to demonstrate peacefully against human rights violations and calling for freedom of opinion and expression and other political demands." Bahrain Youth Society for Human Rights, <http://byshr.org/> (last visited 21 Jun. 2011).
5. Michael Slackman, *Bahrain Takes the Stage With a Raucous Protest*, New York Times, 15 Feb. 2011, <http://www.nytimes.com/2011/02/16/world/middleeast/16bahrain.html>. The Pearl Roundabout, found in the center of capital city Manama, is surrounded by the Bahrain Central Market, Marina, Pearl and City Center Roundabout and the Abraj Al Lulu (Pearl Towers) apartment complex, which is named after the Pearl Monument (no longer standing). The Pearl Monument contained six dhow "sails" reaching skyward (representing the Gulf Cooperation Council's six member nations), which joined together to hold a pearl at the top (signaling Bahrain's history of pearl cultivation).
6. *Bahrain: Reform, Security, and U.S. Policy*, *supra* note 2, at 7.
7. *Footage shows crackdown in Bahrain*, Al Jazeera, 13 Mar. 2011, <http://english.aljazeera.net/news/middleeast/2011/03/201131375850321229.html>.
8. *Id.*
9. Kristen Chick, *Bahrain's Calculated Campaign of Intimidation*, Christian Science Monitor, 1 Apr. 2011, <http://www.csmonitor.com/World/Middle-East/2011/0401/Bahrain-s-calculated-campaign-of-intimidation>.
10. *Clashes rock Bahraini capital*, Al Jazeera, 17 Feb. 2011, <http://www.aljazeera.com/news/middleeast/2011/02/201121714223324820.html>.
11. Physicians for Human Rights, *Do No Harm: A Call for Bahrain to End Systematic Attacks on Doctors and Patients* 10 (2011), <http://physiciansforhumanrights.org/library/reports/bahrain-attacks-on-doctors-2011-04-22.html>. Several groups documented Bahraini law enforcement officials' use of riot control methods including toxic chemical agents and rubber bullets. See e.g., *Bahrain Forces Quash Protests*, Reuters, 25 Mar. 2011, <http://www.independent.co.uk/news/world/middle-east/bahrain-forces-quash-protests-2253207.html>; Christopher Hope, *Coalition criticized for allowing sales of arms used to suppress democracy protests in Libya and Bahrain*, The Telegraph, 5 Apr. 2011, <http://www.telegraph.co.uk/news/worldnews/africaandindianocean/libya/8427138/Coalition-criticised-for-allowingsales-of-arms-used-to-suppress-democracy-protests-in-Libya-and-Bahrain.html>; Bahrain: *Investigate deaths linked to crackdown*, The Muslim News, 29 Mar. 2011, <http://muslimnews.co.uk/news/news.php?article=19930>; Human Rights Watch, *Bahrain: Martial Law Does Not Trump Basic Rights*, 16 Mar. 2011, <http://www.hrw.org/news/2011/03/16/bahrain-martial-law-does-not-trump-basic-rights>.
12. Do No Harm: A Call for Bahrain to End Systematic Attacks on Doctors and Patients, *supra* note 11, at 16, 17. See also Bahrain Youth Society for Human Rights, *The Riot Police Continuously Attack Civilians*, 27 Jan. 2010, <http://byshr.org/?p=177>.
13. See Barbara Surk and Reem Khalifa, *Bahrain's King Declares State of Emergency*, The Washington Times,

forces to “take necessary steps to restore national security,”¹⁴ international law prohibits governments from restricting the ‘non-derogable’ right to life and the right to be free from torture and cruel, inhuman or degrading treatment.¹⁵ Bahrain’s state of emergency was lifted, moreover, on 1 June 2011;¹⁶ all of the rights violations PHR documents in this report occurred after June 2011.

Bahrain established the Royal Independent Investigation Commission (later known as the Bahrain Independent Commission of Inquiry) in June 2011¹⁷ to investigate alleged gross human rights violations in response to the February and March 2011 protests, as reports of excessive use of toxic chemical agents against civilians mounted.¹⁸ The commission later found that anti-riot police¹⁹ used toxic chemical agents disproportionately to disperse protesters,²⁰ but since that pronouncement, police officers’ approach to dealing with protesters appears to have become even less restrained.²¹

Manufacturers of toxic chemical agents deployed in Bahrain

Toxic chemical agent canisters in Bahrain appear to come from at least four main manufacturers: Brazilian company Condor Non-Lethal Technologies;²² US-based Nonlethal



A Bahraini man displays an exploded canister of CS gas which was shot into his house. Photo: Richard Sollom, PHR

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- Associated Press, 15 Mar. 2011, <http://www.washingtontimes.com/news/2011/mar/15/official-saudi-soldier-shot-dead-bahrain/>; Bahrain king declares state of emergency after protests, BBC News, 15 Mar. 2011, <http://www.bbc.co.uk/news/world-middle-east-12745608>. “A state of national safety or martial law shall be proclaimed only by Decree. In all cases, martial law cannot be proclaimed for a period exceeding three months. This period may not be renewed except with the consent of the majority of the members of the National Assembly present”. Constitution of the Kingdom of Bahrain art. 36(b), 14 February 2002, available at <http://www.unhcr.org/refworld/country,LEGAL,,LEGISLATION,BHR,4562d8cf2,48b54f262,0.html>.
14. Bahrain’s King Declares State of Emergency, *supra* note 13.
 15. International Covenant on Civil and Political Rights art. 4(2), 16 Dec. 1966, 999 U.N.T.S. 171 (acceded 20 Sep. 2006). See also, Human Rights Watch, *Bahrain: Martial Law Does Not Trump Basic Rights*, 16 Mar. 2011, <http://www.hrw.org/news/2011/03/16/bahrain-martial-law-does-not-trump-basic-rights>.
 16. Bahrain ends state of emergency imposed after protests, BBC News, 1 Jun. 2011, <http://www.bbc.co.uk/news/world-middle-east-13616798>.
 17. HM King Hamad Sets up Royal Independent Investigation Commission, Bahrain News Agency, 29 Jun. 2011, <http://bna.bh/portal/en/news/462963>.
 18. See Do No Harm: A Call for Bahrain to End Systematic Attacks on Doctors and Patients, *supra* note 11, at 16.
 19. Riot police in Bahrain wear dark blue military fatigues with flak helmets and olive green pouches, black boots, and bulletproof vests. Bahrain has hired foreign mercenaries to serve as riot police. Bahrain Youth Society for Human Rights, *The Riot Police Continuously Attack Civilians*, 27 Jan. 2010, <http://byshr.org/?p=177>; Ian Black, *Bahrain security forces accused of deliberately recruiting foreign nationals*, The Guardian, 17 Feb. 2011, <http://www.guardian.co.uk/world/2011/feb/17/bahrain-security-forces-sunni-foreign>.
 20. Bahrain Independent Commission of Inquiry (BICI Report), Report of the Bahrain Independent Commission of Inquiry, ¶ 1117 [2011], <http://www.bici.org.bh/BICIREportEN.pdf>.
 21. See Bill Law, *Bahrain restricts protests on uprising anniversary*, BBC, 14 Feb 2012, <http://www.bbc.co.uk/news/world-middle-east-17025148>.
 22. Evidence from media sources suggests that the toxic chemical agents used against Bahraini protesters were manufactured by companies in Brazil, the US and France. The Brazilian newspaper *Época* reported in December 2011 that images of a toxic chemical agent canister carrying a “made in Brazil” stamp had been published online by Bahraini activists. The canister appears to be a GL-202 Long Range Tear Gas Projectile produced by Brazilian company Condor Non-Lethal Technologies. José Antonio Lima and Liuca Yonaha, *Gás lacrimôgeneo “made in Brazil” é usado na repressão no Bahrein, dizem ativistas*, *Época* (16 Dec. 2012) <http://revistaepoca.globo.com/Mundo/noticia/2011/12/gas-lacrimogeneo-made-brazil-e-usado-na-repressao-no-bahrein-dizem-ativistas.html>. Condor Non-Lethal Technologies, *GL-202 Long Range Tear Gas Projectile*, Condor Nao Letal, http://www.condornaletal.com.br/eng/index.php?option=com_content&task=view&id=91&Itemid=93 (last visited 6 Jun. 2012).

Technologies, Inc.²³ and Federal Laboratories (also known as Defense Technology),²⁴ and France-based SAE Alsetex/Etienne Lacroix Group.²⁵

Condor Non-Lethal Technologies has stated that while it does supply weapons to more than 35 countries, including some in the Arab world, it never exported weaponry to Bahrain.²⁶ Although Condor would not reveal its clients for reasons of commercial competitiveness, the company noted that troops from at least five different countries in the region were operating inside Bahrain (possibly with Condor-made toxic chemical agents) at the request of the Bahraini government.²⁷ At the time of this writing, the Brazilian government has yet to report on alleged exports of Condor's toxic chemical agents to Bahrain.²⁸

In February 2012, the group "Anonymous" hacked the website of US-based company Combined Systems Inc.,²⁹ which exports riot-control equipment to armies around the world.³⁰ The company has yet to address allegations that it has been a primary riot control agent (RCA) supplier to MENA governments embroiled in the Arab Spring.³¹ Although Combined Systems Inc. refuses to comment on whether it exports toxic chemical agents to Bahrain, sources have documented the use of canisters bearing its logo in Egypt.³²

Governments are the arbiters of whether products such as chemical agents are exported to other countries; they have the responsibility to grant or deny export licenses for various products.

History and development of toxic chemical agents

Definition and origins. Tear gas is a term used to refer to a group of toxic chemical agents that disable people exposed to them by irritating the lungs, skin, or eyes.³³ These agents are also called lachrymatory agents, peripheral chemosensory irritants (PCSI), riot control agents and harassing agents,³⁴ and qualify as "less-lethal" weapons.³⁵ Toxic lachrymatory chemical

23. In December 2011, the New York Times reported that tear gas shells made by US company Nonlethal Technologies were "being swept off the street each morning" in Bahrain. Nicholas Kristof, *Repressing Democracy, With American Arms*, New York Times (17 Dec. 2011), http://www.nytimes.com/2011/12/18/opinion/sunday/kristof-repressing-democracy-with-american-arms.html?_r=1.
24. Bahrain Watch Blog, *Arms Watch Tracking the Governments and arms dealers fueling the bloodshed*, 14 Feb. 2012, <http://bahrainwatch.org/arms.html>.
25. A photograph published in The Telegraph shows a collection of spent toxic chemical agent canisters in Bahrain's Pearl Square, which appear identical to canisters produced by France's Etienne Lacroix Group. The Telegraph, *Bahrain protests escalate: Saudi Arabia sends troops to help restore security*, <http://www.telegraph.co.uk/news/picturegalleries/worldnews/8381142/Bahrain-protests-escalate-Saudi-Arabia-sends-troops-to-help-restore-security.html?image=6> (last visited 6 Jun. 2012); Etienne Lacroix Group, *Munitions, Grenades, Dispersers*, Lacroix DS, <http://www.lacroixds.com/catalogue.html> (last visited 6 Jun. 2012).
26. *Gás lacrimôgeneo "made in Brazil"*, *supra* note 22.
27. *Id.*
28. The Brazilian government noted that it would have no investigative power over Condor's sale of toxic chemical agents to Bahrain given that the contract would be between two private parties. Rasheed Abou-Alsamh, *Who will investigate the use of Brazilian tear gas in Bahrain?*, 11 Mar. 2012, <http://www.rasheedsworld.com/wp/2012/03/who-will-investigate-the-use-of-brazilian-tear-gas-in-bahrain/>.
29. The Atlantic Wire, *Anonymous Marks Bahrain Protest by Hacking U.S. Tear Gas Company*, 14 Feb. 2012, <http://www.theatlanticwire.com/global/2012/02/anonymous-marks-bahrain-protest-hacking-us-tear-gas-company/48669/>.
30. Washington Post Blog, *Anonymous marks Bahrain anniversary by hacking U.S. tear gas company*, 14 Feb. 2012, http://www.washingtonpost.com/blogs/blogpost/post/anonymous-marks-bahrain-anniversary-by-hacking-us-tear-gas-company/2012/02/14/gIQAilOVDR_blog.html.
31. Amnesty International, *USA repeatedly shipped arms supplies to Egyptian security forces*, 7 Dec. 2011, <http://www.amnesty.org/en/news/usa-repeatedly-shipped-arms-supplies-egyptian-security-forces-2011-12-06>.
32. *Id.*
33. Toxic chemical lachrymatory agents induce incapacitation by irritating the respiratory system, mucous membranes, skin or eyes. Indiana State Department of Health, *Facts about Riot Control Agents*, <http://www.in.gov/isdh/24339.htm> (last visited 7 Jun. 2011).
34. *Id.*
35. Less-lethal weapons include tear gas, water cannons, rubber bullets, pepper spray, lasers, conducted energy devices, and Fentanyl. Parliamentary Forum on Small Arms and Light Weapons, *Policy Statement on Less*

agents are among the most commonly used types of riot control agents.³⁶ At least 15 chemicals have been used worldwide as harassing agents,³⁷ with CS gas³⁸ being the most commonly used by law enforcement for crowd control.³⁹ PHR uses the term “toxic chemical agents” instead of tear gas in this report to underscore the toxicity of these chemicals. “Tear gas,” implying that these chemical agents merely cause tearing, is a misnomer.

Precursors to today’s lachrymatory riot control agents⁴⁰ may have been used against civilian populations as early as 1912,⁴¹ and militaries employed toxic lachrymatory agents as weapons for the first time in 1914.⁴² Some of the chemicals used in today’s riot control agents, however, evolved from chemical weapons developed as early as the 1800s.⁴³ CS gas was identified as a lachrymatory agent in 1928⁴⁴ and was weaponized in the mid-1950s.⁴⁵ The letters “CS” stand for the initials of B.B. Corson and R.W. Stoughton, American chemists who discovered the properties of the chemical in 1928.⁴⁶ Toxic lachrymatory agents and other chemical warfare-agents (CWAs) were used extensively throughout both World Wars I and II.⁴⁷ The United States used CS gas on the battlefield for the first time during the 1960s Vietnam War.⁴⁸

Responding to widespread use of chemical weapons on the battlefield during WWI, over 30 countries signed a UN protocol in 1925 that prohibited the use of poisonous gases in war.⁴⁹

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- Lethal Weapons*, 20 Feb. 2011, http://parliamentaryforum.org/sites/default/files/parlforum_policy_statement_on_less_lethal_weapons_final.pdf.
36. Facts about Riot Control Agents, *supra* note 33.
 37. Howard Hu, et al., *Tear Gas – Harassing Agent or Toxic Chemical Weapon?*, 262 JAMA 660 (4 Aug. 1989). Among these chemicals are CA gas, which was one of the first toxic chemical lachrymatory agents used and is now obsolete, and CN gas, which was discovered in 1869 and has been replaced largely by CS gas. USAF Institute for National Security Studies, *Nonlethal Weapons: Terms and References*, INSS Occasional Paper 15, 25 (1996), available at <http://www.usafa.edu/df/inss/OCP/ocp15.pdf>.
 38. CS gas is known scientifically as o-chlorobenzylidene malononitrile with a molecular formula of C₁₀H₅ClN₂. When combined with other agents, it can be easily dispersed. B.L. Danto, *Medical problems and criteria regarding the use of tear gas by police*, 8 Am J Forensic Med Pathol 317, 319 (1987); Jay P Sanford, *Medical aspects of riot control (harassing) agents*, 27 Annu Rev Med. 421, 423 (1976).
 39. Yakubu. G. Karagama et al., *Short-term and long-term physical effects of exposure to CS spray*, 96 J R Soc Med 172,172 (2003).
 40. Ethylbromacetate, a strong lachrymatory agent, was developed in 1858 and later became the first “combat gas” of World War I. The chemical chloracetone largely replaced ethylbromacetate in 1914. An even more potent lachrymator, xylyl bromide, was first used in 1915. Eric Croddy, *Chemical and Biological Warfare: A Comprehensive Survey for the Concerned Citizen* 118 (2001).
 41. French authorities used Ethylbromoacetate to control violent mobs and incapacitate criminals. *Id.*
 42. The French army reportedly launched grenades containing the substance Ethylbromacetate at the German army. *Id.*
 43. The invention of chlorine, one of the earliest recognizable chemical weapons, is attributed to the Swedish chemist Carl Scheele in 1774. Office of The Surgeon General, Department of the Army, United States of America, *Medical Aspects of Chemical and Biological Warfare* 10 (1997), available at <http://www.opas.org.br/ambiente/quimicos/fulltex/armas/textos/chebio/chebio.pdf#page=24>. British chemist John Davey created phosgene, a choking agent nearly ten times as toxic as chlorine, in 1812. Together with chlorine, phosgene was responsible for more deaths in WWI than any other chemical agent. Scientists in both Germany and the United Kingdom created sulphur mustard (SM) in 1860. Invented explicitly as a weapon of mass destruction, SM was the earliest form of mustard gas. Ladislaus Szinicz, *History of chemical and biological warfare agents*, 214 Toxicology 167, 174-175 (2005), available at <http://www.sciencedirect.com/science/article/pii/S0300483X05002829>.
 44. CS, Oxford English Dictionary (2d ed. 1989, online version Mar. 2011).
 45. *Tear Gas – Harassing Agent or Toxic Chemical Weapon?*, *supra* note 37, at 661. CS gas was used in Cyprus and British Guyana in 1956. Brian Rappert, *Non-Lethal Weapons as Legitimizing Forces? Technology, Politics, and the Management of Conflict* 35 (2003).
 46. Oxford English Dictionary, *supra* note 44; *Medical problems and criteria regarding the use of tear gas by police*, *supra* note 38, at 319.
 47. Initially, CWAs were available only to countries with advanced chemical industries; however, by the end of the century they were produced and used by countries with less-developed industries as well as terrorist organizations. James A. Romano, Jr., et al., *Chemical Warfare Agents: Chemistry, Pharmacology, Toxicology, and Therapeutics* 627 (James A. Romano Jr. et al. eds., 2d ed. 2008).
 48. *Non-Lethal Weapons as Legitimizing Forces?*, *supra* note 45, at 35.
 49. There are currently 132 States Party to the Protocol for the Prohibition of the Use of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare, 17 Jun. 1925, available at <http://www.icrc.org/ihl.nsf/FULL/280?OpenDocument> (Bahrain ratified 12 Sep. 1988).

However, countries continued to develop and stockpile chemical and biological weapons following WWI and throughout the 20th century.⁵⁰ The need for comprehensive international standards regulating the use and development of chemical weapons became apparent, especially following countries' abuse of many different chemical agents both for use in combat during war and against their own civilians.⁵¹

In 1997, the Chemical Weapons Convention (CWC) effectively prohibited the use of chemical and biological weapons in warfare, and promoted disarmament.⁵² The CWC, however, allows law enforcement officials to use some chemical agents during periods of peacetime or civil unrest.⁵³ The convention calls permissible chemicals "riot control agents" and stipulates that these agents must have effects which disappear shortly after exposure.⁵⁴ Lack of state consensus at the time of the CWC's drafting may explain why the Convention does not forbid use of chemical agents by law enforcement personnel. It has been suggested that domestic regulation of chemical agents did not take precedence and therefore was unable to be resolved.⁵⁵

Global use. Within the past year and a half, governments of Arab Spring countries including Bahrain,⁵⁶ Egypt,⁵⁷ Libya,⁵⁸ Syria,⁵⁹ Tunisia,⁶⁰ and Yemen⁶¹ have deployed toxic chemical agents against civilians. Other governments that have recently deployed toxic chemical agents

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50. *History of chemical and biological warfare agents*, *supra* note 43, at 167-181; Organisation for the Prohibition of Chemical Weapons, *Basic Facts on Chemical Disarmament*, <http://www.opcw.org/news--publications/publications/history-of-the-chemical-weapons-convention/> (last visited 19 Jun. 2012).
51. Examples include abuse of chemical agents in Vietnam (by the United States) and Iran (by Iraq) as well as their use against civilians by the Iraqi government and Japanese terrorists. Chemical Warfare Agents: Chemistry, Pharmacology, Toxicology, and Therapeutics, *supra* note 47, at 628-630; *History of chemical and biological warfare agents*, *supra* note 43, at 172.
52. The Chemical Weapons Convention (CWC) was the result of 12 years of negotiations, which aimed to prohibit "the development, production, acquisition, stockpiling, retention, transfer, or use of chemical weapons." Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and their Destruction ("Chemical Weapons Convention") art. 1, 13 Jan. 1993, available at <http://www.opcw.org/chemical-weapons-convention/> (Bahrain ratified 28 Apr. 1997).
53. As party to the Chemical Weapons Convention, Bahrain is permitted to employ certain toxic chemicals for, inter alia, purposes of scientific and medical research; protection against chemical weapons; military purposes that do not rely on toxic chemicals as agents of warfare; and law enforcement including domestic riot control purposes. *Id.*, at art. 2.9(a)-(d).
54. "'Riot Control Agent' means: Any chemical not listed in a Schedule, which can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure." Chemical Weapons Convention, *supra* note 52, at art. 2.7.
55. Matthew Meselson & Julien Perry Robinson, "Law Enforcement" and the CWC, 58 *The CBW Conventions Bulletin* 1, 1-2 (2002) (Discusses the need for clarifications in the CWC), available at <http://www.fas.harvard.edu/~hsp/bulletin/cbwc58.pdf>. Whether the CWC allows States to develop and use incapacitating chemical agents as well as well as riot control agents for domestic law enforcement is an ongoing subject of debate. Arms Control Today, *The Chemical Weapons Convention at 10: An Interview with OPCW Director-General Rogelio Pfirter*, Apr. 2007, http://www.armscontrol.org/act/2007_04/Pfirter. Absence of regulation regarding use of chemical agents for domestic law enforcement may have encouraged their misuse. For instance, in the 2002 Moscow hostage crisis, some 160 deaths could be passed off as legal. "Law Enforcement" and the CWC, *supra* note 55, at 1-2.
56. Physicians for Human Rights, *Tear Gas or Lethal Gas? Bahrain's Death Toll Mounts to 34*, Mar. 2012 <http://physiciansforhumanrights.org/blog/tear-gas-or-lethal-gas.html>.
57. See Amnesty International, *Egypt: Systematic failure to rein in security forces*, 22 Feb. 2012, <http://www.amnesty.org/en/news/egypt-systematic-failure-rein-security-forces-2012-02-22>; BBC News, *UN human rights chief Navi Pillay condemns Cairo deaths*, 23 Nov. 2011, <http://www.bbc.co.uk/news/world-africa-15854418>.
58. See Aaron Gray-Block, *Exclusive: Gaddafi pre-planned attacks on civilians: prosecutor*, Reuters, 5 Apr. 2011, <http://www.reuters.com/article/2011/04/05/us-libya-icc-exclusive-idUSTRE73443V20110405>.
59. See Liam Stack and Neil MacFarquhar, *Syrian Protesters Clash with Security Forces*, *NY Times*, 1 Apr. 2011, <http://www.nytimes.com/2011/04/02/world/middleeast/02syria.html>.
60. See Reuters, *Tunisia's Ban on Protests in Capital Is Reversed*, 11 Apr. 2012, http://www.nytimes.com/2012/04/12/world/africa/tunisia-ban-on-habib-bourguiba-avenue-protests-is-reversed.html?_r=1&ref=tunisia; Tunisia: Police Tear-Gas Demonstrators, 15 July 2011, <http://www.nytimes.com/2011/07/16/world/africa/16briefs-Tunisia.html>.
61. See Portia Walker, *Police Fire On Demonstrators in Yemen*, 9 Mar. 2011, <http://www.washingtonpost.com/wp-dyn/content/article/2011/03/08/AR2011030805594.html>.

against their civilian populations include Chile,⁶² Honduras,⁶³ Israel,⁶⁴ Panama,⁶⁵ Turkey,⁶⁶ and Uganda.⁶⁷ Such tactics are not a new phenomenon. For decades governments have launched attacks against civilians with toxic chemical agents.⁶⁸ Perhaps most similar to the Bahraini context, authorities in South Korea in 1987 used hundreds of thousands of canisters of toxic chemical agents over the course of two months (June and July) in the streets of Seoul to crush civilian uprisings.⁶⁹ Just as in Bahrain, civilians exposed to high quantities of toxic chemical agents in South Korea suffered acute illnesses and severe health impairments; affected individuals went without medical attention for fear of police and government harassment.⁷⁰

Types of chemical riot-control agents and their effects

***o*-Chlorobenzylidene malononitrile (CS, CS1, CS2).** The chemical CS remains the most commonly used lachrymatory riot control agent today.⁷¹ Symptoms of CS exposure include severe tearing, burning in the nose and throat, eye spasms, chest tightness, coughing, and wheezing among other signs of oral and respiratory distress.⁷² Scientists have also reformulated

62. Police in Chile used toxic chemical lachrymatory agents against more than 30,000 civilians protesting against a hydroelectric dam, and temporarily stopped using the chemical agents over concerns that these lachrymatory agents may lead to miscarriages. Latin America News Dispatch, *Chile Suspends Use of Tear Gas Amid Concerns Over Miscarriages*, 19 May 2011, <http://latindispatch.com/2011/05/19/chile-suspends-use-of-tear-gas-amid-concerns-over-miscarriages/>; Latin America News Dispatch, *Chilean Government Resumes Use of Tear Gas As HidroAysén Protests Continue*, 25 May 2011, <http://latindispatch.com/2011/05/25/chilean-government-resumes-use-of-tear-gas-as-hidroaysen-protests-continue/>.
63. "There were credible reports in March 2011 that members of the national police fired tear gas canisters indiscriminately and beat people with batons during demonstrations by teachers' unions protesting proposed changes in the public education system." Human Rights Watch, *World Report 2012: Honduras 2* (2012, <http://www.hrw.org/world-report-2012/world-report-chapter-honduras>; Amnesty International, *Stock pile of tear gas grenades in Honduras triggers fears of human rights abuses*, 27 Nov. 2009, available at <http://www.unhcr.org/refworld/country,,AMNESTY,COUNTRYNEWS,HND,,4b14e7a6c,0.html>.
64. The UN Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression has noted Israel's use of toxic chemical lachrymatory agents. *Report of the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression, Frank La Rue*, U.N. Doc. A/HRC/20/17/Add.2, 11 Jun. 2012, <http://unispal.un.org/unispal.nsf/47d4e277b48d9d3685256ddc00612265/68a8430f7c1ae73285257a1c00512d46?OpenDocument>. PHR reported on the use of toxic chemical agents by the IDF in 1988, documenting reports that soldiers threw and shot tear gas into homes, stores and hospitals. Physicians for Human Rights, *The Casualties of Conflict: Medical Care and Human Rights in the West Bank and Gaza Strip* (1988).
65. "Disputes over mining rights in western Panama have led to violent confrontations between indigenous groups and Panamanian security forces... Panamanian Security Services continue to use tear gas and other riot control measures." US Department of State Bureau of Diplomatic Services, *Travel Alert: Panama*, 5 Feb. 2012, <https://www.osac.gov/Pages/ContentReportDetails.aspx?cid=11944>. PHR reported in 1987 that chemical agent canisters being shot into homes, classrooms, and cars "were clearly labeled: 'For outdoor use only-may cause severe injuries-give medical aid to persons seriously affected.'" Physicians for Human Rights, *Panama 1987: Health Consequences of Police and Military Actions: The Report of a Medical Fact-Finding Mission of Physicians for Human Rights* (1987), <http://www.physiciansforhumanrights.org/library/reports/panama-1987-health.html>.
66. See *World Without Torture*, *Tear gas: Is it a violation of human rights?*, 31 May 2012, <http://worldwithouttorture.org/tag/european-court-of-human-rights/>; Al Jazeera, *Turkish police clash with Kurdish protesters*, 18 Mar. 2012, <http://www.aljazeera.com/news/middleeast/2012/03/2012318173842690891.html>; Frederike Geerdink, *The wrong discussion about tear gas*, *Journalistinturkey.com*, 13 Apr. 2012, http://www.journalistinturkey.com/blogs/the-wrong-discussion-about-tear-gas_3068/.
67. See Reuters, *Ugandan police fire teargas, disperse opposition vigil*, 17 Aug. 2011, <http://af.reuters.com/article/topNews/idAFJ0E77G0F120110817>; BBC News, *Uganda: Police tear gas 'walk-to-work' protesters*, 14 April 2011, <http://www.bbc.co.uk/news/world-africa-13078400>.
68. *Tear Gas – Harassing Agent or Toxic Chemical Weapon?*, *supra* note 37, at 660.
69. According to media sources, The Republic of Korea used 351,000 toxic chemical agent grenades and canisters in June 1987 alone. Physicians for Human Rights, *The Use of Tear Gas in the Republic of Korea 1* (1987), https://s3.amazonaws.com/PHR_Reports/korea-1987-use-of-tear-gas-in-republic-of-korea.pdf.
70. *Id.*, at 4.
71. *Short-term and long-term physical effects of exposure to CS spray*, *supra* note 39, at 172-174.
72. *Id.*, at 172; B Ballantyne and DW Swanston, *The comparative acute mammalian toxicity of 1-chloroacetophenone (CN) and 2-chlorobenzylidene malononitrile (CS)*, 40 *Arch Toxicol* 75, 76 (1978) <http://www.springerlink.com/content/m17075801362u733/>.

CS into the chemical agents CS1⁷³ and CS2,⁷⁴ which increase both the severity and duration of tearing effects of CS.⁷⁵ CS1 stays active when it settles onto the ground, re-aerosolizing when touched.⁷⁶ CS1 can remain active for 14 days in an enclosed space, and about one week in open air (long after a given protest is over).⁷⁷ CS2, which is water-resistant, is so potent that wetting an exposed part of the body can re-activate the gas and regenerate the toxins.⁷⁸ Chemicals in CS2 remain toxic for about one month after being released, although particles can remain active for two months or more (the chemicals are extremely potent, and water cannot wash them away).⁷⁹ CS, like other toxic chemical agents, may be released through pressurized devices such as spray cans or guns, or explosive cartridges that release the toxic agent through a powder charge.⁸⁰ Grenades may also release CS in aerosol form; aerosol CS has been known to cause blistering at close range.⁸¹

Chloracetophenone (CN). The most toxic chemical lachrymatory agent currently available is chloracetophenone (CN),⁸² which irritates the skin and eyes more than CS.⁸³ As a result, CS gas has generally replaced CN as a riot control agent in many countries, as it is thought to be less toxic⁸⁴—although Handheld Mace still contains a small percentage of CN.⁸⁵ Though acute effects of exposure to CN are similar to effects of exposure to CS,⁸⁶ CN has a greater potential to cause corneal damage, especially when cartridges have expired.⁸⁷ The lachrymatory prop-

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73. CS1 is a free-flowing powder, in which CS is combined with silica aerogel, which increases fluidity and water resistance. U.S. Army Field Manual 3-11 - Flame, Riot Control Agents, and Herbicide Operations, 6-1, FM 3-11/MCRP 3-3.7.2 (19 Aug. 1996), available at <http://www.enlisted.info/field-manuals/fm-3-11-flame-riot-control-agents-and-herbicide-operations.shtml>.
74. CS2 is blended with silicone-treated silica aerogel, which enables it to repel water. USAF Institute for National Security Studies, *supra* note 37, at 26.
75. *Id.*, at 26.
76. U.S. Army Field Manual, *supra* note 73, at 6-2.
77. *Id.*
78. *Id.*
79. *Id.*; USAF Institute for National Security Studies, *supra* note 37, at 25.
80. “[S]ome containers discharge a stream of the solution and some discharge a mist or fine particulate cloud... [Another type] contains tear gas dispersed by means of a small powder charge.” JR Gaskins, et al., *Lacrimating agents (CS and CN) in rats and rabbits*, 24 Arch Environ Health 449, 449 (1972). See also S. Varma and P.J.A Holt, *Severe cutaneous reaction to CS gas*, 26(3) Clin Exp Dermatol. 248, 249 (May 2001), <http://onlinelibrary.wiley.com.ezproxy.bu.edu/doi/10.1046/j.1365-2230.2001.00806.x/pdf>. The tools of tear gas employment can be dangerous themselves. Heat, flames, and chemical reactions generated by tear gas grenades and launchers can produce burns. The gas pressure and velocity of canisters released at close range create sizable contact wounds, excessive bleeding, and internal damage. When directed at the head or neck, this damage can be fatal. MA Rothschild and K Vendura, *Fatal neck injuries caused by blank cartridges*, 101 Forensic Sci Int. 151, 151-158 (26 Apr 1999); Franck Clarot, et al., *Lethal head injury due to tear-gas cartridge gunshots*, 137 Forensic Sci Int. 45, 48-51 (14 Oct. 2003).
81. *Medical aspects of riot control (harassing) agents*, *supra* note 38, at 421-424; P Holland and RG White, *The cutaneous reactions produced by CS and CN when applied directly to the skin of human subjects*, 86 Br J Dermatol 150, 150-154 (1972) <http://onlinelibrary.wiley.com/doi/10.1111/bjd.1972.86.issue-2/issuetoc>. For a detailed explanation of cutaneous responses to CS, see DA Wiegand, *Cutaneous reactions to the riot control agent CS*, 134 Milit Med 437, 437-440 (1969).
82. Chemical and Biological Warfare, *supra* note 40, at 118. See also U.S. Army Medical Research Institute of Chemical Defense, *Handbook of Toxicology of Chemical Warfare Agents* (ed. Ramesh C. Gupta) (2009), available at <http://www.dtic.mil/cgi-bin/GetTRDoc?Location=U2&doc=GetTRDoc.pdf&AD=ADA539686>.
83. “w-Chlorocetophenone has been shown to present a far greater cutaneous hazard than o-chlorobenzylidenemalononitrile when applied directly to the skin.” *The cutaneous reactions produced by CS and CN when applied directly to the skin of human subjects*, *supra* note 81, at 150. See also *Lacrimating agents (CS and CN) in rats and rabbits*, *supra* note 80, at 452.
84. *Id.* “Fatalities have occurred following intense, prolonged exposure to CN.” *Medical aspects of riot control (harassing) agents*, *supra* note 81, at 426. Studies show that CS, when ingested or inhaled, is significantly less likely than CN to cause tissue damage. *The comparative acute mammalian toxicity of 1-chloroacetophenone (CN) and 2-chlorobenzylidene malononitrile (CS)*, *supra* note 72, at 75.
85. Chemical Mace contains 0.9% CN. USAF Institute for National Security Studies, *supra* note 37, at 25.
86. “The acute transient clinical effects of both CN and CS are quite similar...” *Medical aspects of riot control (harassing) agents*, *supra* note 81, at 424.
87. “If the CN cartridges are too old and the agent does not vaporize adequately, small solid particles may strike

erties of CN gas were discovered in Germany in 1869, and Japan may have been first to use CN gas on the battlefield.⁸⁸

Dibenz (b, f)-1, 4-oxazepine (CR). CR⁸⁹ is another toxic chemical agent and is at least five times more potent than CS.⁹⁰ British scientists developed CR gas in 1962.⁹¹ Persons exposed to CR gas experience painful photophobia as well as a burning sensation that intensifies on damp skin. CR remains active in the environment for 60 days, at least as long as CS.⁹² CR gas became known as “fire gas” in 1974 following its use in Northern Ireland, owing to the burning sensation it causes.⁹³

Oleoresin capsicum (OC) and pelargonic acid vanillylamide (PAVA). Law enforcement officers are also increasingly using pepper spray (OC or PAVA)⁹⁴ as a riot control agent (often instead of Chemical Mace),⁹⁵ which causes tearing and burning when sprayed directly into a person’s face as riot control agents.⁹⁶ The principal chemical in pepper spray is oleoresin capsicum (OC), which comes from the capsaicin in chili peppers.⁹⁷ PAVA is a synthesized capsaicin that, when directed at a person’s eyes, can reportedly cause more pain than CS gas.⁹⁸

Medical hazards of exposure to toxic chemical agents

Longitudinal or population-based studies on the long-term effects of toxic lachrymatory agents on repeatedly exposed humans do not exist, because no government is known to have deployed toxic lachrymatory agents against a civilian population for an extended period of time.⁹⁹ Some tests, however, have shown that CS gas can damage chromosomes and change DNA, raising the potential of these agents to cause long-term carcinogenic¹⁰⁰ and deleterious reproductive effects,¹⁰¹ as well as concerns about their long-term harmful effects on the

the cornea and cause damage.” *Medical problems and criteria regarding the use of tear gas by police, supra* note 46, at 320 (1987).

88. Chemical and Biological Warfare, *supra* note 40, at 118.

89. CR can be dispersed as a 0.1% CR solution comprised of 80% propylene glycol and 20% water. USAF Institute for National Security Studies, *supra* note 37, at 25.

90. *Id.*

91. *Id.*

92. U.S. Army Field Manual, *supra* note 73, at 6-3.

93. USAF Institute for National Security Studies, *supra* note 37, at 25.

94. Chemical and Biological Warfare, *supra* note 40, at 118.

95. USAF Institute for National Security Studies, *supra* note 37, at 27.

96. OC does not vaporize or emit fumes capable of incapacitating wide-reaching groups of people. U.S. Army Medical Research Institute of Chemical Defense, *supra* note 82, at 157.

97. Chemical and Biological Warfare, *supra* note 40, at 118.

98. U.S. Army Medical Research Institute of Chemical Defense, *supra* note 82, at 158.

99. Lakshaman Karalliedde et al., *Possible immediate and long-term health effects following exposure to chemical warfare agents*, 114 *Public Health* 238, 246 (2000).

100. Scientists determined in the 1970s that CS “suppressed non-specific esterase activity to a similar extent as the potent carcinogen 7, 12-dimethylbenz[*a*]anthracene.” LF Chasseaud, et al., *Suppression of sebaceous gland non-specific esterase activity by electrophilic alpha beta-unsaturated compounds*, 31 *Experientia* 1196, 1196 (1975) <http://www.springerlink.com/content/r551818731k09081/>. “CS should be fully investigated for carcinogenic activity.” DH Barry, et al., *The suppression of non-specific esterase activity in mouse skin sebaceous gland by CS gas*, 240 *Nature* 560, 561 (1972) <http://www.nature.com.ezproxy.bu.edu/nature/journal/v240/n5383/abs/240560a0.html>. See also *Tear Gas – Harassing Agent or Toxic Chemical Weapon?*, Hu et al., *supra* note 37, at 660. But cf. E Zeiger, et al., *Salmonella mutagenicity tests, III: results from the testing of 225 chemicals*, 9 *Environ Mol Mutagen* 1, 4 (1987), which found that an increase in results could not necessarily be attributed to CS application; some animal studies claim to have disproven the mutagenic and carcinogenic potential of CS gas deployed in appropriate concentrations and in open space. Bernard P McNamara, et al., *CS: A Study of Carcinogenicity*, National Technical Information Service (Nov. 1973); Albert Von Daniken, et al., *Tests for mutagenicity in Salmonella and covalent binding to DNA and protein in the rat of the riot control agent o-chlorobenzylidene malononitrile (CS)*, 49 *Arch Toxicol* 15, 15 (1981); Dieter Wild, et al., *Genotoxicity study of CS (ortho-chlorobenzylidene malononitrile) in Salmonella, Drosophila, and mice*, 54 *Arch Toxicol* 167, 167 (1983).

101. Physicians for Human Rights spoke to physicians in the Gaza Strip in the 1980s, who reported some 40 cases of intra-uterine fetal birth. “All these cases were among women who noticed the absence of fetal movement

pulmonary system following inhalation.¹⁰² In addition, these toxic chemical agents can cause severe burns including (1) chemical burns resulting from direct contact with CS; (2) contact burns from touching the CS canisters; and (3) flame burns, when a grenade explodes too close to an individual.¹⁰³ It has also been suggested that CS inhalation may cause breathing complications, such as laryngospasm that can complicate operative procedures.¹⁰⁴

If a person exposed to toxic chemical agents leaves the saturated area quickly, symptoms of exposure can dissipate within 15 minutes, but can also last for hours.¹⁰⁵ This has led proponents of toxic chemical agent use to argue that when used properly, chemical riot control agents are nonlethal and therefore safe.¹⁰⁶ Toxic chemical agents are often used improperly, however, and scientists and law enforcement agencies alike have found that these agents can lead to fatalities¹⁰⁷ when employed indiscriminately and with disproportionate force.¹⁰⁸ According to one recent study published by the Federation of American Scientists, incapacitating chemical agents authorized for crowd control purposes might prove fatal for 10% of those exposed.¹⁰⁹

two to three days after exposure to tear gas when soldiers had entered their camps or villages.” Physicians for Human Rights, *The Casualties of Conflict*, *supra* note 64, at 19. *But cf.* PR McElhatton, S Sidhu, and SHL Thomas, *Exposure to CS Gas in Pregnancy*, 24 *Journal of Toxicology: Clinical Toxicology* 547, 547 (Jun. 2004), which collected data on 30 women exposed to toxic chemical agents during pregnancy and concluded that “in the absence of severe maternal toxicity an increased risk of fetal toxicity is unlikely.”

102. Inhalation of excessive amounts of CS gas can cause lung damage leading to asphyxiation or, less frequently, acquired pneumonia. *The comparative acute mammalian toxicity of 1-chloroacetophenone (CN) and 2-chlorobenzylidene malononitrile (CS)*, *supra* note 72, at 93. One study found that “the possible cause of upper airway and bronchial obstruction was respiratory tract injury after CS spray inhalation... We suggest that laryngeal and bronchial obstruction constitutes a life-threatening condition that might result from CS spray inhalation.” E Karaman, et al., *Acute laryngeal and bronchial obstruction after CS (o-chlorobenzylidenemalononitrile) gas inhalation*, 266 *Eur Arch Otorhinolaryngol* 301, 303 (Feb. 2009). *See also* TC Marrs, et al., *A repeated dose study of the toxicity of inhaled 2-chlorobenzylidene malononitrile (CS) aerosol in three species of laboratory animals*, 52 *Arch Toxicol* 183, 192 (1983) <http://www.springerlink.com/content/hr276vv375183053/>; *Tear Gas – Harassing Agent or Toxic Chemical Weapon?*, *supra* note 37, at 660.
103. Yuvraj Agrawal, et al., *CS gas—Completely safe? A burn case report and literature review*, 35(6) *Burns* 895, 896 (Sep. 2009); AM Zekri, et al., *Acute mass burns caused by o-chlorobenzylidene malononitrile (CS) tear gas*, 21 *Burns* 586, 586 (Dec. 1995).
104. “[L]aryngospasm may occur hours after CS spray exposure.... [A]nesthesiologists should be aware that patients exposed to CS spray may be at risk of airway problems hours after exposure.” A Davey & IK Moppett, *Postoperative complications after CS spray exposure*, 59 *Anesthesia* 1219, 1220 (Dec. 2004).
105. A. R. Hill et al., *Medical Hazards of the Tear Gas CS: A Case of Persistent, Multisystem, Hypersensitivity Reaction and Review of the Literature*, 79 *Medicine* 236, 236-40 (2000).
106. Frederick Fraunfelder, *Is CS gas dangerous?* 320 *BMJ* 458, 459 (2000); *Medical problems and criteria regarding the use of tear gas by police*, *supra* note 46, at 320.; P.G. Blain, *Tear gases and irritant incapacitants. 1-chloroacetophenone, 2-chlorobenzylidene malononitrile and dibenz[b, f]-1,4-oxazepine*, 22 *Toxicol Rev* 103, 103-110 (2003).
107. “Death is usually the result of excessive concentrations used, confined spaces, and prolonged exposures.” U.S. Army Medical Research Institute of Chemical Defense, *supra* note 82, at 168. *See also* U.S. Department of Justice, *Review of the Department of Justice’s Use of Less-Lethal Weapons*, May 2009, <http://www.justice.gov/oig/reports/plus/e0903/final.pdf>.
108. Force is “disproportionate” when it is not “in proportion to the seriousness of the offense and legitimate objective to be achieved” U.N. Principles on the Use of Force and Firearms by Law Enforcement Officials, at art. 5(a), U.N. Doc. A/CONF.144/28/Rev.1 (18 Dec. 1990). “Some of the adverse clinical effects from RCA exposure reported in the literature have involved indiscriminate use (excessive concentrations), prolonged exposure, and dissemination of compound in a confined space.” U.S. Army Medical Research Institute of Chemical Defense, *supra* note 82, at 170. In laboratory animals, “[e]xcess mortality was noted in high dose groups of all three species ... harm was related to the high concentration (Ct) of CS...” *A repeated dose study of the toxicity of inhaled 2-chlorobenzylidene malononitrile (CS) aerosol*, *supra* note 102, at 183, 196, <http://www.springerlink.com/content/hr276vv375183053/>. *See also* Parliamentary Forum on Small Arms and Light Weapons, *supra* note 35, at 1.
109. Lynn Klotz et al., *Beware the Siren’s Song: Why “Non-Lethal” Incapacitating Chemical Agents are Lethal*, 7-8 (2003), http://www.fas.org/programs/bio/chemweapons/documents/sirens_song.pdf. *See also* ICRC, *Incapacitating Chemical Agents: Implications for International Law*, 20, 24-26 Mar. 2010, <http://www.icrc.org/eng/assets/files/publications/icrc-002-4051.pdf>.

Toxic chemical agent vapors accumulate in low areas¹¹⁰ and do not disperse easily when canisters are detonated in confined spaces. As a result, health effects of exposure to these toxic chemical agents in confined spaces may be both prolonged and more severe.¹¹¹ Consistent exposure to high doses of riot control agents in enclosed spaces has been shown to cause acute lung damage¹¹² and death.¹¹³

Repeated exposure to toxic chemical agents may lead to increased sensitization such that subsequent exposures can result in increased health complications.¹¹⁴ Exposure to toxic chemical agents at close range increases the potential for toxic chemical substances to enter bodily tissues, which can compromise and inflame immune systems and cause chronic symptoms.¹¹⁵ Various factors affect the impact of toxic chemical agents on an individual, including whether the gas is delivered in solution or aerosol form, the length of exposure, temperature of surroundings, humidity (high temperature and humidity increase skin reactions¹¹⁶), age, and whether the exposed person has other diseases.¹¹⁷

In light of the severe detrimental health impacts noted by the Bahrain Independent Commission of Inquiry and this report, it is crucial that Bahraini authorities publicly identify which types of toxic chemical agents they use against civilians to allow further medical research and development of specific usage guidelines.¹¹⁸ Bahraini officials have not responded to PHR's request for a list of toxic chemical agents the government deploys and their concentrations.¹¹⁹

110. D. Hank Ellison, *Handbook of Chemical and Biological Warfare Agents* 405 (CRC Press ed, 2d ed. 2008).

111. "When used at higher levels, in confined spaces and/or for prolonged duration, there is a greater potential for the toxicity to escalate." U.S. Army Medical Research Institute of Chemical Defense, *supra* note 82, at 168.

112. Histologic findings included "pulmonary vascular congestion, accompanied in severe cases by focal hemorrhages and edema." *Medical Hazards of the Tear Gas CS*, *supra* note 105, at 237.

113. "In enclosed places, prolonged exposure to the resulting high dosages of RCAs can kill or disable personnel and can cause serious physiological reactions." U.S. Army Field Manual, *supra* note 73, at 6-1. See CW Chung & AL Giles Jr., *Sensitization of guinea pigs to alpha-chloroacetophenone (CN) and ortho-chlorobenzylidene malono-nitrile (CS), tear gas chemical*, 109 J Immunol 284, 284 (1972) <http://www.jimmunol.org.ezproxy.bu.edu/content/109/2/284.long>; *Tear Gas—Harassing Agent or Toxic Chemical Weapon?*, *supra* note 37, at 661. *But cf.* *Medical problems and criteria regarding the use of tear gas by police*, *supra* note 46, at 320, which found that CS has a safety factor of 2,600, meaning that "2,600 times as much as is required to affect humans would be required to be fatal."

114. "Persons sensitized by a previous contact with CN or other tear gas ingredient may develop serious complications on a second encounter..." *Sensitization of guinea pigs to alpha-chloroacetophenone (CN) and ortho-chlorobenzylidene malono-nitrile (CS)*, *supra* note 113, at 291. Sensitization may be more readily produced and more severe with repeated exposure to CN. *Lacrimating agents (CS and CN) in rats and rabbits*, *supra* note 80, at 452.

115. "Tear gas chemicals, especially CN may enter into the tissues of eyes or bones of human victims who are fired upon at close ranges and may generate severe immunologic responses if the chemical is released continuously. Some of the chronic clinical symptoms of such victims might have been due to immunologic inflammatory reactions." *Sensitization of guinea pigs to alpha-chloroacetophenone (CN) and ortho-chlorobenzylidene malono-nitrile (CS)*, *supra* note 113, at 291.

116. Even when used appropriately tear gas can induce severe contact dermatitis, especially if the victim develops an allergic reaction. NS Penneys, RM Israel, and SM Indgin, *Contact dermatitis due to 1-chloroacetophenone and chemical mace*, 281 N Engl J Med 413, 413-415 (1969). Symptoms are also exacerbated in hot or humid weather. *Tear Gas—Harassing Agent or Toxic Chemical Weapon?*, *supra* note 37, at 661.

117. Symptoms of RCA exposure depend on both dose and duration of exposure. Pre-existing asthma and underlying cardiac disease has been shown to exacerbate toxicity. When released as an aerosol, particles can accumulate and cause corneal abrasions when they penetrate the eye. U.S. Army Medical Research Institute of Chemical Defense, *supra* note 82, at 155, 163-165. The very young and very old may face a greater risk of negative health effects due to toxic chemical agent exposure. Elspeth Worthington & Patrick A Nee, *CS exposure-clinical effects and management*, 16 Accid Emerg Med 168, 168-170 (1999) <http://emj.bmj.com/content/16/3/168.full.pdf+html>. See also CL Punte, et al., *Exposures to orthochlorobenzylidene malononitrile*, 6 Arch Environ Health 366, 366-74 (1964). One study determined that a 4-month year old died from pneumonia developed after exposure to CS gas. Sungmin Park & Samuel T. Giammona, *Toxic Effects of Tear Gas on an Infant Following Prolonged Exposure*, 123 Arch Pediatr Adolesc Med. 245, 245-246 (1972).

118. Interview with key informant no. 11, in Bahrain (8 Apr. 2012).

119. PHR requested this information when investigators met with Bahraini Ministry of the Interior officials on 11 April 2012.

Bahraini government violates UN principles on the use of force during protests

Analysis from PHR's April 2012 investigation in Bahrain reveals that Bahraini law enforcement officials routinely deployed excessive force while using riot-control agents against civilian protesters.¹²⁰ Specifically, PHR concludes that Bahraini police (1) failed to exercise restraint¹²¹ before resorting to force; (2) used disproportionate force¹²² when responding to protesters; and (3) failed to minimize damage and injury to demonstrators.¹²³ Based on this analysis, Physicians for Human Rights concludes that such unrestrained use of toxic chemical agents against a civilian population has caused gratuitous—and sometimes life-threatening—harm to men, women, and children in Bahrain.

Bahraini law enforcement officials use preemptive and excessive force

All 32 eyewitnesses exposed to toxic chemical agents whom PHR interviewed reported that law enforcement officials failed to employ gradations of force when confronting peaceful demonstrators.¹²⁴ Police reportedly used force preemptively¹²⁵ to disperse peaceful gatherings. This preemptive action contravenes UN guidelines, which mandate that law enforcement officials begin with nonviolent means before using force or firearms.¹²⁶ For example, riot police routinely accost peaceful protesters and immediately use force to disperse participants before engaging in dialogue or other nonviolent tactics.¹²⁷

One eyewitness reported that while participating in a small demonstration alongside approximately 50 other people in his Shi'a village in February 2012, scores of police wearing dark blue uniforms arrived at the scene, split into three groups, and suddenly, without warning, began to attack the

120. United Nations best practices on the use of force state the importance of employing non-violent means before resorting to use of force; exercising restraint and proportionality; minimizing damage and injury; ensuring that the injured receive assistance and medical aid; ensuring that relatives of the injured are notified; and promptly reporting deaths to officials, among other measures. U.N. Basic Principles on the Use of Force, *supra* note 108, art. 5(a)-(d), 6. PHR's findings are corroborated by findings of the Bahrain Independent Commission of Inquiry, which found that "The usual practice of PSF units was to use excessive amounts of tear gas to disperse protesters." BICI Report, *supra* note 20, at ¶ 1091.
121. "Whenever the lawful use of force and firearms is unavoidable, law enforcement officials shall...exercise restraint in such use" U.N. Principles on the Use of Force, *supra* note 108, at art. 5(a). UN best practice also requires law enforcement agencies to restrain the application of means causing death or injury to persons. *Id.*, at art. 2.
122. "Whenever the lawful use of force and firearms is unavoidable, law enforcement officials shall... act in proportion to the seriousness of the offense and legitimate objective to be achieved" *Id.*, at art. 5(a).
123. "Law enforcement officials shall...minimize damage and injury, and respect and preserve human life" *Id.*, at art. 5(b).
124. "Law enforcement officials, in carrying out their duty, shall, as far as possible, apply non-violent means before resorting to the use of force and firearms. They may use force and firearms only if other means remain ineffective or without any promise of achieving the intended result." *Id.*, at art. 4. See also U.N. Code of Conduct for Law Enforcement Officials, *supra* note 1, at art. 3.
125. By deploying toxic chemical agents preemptively, Bahraini police escalated violence that led to increased injuries. Such cases also show how less-lethal weapons can actually increase police violence, by lowering thresholds for deployment of force and starting a chain of escalating violence. As a result, training and oversight of police officials may be more significant overall in reducing injuries to police and civilians than use of less-lethal weapons. See Parliamentary Forum on Small Arms and Light Weapons, *Policy Statement on Less Lethal Weapons*, 20 Feb. 2011, http://parliamentaryforum.org/sites/default/files/partforum_policy_statement_on_less_lethal_weapons_final.pdf; Amnesty International, *Excessive and lethal force? Amnesty International's concerns about deaths and ill-treatment involving police use of tasers* (2004), <http://educate-yourself.org/pnt/amnestyintl2004TASERfullreport.shtml>.
126. Before law enforcement officials resort to force, they must attempt to use non-violent means, such as physical presence, dialogue, communication of information, and de-escalation of conflict when dealing with peaceful assemblies. Policy on Formed Police Units in United Nations Peacekeeping Operations, 9, DPKO Ref. 2009.32 (effective 1 Mar. 2010).
127. These eyewitness accounts are corroborated by documentation by local human rights organizations. See Bahrain Center for Human Rights, *February 14th: The Bahraini Authorities Brutally Suppress the Protests*, 14 Feb. 2012, <http://www.bahrainrights.org/en/node/5056>.

*crowd with tear gas canisters, bird shot, and sound bombs. According to this eyewitness, the police made no attempt to communicate first with any of the protesters.*¹²⁸

This and 15 other eyewitness testimonies PHR received indicate that law enforcement officials routinely fail to warn civilians of their intent to use force,¹²⁹ which contravenes UN guidelines.¹³⁰

Bahraini law enforcement officials use excessive and disproportionate force

Bahraini riot police not only fail to exercise restraint when confronting demonstrators, they also overwhelm peaceful protesters with disproportionate force exceeding the “minimum extent necessary” to disperse unlawful assemblies.¹³¹ All 16 demonstrators whom PHR investigators interviewed reported that law enforcement officials routinely fire inestimable numbers of grenades containing toxic chemical agents at civilians who demonstrate peacefully.

*A young man from Saar named Ali reported that immediately after a large number of riot police arrived at a nonviolent demonstration in his village on 28 January 2012, they shot volley after volley of tear gas canisters directly at the group of some 50 protesters. He heard the explosions come from behind. White low-hanging clouds of toxic smoke then appeared and were so thick he couldn't see. Ali suddenly collapsed, blood streaming from his head where he had been hit by a canister.*¹³²

The King of Bahrain's own Commission of Inquiry found that “in the events of February/March 2011 and subsequent events in many situations,”¹³³ “[p]olice units resorted to the disproportionate use of tear gas for the dispersion of protesters. On many occasions, the number of tear gas canisters fired at protesters was disproportionate to the size of the demonstration and the number of participants.”¹³⁴

In using excessive amounts of toxic chemical agents against demonstrators, Bahraini law enforcement officials violate best practices, which dictate that any chemicals deployed should only contain the minimum that fulfills the purpose—“namely to minimize a person's capacity for resistance without unnecessarily prolonging their discomfort.”¹³⁵ Those survivors of chemical agent attacks whom PHR interviewed reported debilitating short-term symptomatology and long-term sequelae from exposure to toxic chemical agents.

PHR met with former Miami (Florida, US) Chief of Police John Timoney,¹³⁶ whom the Bahraini Ministry of Interior hired in December 2011 to advise law enforcement officials on crowd-control tactics.¹³⁷ Timoney has publicly defended the government's use of toxic chemical

128. Interview with key informant no. 73, in Bahrain (8 Apr. 2012).

129. Interview with key informant no. 18, in Bahrain (9 Apr. 2012). A local rights group reported that at one demonstration, Bahraini officials announced their intent to use force, but then attacked with toxic chemical agents only seconds later. See Josh Shahryar, *Bahrain Interview: Nabeel Rajab-How Police Attacked the Manama March and Beat Me*, EA World View, 8 Jan. 2011, <http://www.enduringamerica.com/home/2012/1/8/bahrain-interview-nabeel-rajab-how-police-attacked-the-manam.html>.

130. “[L]aw enforcement officials shall identify themselves as such and give a clear warning of their intent to use firearms, with sufficient time for the warning to be observed” U.N. Principles on the Use of Force, *supra* note 108, at art. 10. See also U.N. Policy on Formed Police Units, *supra* note 126, at 9.

131. “In the dispersal of assemblies that are unlawful but non-violent, law enforcement officials shall avoid the use of force or, where that is not practicable, shall restrict such force to the minimum extent necessary.” U.N. Principles on the Use of Force, *supra* note 108, at art. 13. The BICI also concluded that “PSF units used amounts of tear gas that were disproportionate to the objective of dispersing protesters.” BICI Report, *supra* note 20, at ¶ 1095.

132. Interview with key informant no. 08, in Bahrain (8 Apr. 2012).

133. BICI Report, *supra* note 20, at ¶ 1112 (2011).

134. *Id.*, at ¶ 1117 (2011).

135. Association of Chief Police Officers of England, Wales, and Northern Ireland, *Guidance on the Use of Incapacitant Spray*, art. 2.3.2, May 2009, <http://www.acpo.police.uk/documents/uniformed/2009/200905UNGIS01.pdf>.

136. Interview with key informant no. 95, in Bahrain (11 Apr. 2012).

137. As a former Chief of Police in the United States, Timoney was known for using aggressive tactics to control crowds. Officers under Timoney in Miami used tasers, pepper spray, and batons against non-violent

agents “to create distance between gangs of rioters that have been ... assaulting police officers with Molotov cocktails and also with bricks, nails, and other things.”¹³⁸ This advisor stated that police are authorized to respond with force to defend themselves against imminent threat of death or serious injury,¹³⁹ but Timoney did not acknowledge that such force must be tempered and directed proportionally¹⁴⁰ at those who pose a grave threat.¹⁴¹ The International Committee of the Red Cross (ICRC) warns that when law enforcement officials resort to practices that extend beyond the powers and authorities granted to them by the law, the distinction between them and criminal offenders can no longer be made.¹⁴²

One non-peaceful demonstrator whom PHR interviewed reported that riot police had first attacked a group of peaceful demonstrators of which he was a part, before he attacked the riot police. Another eyewitness reported to PHR that he had burned the first and second digits of his right hand while attempting to throw back an exploded canister containing a toxic chemical agent that law enforcement officers had fired at him.¹⁴³ The BICI did document times in which protesters have endangered law enforcement officials’ lives by throwing Molotov cocktails,¹⁴⁴ and no demonstrator has the right to attack law enforcement officials with incendiary devices. However, as previously noted, law enforcement officials must in response only deploy the minimal amount of force necessary to subdue or apprehend a violent protester. Such disproportionate use of force excessively harms individuals and violates UN guidelines.¹⁴⁵

Bahraini law enforcement officials fail to minimize harm

Failure to minimize damage and injury to demonstrators constitutes a third means by which Bahraini law enforcement officials deploy excessive force.¹⁴⁶ Analysis of PHR findings shows that law enforcement officials who fired toxic chemical agents at assemblies without adhering to principles of proportionality and restraint caused unnecessary injury to civilians—demonstrators and bystanders alike.

PHR investigators interviewed 16 survivors who reported that Bahraini riot police fired canisters containing toxic chemical agents directly at civilians, often aiming hand-held launchers at their targets’ upper bodies and heads.¹⁴⁷

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- protesters at the 2003 Free Trade Area of the Americas summit, resulting in 150 complaints of police abuse filed with the ACLU. Ryan Devereaux, *John Timoney: the notorious police chief sent to reform forces in Bahrain*, The Guardian, 16 Feb. 2012, <http://www.guardian.co.uk/world/2012/feb/16/john-timoney-police-chief-bahrain-protests>.
138. Voice of America, *Bahrainis Complain of Government Tear Gas on Neighborhoods*, 16 Feb. 2012, <http://www.voanews.com/content/bahrainis-complain-of-government-teargas-attacks-on-neighborhoods-139525848/152204.html>.
139. “Law enforcement officials shall not use firearms against persons except in self-defence or defence of others against the imminent threat of death or serious injury, to prevent the perpetration of a particularly serious crime involving grave threat to life, to arrest a person presenting such a danger and resisting their authority, or to prevent his or her escape, and only when less extreme means are insufficient to achieve these objectives. In any event, intentional lethal use of firearms may only be made when strictly unavoidable in order to protect life.” U.N. Principles on the Use of Force, *supra* note 108, at art. 9.
140. “Proportional” refers to the seriousness of the offense and the legitimate objective to be achieved. *Id.*, at art. 5(a).
141. Objectives must be “legitimate” and the use of force must be “proportionate to the seriousness of the offense.” *Id.*
142. ICRC, *To Serve and To Protect: Human Rights and Humanitarian Law for Police and Security Forces 156* (1998), available at <http://reliefweb.int/sites/reliefweb.int/files/resources/D308231847B7B08BC1256DBF00409023-ICRC-toserveandtoprotect-feb98.pdf>.
143. Interview with key informant no. 18, in Bahrain (9 Apr. 2012).
144. The Bahrain Independent Commission of Inquiry documented instances in which protesters threw rocks and Molotov cocktails at police. BICI Report, *supra* note 20, at ¶ 234, 258, 531.
145. Recourse to potentially lethal force “may only be made when strictly unavoidable in order to protect life.” U.N. Principles on the Use of Force, *supra* note 108, at art. 9.
146. “Whenever the lawful use of force and firearms is unavoidable, law enforcement officials shall ... [m]inimize damage and injury, and respect and preserve human life”. *Id.*, at art. 5(b).
147. A U.N. human rights expert recently noted that “tear gas canisters should never be fired directly at demonstrators.” Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression, *Statement by the UN Special Rapporteur on the promotion and protection of the right to freedom of*

One 20-year-old demonstrator told PHR that while he was attending a nonviolent rally, a policeman fired a tear gas canister at his head. He was immediately blinded and fell to the ground.¹⁴⁸ PHR conducted a physical examination and reviewed this respondent's medical records, which noted skull fractures and brain hemorrhaging.¹⁴⁹

Another 15-year-old protester admitted that he had thrown small stones at a phalanx of riot police, saying he was "revenging all the people they have hurt." In response, one official reportedly shot a canister containing a toxic chemical agent directly at this boy's torso, severing a nerve in his upper right arm. Results from a physical examination PHR conducted revealed wounds highly consistent with the boy's account, and review of his medical records corroborated his testimony.¹⁵⁰

PHR further determined that Bahraini law enforcement officials failed to render aid and assistance to wounded protesters—as international guidelines require¹⁵¹—thus exacerbating injuries. Among 14 wounded demonstrators whom PHR investigators interviewed, none reported that law enforcement officials had come to their aid to render assistance, even when they were in need of emergency medical care. In fact, some demonstrators reported that Bahraini police fired on them and then proceeded to beat them after they had already been incapacitated.

PHR interviewed a young teenage boy who reported that he had been knocked unconscious after police fired a tear gas canister at his head. The boy's family reported that police then surrounded him and kicked him while he lay unconscious and bleeding from an open head wound.¹⁵²

During a demonstration of 20-30 people who were protesting police use of force at a funeral for a wounded demonstrator earlier that morning, some 20 riot police stormed them and aimed their tear gas launchers¹⁵³ at the demonstrators, according to a teenage boy who had attended. He reported that one policeman fired a canister directly at his head, severely injuring his left eye. The boy collapsed on the ground and said that several police then ran over and began to kick him and beat him with batons while he lay bloodied on the street.¹⁵⁴

Another means by which Bahraini law enforcement officials fail to minimize harm is by not allowing or providing clear and obvious corridors of escape when using toxic chemical agents for crowd dispersal.¹⁵⁵ The Bahrain Independent Commission of Inquiry (BICI) documented this pattern by which police routinely blocked entrances to villages where protests took place, in order to prevent demonstrators from escaping once they began firing toxic chemical agents

opinion and expression at the conclusion of his visit to Israel and the occupied Palestinian territory (18 Dec. 2011), available at <http://unispa.un.org/UNISPAL.NSF/0/67C53F54894114298525796C0056DED2>.

148. Interview with key informant no. 73, in Bahrain (8 Apr. 2012).

149. The medical record noted "depressed fracture of left frontal bone and cerebral hemorrhagic contusion underneath with edema." PHR's physical exam revealed a 2.75-cm sutured laceration just inside the hairline in the left temporal region, ending in a circular, depressed region.

150. Interview with key informant no. 64, in Bahrain (7 Apr. 2012).

151. "Law enforcement officials must ... ensure assistance and medical aid are rendered to any injured or affected persons at the earliest possible moment" U.N. Principles on the Use of Force, *supra* note 108, at art. 5(c).

152. Interview with key informant no. 63, in Bahrain (7 Apr. 2012).

153. Toxic chemical agent launchers, sometimes referred to as gas guns or riot guns, are weapons designed to fire canisters or other projectiles containing toxic chemical agents as munitions. Some launchers can shoot toxic chemical agent munitions a distance of about 65-90 meters. USAF Institute for National Security Studies, *Nonlethal Weapons: Terms and References*, INSS Occasional Paper 15, 27 (1996), <http://www.usafa.edu/df/inss/OCP/ocp15.pdf>; U.S. Department of Justice, Technology Assessment Program: Barrier-Penetrating Tear Gas Munitions 3.10 (1985), available at <https://www.ncjrs.gov/pdffiles1/nij/099857.pdf>.

154. Interview with key informant no. 87, in Bahrain (10 Apr. 2012).

155. "Where it is necessary to disperse a crowd, always leave a clear and obvious corridor of escape." U.N. Office of the High Commissioner for Human Rights, *Human Rights and Law Enforcement: A Trainer's Guide on Human Rights for the Police*, Professional Training Series No. 5/Add.2, 114 (2002), <http://www.ohchr.org/Documents/Publications/training5Add2en.pdf>.

to disperse them.¹⁵⁶ At no point should law enforcement officials corner crowds to create a perception of no escape, because this can escalate violence and maximize harm.¹⁵⁷

Toxic chemical agent attacks endanger the health of bystanders and protesters

PHR examined civilians who reported being injured by Bahraini law enforcement officials while exercising their right to freedom of assembly. Injured protesters whom PHR investigators examined suffered from (1) blunt force trauma and lacerations to the head, torso, and limbs due to the impact of metal toxic chemical agent canisters being fired at them; and (2) toxic reaction to exposure to chemical agents such as burning of the eyes, nose, and throat, chest tightness, shortness of breath, vomiting, and skin burns. In addition, a number of people have reportedly died from toxic chemical agent exposure in Bahrain, according to the United Nations.¹⁵⁸

Blunt force trauma and lacerations. Law enforcement officials cause severe blunt force trauma to civilians when they fire toxic chemical agent canisters directly at individuals at close range.¹⁵⁹ Police hit one 27-year-old bystander in the head with a canister while he was walking near the site of a protest in Karanah, causing a fractured skull and intracranial hemorrhaging.¹⁶⁰

“You’re lucky to have survived,” the doctor who performed this CT scan told this victim, “Others from the same injury have died.”¹⁶¹ PHR investigators examined the CT scan, which corroborated this victim’s testimony.

PHR spoke with another bystander, a 13-year-old named Hadi, whom riot police struck in the head with a toxic chemical agent canister as he waited in line at a bakery near the site of an ongoing protest.

Hadi reported that he turned to look over his shoulder after hearing a commotion behind him, and saw a group of 20 people run past him trailed by about 50 policemen dressed in blue uniforms and carrying black “safety” equipment.¹⁶² Just moments later, an officer standing approximately 15 meters away shot a tear gas canister at Hadi’s head, knocking him unconscious. PHR examined Hadi and documented a seven-centimeter healed laceration at the hairline of his right forehead as well as a circular depression in his skull roughly five centimeters in diameter, where an arterial pulse was clearly visible and the underlying soft tissue easily palpated. His wound was highly consistent with being struck by a cylinder-shaped object.

Peaceful demonstrators also received facial wounds when police launched toxic chemical agent canisters at heads.

When police reportedly shot a tear gas canister at Ali’s head,¹⁶³ they hit him in the left eye, fracturing the bones around his eye and rupturing his eyeball. Doctors at Salmaniya Hospital performed two operations, one to stitch his open wounds and one to repair the broken bones around his eye socket.

156. BICI Report, *supra* note 20, at ¶ 1091.

157. U.S. Army, Civil Disturbance Operations, 2-90 (2005), <http://www.fas.org/irp/doddir/army/fm3-19-15.pdf>.

158. U.N. News Centre, *Bahrain: UN calls for probe into alleged excessive use of force against protesters*, 20 Mar. 2012, <http://www.un.org/apps/news/story.asp?NewsID=41586&Cr=Bahrain&Cr1>.

159. “Ballistic studies have shown that the gas jet alone generated by a commercial available blank or tear-gas cartridge possess the characteristics of a missile when fired at close range...” *Lethal head injury due to tear-gas cartridge gunshots*, *supra* note 80, at 45-51. Recently, Bahraini law enforcement officials injured prominent human rights activist Zainab al-Khawaja by shooting her in the leg with a toxic chemical agent canister “at close range.” Reem Khalifa, *Bahrain witnesses: Activist hurt by gas canister*, 28 Jun. 2012, AP, available at <http://www.guardian.co.uk/world/feedarticle/10311414>.

160. Interview with key informant no. 25, in Bahrain (10 Apr. 2012).

161. *Id.*

162. Interview with key informant no. 63, in Bahrain (7 Apr. 2012).

163. Interview with key informant no. 87, in Bahrain (10 Apr. 2012).

*Ali reported that he has permanently lost use of his left eye. PHR examined Ali's medical records, which corroborate his testimony.*¹⁶⁴

Symptomatology of exposure to toxic chemical agents. In addition to wounds due to the impact of toxic chemical agent canisters, PHR investigators also documented severe tearing, burning eyes, throat irritation, chest tightness, shortness of breath, and vomiting in individuals exposed to toxic chemical agents.¹⁶⁵ Because chemicals in toxic lachrymatory agents can destroy membranes of the throat, esophagus, and mouth, such vomiting can become dangerous.¹⁶⁶ Even if an exposed person quickly leaves the chemical-saturated area, symptoms of exposure can last hours.¹⁶⁷ It has been shown that hyperventilation, often induced by running, intensifies the effects of toxic chemical agents on the throat and lungs and slows recovery.¹⁶⁸ Sustained exposure to toxic chemical agents can also burn skin and the cornea of the eye.¹⁶⁹

*A physiotherapist reported that she developed shortness of breath, wheezing and severe coughing, turned red, and felt hot after being exposed to tear gas that was yellow in color. A doctor at private hospital treated her with Atrovent¹⁷⁰ and Symbicort¹⁷¹, but she reported having continued difficulty breathing at night and difficulty speaking for approximately two weeks.*¹⁷²

PHR investigators received eyewitness reports that Bahraini police used toxic chemical agents of different colors, ranging from white and yellowish-beige to various shades of dark yellow and orange as well as blue. Local physicians and wounded demonstrators told PHR that symptoms varied based on the color of the gas, with some the lighter-colored gases provoking more tearing and skin irritation, while the dark yellow gas reportedly provoked little tearing but more severe symptoms, including chest tightness and coughing, nausea and vomiting, and loss of consciousness.¹⁷³

The cases in the above sections illustrate gradations of harm that result from Bahraini law enforcement officials' excessive use of force. Failing to exercise restraint before resorting to violence, responding to demonstrators with disproportionate force, and failing to minimize harm have led to grave injuries among men, women, and children in Bahrain. These actions contravene established UN principles and international norms that the Bahraini government must uphold.

164. Ali's medical records revealed the "upper and lower lids were shattered with full thickness multiple wounds. The left eye ball was ruptured. The globe was soft and exposed." A CT scan revealed a fracture of the zygomatic arch with minimal displacement, fracture of all the walls of the maxillary sinus with haemosinus, and a 5 mm subdural hematoma in the left upper parietal region.

165. These symptoms are all recognized effects of toxic lachrymatory agent exposure. See Handbook of Chemical and Biological Warfare Agents, *supra* note 110, at 409. Dr. Holly Atkinson, author of this report suffered acute respiratory distress—including profound shortness of breath as well as severe coughing, which persisted intermittently for approximately four weeks—after 15 minutes' exposure to toxic chemical agents during a protest in Bahrain in April 2012.

166. CAMEO Chemicals, Office of Response and Restoration, National Oceanic and Atmospheric Administration, *Chemical Datasheet: O-Chlorobenzylidene Malononitrile*, <http://cameochemicals.noaa.gov/chemical/19984>.

167. *Medical Hazards of the Tear Gas CS*, *supra* note 105, at 236.

168. *Exposures to orthochlorobenzylidene malononitrile*, *supra* note 117, at 366-74.

169. *Medical Hazards of the Tear Gas CS*, *supra* note 105, at 234-40.

170. Atrovent, also known as Ipratropium, is a drug that helps to preventing wheezing and decrease chest tightness. US National Library of Medicine, *Ipratropium Oral Inhalation*, PubMed Health, 1 Sep. 2010, <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0000965/>.

171. Symbicort is a drug used to decrease inflation of the lungs, and is primarily used to control asthma. Food and Drug Administration. *Medication Guide Symbicort*, <http://www.fda.gov/downloads/Drugs/DrugSafety/ucm089139.pdf> (last visited 29 Jun. 2012).

172. Interview with key informant no. 74, in Bahrain (9 Apr. 2012).

173. Interviews with key informants no. 66, 67, 68, 74, 87 in Bahrain (7-10 Apr. 2012).

Legal obligations under UN guidelines on police use of force

Both national¹⁷⁴ and international¹⁷⁵ law ensure the right to peaceful assembly, and government authorities may only restrict this fundamental right in the interest of national security or public order.¹⁷⁶ Although governments may limit this derogable right in accordance with national law and international obligations, they must adhere to rules and standards when dispersing crowds.¹⁷⁷ The United Nations has established principles for such use of force,¹⁷⁸ which must always be based on legality,¹⁷⁹ necessity,¹⁸⁰ proportionality,¹⁸¹ minimizing harm,¹⁸² and nondiscrimination.¹⁸³ Moreover, law enforcement officials who violate these principles must be held accountable.¹⁸⁴

Legality. Law enforcement officials are obliged to fulfill their duties to uphold the law and protect citizens.¹⁸⁵ Bahrain's Constitution permits civilians to hold peaceful meetings, gatherings, and processions, which law enforcement officials are obliged to permit and protect.¹⁸⁶ According to Bahrain's penal code, when groups of five or more persons assemble—specifically with the intent to cause a riot—law enforcement officials may disperse them.¹⁸⁷

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174. "Public meetings, parades, and assemblies are permitted under the rules and conditions laid down by law, but the purposes and the purposes and the means of the meeting must be peaceful" Constitution of the Kingdom of Bahrain, *supra* note 13, at art. 28(b).
175. "The right of peaceful assembly shall be recognized." International Covenant on Civil and Political Rights art. 21, 16 December 1966, 999 U.N.T.S. 171 [acceded 20 Sep. 2006] [hereinafter ICCPR].
176. "No restrictions may be placed on the exercise of this right other than those imposed in conformity with the law and which are necessary in a democratic society in the interests of national security or public safety, public order ... protection of public health or morals or the protection of the rights and freedoms of others." *Id.*, at art. 21.
177. "Governments and law enforcement agencies shall adopt and implement rules and regulations on the use of force and firearms against persons by law enforcement officials." U.N. Principles on the Use of Force, *supra* note 108, at art. 1. *See also* U.N. Code of Conduct for Law Enforcement Officials, *supra* note 1, at art. 1.
178. PHR adopts its definition of "use of force" from the International Association of Chiefs of Police and U.S. Department of Justice, as the "amount of effort required by law enforcement to compel compliance by an unwilling subject." US Department of Justice, Review of the Department of Justice's Use of Less-Lethal Weapons i (2009), <http://www.justice.gov/oig/reports/plus/e0903/final.pdf>.
179. "Law enforcement officials shall at all times fulfill the duty imposed upon them by law, by serving the community and by protecting all persons ... consistent with the high degree of responsibility required by their profession." U.N. Code of Conduct for Law Enforcement Officials, *supra* note 1, at art. 1.
180. "Law enforcement officials, in carrying out their duty, shall, as far as possible, apply non-violent means before resorting to the use of force and firearms. They may use force and firearms only if other means remain ineffective or without any promise of achieving the intended result." U.N. Principles on the Use of Force, *supra* note 108, at art. 4. *See also* U.N. Code of Conduct for Law Enforcement Officials, *supra* note 1, at art. 3, which states, "Law enforcement officials may use force only when strictly necessary and to the extent required for the performance of their duty."
181. "Whenever the lawful use of force and firearms is unavoidable, law enforcement officials shall: (a) Exercise restraint in such use and act in proportion to the seriousness of the offense and legitimate objective to be achieved". U.N. Principles on the Use of Force, *supra* note 108, at art. 5(a). *See also* U.N. Code of Conduct for Law Enforcement Officials, *supra* note 1, at art. 3.
182. "[L]aw enforcement officials shall respect and protect human dignity and maintain and uphold the human rights of all persons." U.N. Principles on the Use of Force, *supra* note 108, at art. 3. *See also* U.N. Code of Conduct for Law Enforcement Officials, *supra* note 1, at art. 2.
183. "In time of public emergency ... the States Parties to the present Covenant may take measures derogating from their obligations under the present Covenant to the extent strictly required by the exigencies of the situation, provided that such measures are not inconsistent with their other obligations under international law and do not involve *discrimination solely on the ground of race, colour, sex, language, religion or social origin.*" [emphasis added] ICCPR *supra* note 175, at art. 4(1).
184. "Governments shall ensure that arbitrary or abusive use of force and firearms by law enforcement officials is punished as a criminal offence under their law." U.N. Principles on the Use of Force, *supra* note 108, at art. 7.
185. "Law enforcement officials shall at all times fulfill the duty imposed upon them by law, by serving the community and by protecting all persons against illegal acts, consistent with the high degree of responsibility required by their profession." U.N. Code of Conduct for Law Enforcement Officials, *supra* note 1, at art. 1.
186. "Public meetings, parades and assemblies are permitted under the rules and conditions laid down by law, but the purposes and means of the meeting must be peaceful and must not be prejudicial to public decency." Constitution of the Kingdom of Bahrain, *supra* note 13, at art. 28(b).
187. "If one of the public authority officers finds that 5 persons or more have demonstrated with the intent of

Necessity. Before using force, law enforcement officials must exercise restraint and always begin with nonviolent means when confronting assemblies.¹⁸⁸ Dialogue and mediation must first be employed.¹⁸⁹ Police should also respond to protesters nonviolently by wearing defensive vests and helmets and by using shields and nonlethal instruments, thus decreasing the need to use weapons of any kind.¹⁹⁰ Law enforcement officials should plan in advance for the progressive use of force and avoid unnecessary escalation of violence.¹⁹¹ Before employing force, police must warn civilians of their intent to use force, and then make every effort to determine that demonstrators have heard and understood these warnings.¹⁹²

Proportionality. Law enforcement officials are obligated to use the minimum level of force necessary to disperse a crowd.¹⁹³ When law enforcement officials are faced with serious threats, they may employ less-lethal weaponry.¹⁹⁴ Police may only use such weapons, however, if the use of force is preceded by (a) nonviolent tactics, (b) clear warnings that officials intend to use force, and (c) efforts to determine that demonstrators have heard and understood these warnings.¹⁹⁵ Only when a situation has escalated to present an imminent deadly threat should law enforcement officials apply proportional and reasonable use of lethal force.¹⁹⁶

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- causing a riot, he may in such capacity order them to disperse. Thereafter, he shall be empowered to take the necessary measures for dispersing those who have not complied with the order by arresting them and may use force within reasonable limits against any person resisting the said order. He may not use firearms except in extreme necessity or when someone's life is threatened." Bahrain Penal Code, art. 180, 1976, available at United Nations Office on Drugs and Crime, <https://www.unodc.org/tldb/showDocument.do?documentUid=6361>.
188. "Law enforcement officials, in carrying out their duty, shall, as far as possible, apply non-violent means before resorting to the use of force and firearms." U.N. Principles on the Use of Force, *supra* note 108, at art. 4.
189. Governments must also provide law enforcement officials training, while giving "special attention to issues of police ethics and human rights, ...to alternatives to the use of force and firearms, including the peaceful settlement of conflicts, the understanding of crowd behavior, and the methods of persuasion, negotiation and mediation ... with a view to limiting the use of force and firearms." *Id.*, at art. 20. See also U.N. Policy on Formed Police Units, *supra* note 126, at 9.
190. "Governments and law enforcement agencies should ... be equipped with self-defensive equipment such as shields, helmets, bullet-proof vests and bullet-proof means of transportation, in order to decrease the need to use weapons of any kind." U.N. Principles on the Use of Force, *supra* note 108, at art. 2. See also U.N. Trainer's Guide on Human Rights for the Police, *supra* note 155, at 96, 114.
191. "Governments and law enforcement agencies should develop a range of means as broad as possible and equip law enforcement officials with various types of weapons and ammunition that would allow for a differentiated use of force and firearms. These should include the development of non-lethal incapacitating weapons for use in appropriate situations, with a view to increasingly restraining the application of means capable of causing death or injury to persons." U.N. Principles on the Use of Force, *supra* note 108, at art. 2. See also U.N. Trainer's Guide on Human Rights for the Police, *supra* note 155, at 96, 114.
192. "[L]aw enforcement officials shall identify themselves as such and give a clear warning of their intent to use firearms, with sufficient time for the warning to be observed, unless to do so would unduly place the law enforcement officials at risk or would create a risk of death or serious harm to other persons, or would be clearly inappropriate or pointless in the circumstances of the incident." U.N. Principles on the Use of Force, *supra* note 108, at art. 10. See also U.N. Policy on Formed Police Units, *supra* note 126, at 9.
193. "Law enforcement officials, in carrying out their duty, shall, as far as possible, apply non-violent means before resorting to the use of force and firearms. They may use force and firearms only if other means remain ineffective or without any promise of achieving the intended result." U.N. Principles on the Use of Force, *supra* note 108, at art. 4.
194. "The development and deployment of non-lethal incapacitating weapons should be carefully evaluated in order to minimize the risk of endangering uninvolved persons, and the use of such weapons should be carefully controlled." *Id.*, at art. 3. See also the U.N. Formed Police Units approach to addressing escalating threat levels, which states that at a "Serious" threat level law enforcement may use a "[s]how of force and, where all other means of peaceful de-escalation have failed, use of force in a reasonable and proportional manner, using only less-lethal means and weapons". U.N. Policy on Formed Police Units, *supra* note 126, at 9.
195. "Law enforcement officials shall identify themselves as such and give a clear warning of their intent to use firearms, with sufficient time for the warning to be observed". U.N. Principles on the Use of Force, *supra* note 108, at art. 10. See also Policy on Formed Police Units in United Nations Peacekeeping Operations, 9, DPKO Ref. 2009.32 (effective 1 Mar. 2010); U.N. Principles on the Use of Force, *supra* note 108, at art. 10.
196. "Law enforcement officials shall not use firearms against persons except in self-defence or defence of others against the imminent threat of death or serious injury" U.N. Principles on the Use of Force, *supra* note 108, at art. 9. See also U.N. Policy on Formed Police Units, *supra* note 126, at 9.

Minimizing harm. When police do resort to the use of force to disperse demonstrators, UN guidelines require that they minimize damage and injury, respect and preserve human life, ensure that assistance and medical aid reach affected persons at the earliest possible moment, and make sure that friends and relatives of the injured are notified.¹⁹⁷

Nondiscrimination. The principle of nondiscrimination is fundamental to all human rights. When a government declares a state of emergency (as did Bahrain from 15 March to 1 June 2011), it may limit citizens' right of assembly. In doing so, however, the government may not discriminate on the ground of race, color, sex, language, religion, or social origin.¹⁹⁸

Accountability. The Government of Bahrain must hold law enforcement officials accountable under its penal code, which codifies these international principles.¹⁹⁹ Bahrain's penal code mandates jail time for any law enforcement official who infringes on a person's freedom by using force or threat, or causes severe bodily harm.²⁰⁰ UN principles also indicate that the arbitrary or abusive use of force should be punished as a criminal offense.²⁰¹ According to UN guidelines, law enforcement officials are obliged to report any civilian injuries or deaths promptly to their superiors.²⁰² Superior officers are then obliged to report these incidents to the proper administrative and judicial authorities.²⁰³ These authorities must hold commanding officers responsible when they fail to suppress unlawful use of force among police they supervise,²⁰⁴ and any civilian affected by unlawful use of police force must have access to independent, judicial review.²⁰⁵ Finally, under the UN guidelines, no law enforcement official should be disciplined for refusing an order to use excessive force.²⁰⁶ The guidelines state that the Bahraini government should not invoke exceptional circumstances, including political instability or public emergency, to justify any departure from these principles.²⁰⁷

197. "Whenever the lawful use of force and firearms is unavoidable, law enforcement officials shall ... ensure that relatives or close friends of the injured or affected person are notified at the earliest possible moment." U.N. Principles on the Use of Force, *supra* note 108, at art. 5(d).

198. ICCPR *supra* note 175, at art. 4(1).

199. "Governments shall ensure that arbitrary or abusive use of force and firearms by law enforcement officials is punished as a criminal offence under their law." U.N. Principles on the Use of Force, *supra* note 108, at art. 7.

200. "A prison sentence shall be the penalty for any person who ... deprives [another] in any illegal manner of his freedom ... [i]f the act is accompanied by ... bodily harm or acts of physical or mental torture." Bahrain Penal Code, *supra* note 187, at art. 357.

201. "U.N. Principles on the Use of Force, *supra* note 108, at art. 7.

202. "Where injury or death is caused by the use of force and firearms by law enforcement officials, they shall report the incident promptly to their superiors" U.N. Principles on the Use of Force, *supra* note 108, at art. 6.

203. "In cases of death and serious injury or other grave consequences, a detailed report shall be sent promptly to the competent authorities responsible for administrative review and judicial control." *Id.*, at art. 22.

204. "Governments and law enforcement agencies shall ensure that superior officers are held responsible if they know, or should have known, that law enforcement officials under their command are resorting, or have resorted, to the unlawful use of force and firearms, and they did not take all measures in their power to prevent, suppress or report such use." *Id.*, at art. 24.

205. "Persons affected by the use of force and firearms or their legal representatives shall have access to an independent process, including a judicial process." *Id.*, at art. 23.

206. "Governments and law enforcement agencies shall ensure that no criminal or disciplinary sanction is imposed on law enforcement officials who, in compliance with the Code of Conduct for Law Enforcement Officials and these basic principles, refuse to carry out an order to use force and firearms, or who report such use by other officials." *Id.*, at art. 25; "Obedience to superior orders shall be no defence if law enforcement officials knew that an order to use force and firearms resulting in the death or serious injury of a person was manifestly unlawful and had a reasonable opportunity to refuse to follow it. In any case, responsibility also rests on the superiors who gave the unlawful orders." *Id.*, at art. 26.

207. "Exceptional circumstances such as internal political instability or any other public emergency may not be invoked to justify any departure from these basic principles." *Id.*, at art. 8.

Bahraini government violates human rights law by weaponizing toxic chemical agents

Analysis from PHR's April 2012 investigation in Bahrain reveals that Bahraini law enforcement officials routinely attack civilians inside their homes with toxic gas. The frequency of the routine attacks on civilians as well as the lack of accountability for officials who commit such attacks implies intent on the part of law enforcement to use toxic chemical agents as a weapon against peaceful civilians. Such unprovoked and flagrant attacks against families—who pose no threat to the safety of others—flout international human rights law. Specifically, Bahraini law enforcement officials

- (1) subject men, women, and children, including vulnerable disabled and elderly persons, to torture or cruel, inhuman, or degrading treatment;
- (2) unlawfully enter families' homes and destroy property;
- (3) intentionally committed acts that impair people's health; and
- (4) discriminate against one religious sect by targeting Shi'a neighborhoods.

Based on in-country research, PHR warns that the ongoing 18-month siege and targeted use of toxic gas against a civilian population have caused inestimable physical harm and will continue to inflict as yet unknown negative health effects among this population.

Bahraini law enforcement officials attack civilians inside their homes and destroy property

Based on key informant interviews and firsthand observations, Physicians for Human Rights determined that Bahraini law enforcement officials continue to launch unprovoked toxic chemical agent attacks against nonviolent Shi'a men, women, and children, including the elderly and disabled in their homes and cars.



*A Bahraini woman shouts at riot police firing tear gas Saturday, April 7, 2012, in the market area of downtown Manama
Photo: AP Photo/Hasan Jamali*

Two sisters from Shela told PHR investigators that police shot tear gas canisters directly into their home on five separate occasions.²⁰⁸ On the second occasion, they reported police ripped protective covers off of the family's air conditioners and pulled sealant away from the windows from the outside, before throwing tear gas canisters through a window and yelling, "If you want freedom, come out to us."²⁰⁹ They reported that in the third incident, police broke through the front door and threw a tear gas canister into their home. They do not know why they were targeted.

PHR investigators also interviewed several members of a large family—ages 3 to 65—who were forced from their home after police stormed their home, attempted to abduct a 15-year-old boy, and fired canisters containing toxic chemical agents into the house causing a 14-year-old girl to fall unconscious. Law enforcement officials then reportedly surrounded the exits, inhibiting escape.

Family members reported that friends and extended family had gathered in their home on 5 April 2012 around 10:00 p.m.²¹⁰ The grandfather stepped outside to investigate a commotion, as a demonstration was taking place in their village that evening, and the family had taken in some peaceful demonstrators who had fled. The elderly man noticed that a man outside wearing civilian clothes put on a mask to cover his face. He reported that the masked man turned suddenly and ran toward him, barging past him through the front door into the foyer of his home, where a boy aged 15 was standing. The masked man reportedly started to drag the teenager out of the house, when several older men in the living room jumped up to come to the teenager's rescue. They pulled the boy back into the house and slammed the front door. The masked man began banging and kicking the door, and then reportedly shot a tear gas canister through the kitchen window just to the left of the door. As one woman of the house related, "We heard the shatter of the glass in the kitchen, but didn't realize there was a tear gas bomb in the house."

Family members reported to PHR that when the first floor of the house became engulfed in a cloud of toxic gas, a second tear gas canister exploded in the living room. Family members scrambled to a "safe room" in the house, which they had constructed due to ongoing toxic chemical agent attacks in their village, but mounting tear gas levels prevented them from staying inside. Family members testified that they then realized police had encircled the house, shooting tear gas canisters through windows into the kitchen, living room, a back storage room, and the "safe room" while blocking

doors and escape routes. "The entire house was overwhelmed with clouds of tear gas," one family member told PHR. One young boy jumped from a staircase landing window above the front door, while other family members carried outside a 14-year-old girl who had fallen unconscious. Eventually, everyone in the house managed to escape and sought refuge nearby. A neighbor reportedly told the family later that the police forces shooting tear gas canisters were overheard saying, "Just shoot them with a shotgun."

The PHR team inspected this house—still vacated at the time—four days after the incident occurred. PHR investigators found toxic chemical agent canisters on the roof and inside the home on the first floor. Windows were broken throughout the house. Despite the open windows, toxic fumes from the chemical agents remained inside



This image by twitter user @ElaineMasons shows tear gas smoke coming from a canister shot on the top of a house in Buri village, Bahrain, 6 January 2012.

208. Interviews with key informants no. 68, 69, in Bahrain (8 Apr. 2012).

209. *Id.*

210. Interviews with key informants no. 70, 71, 72 in Bahrain (8 Apr. 2012).

the home. Upon entering the home, both PHR investigators developed burning of the face and eyes, tearing, coughing, and headaches within about two minutes of exposure.

Highlighting the frequency with which many Bahraini families are exposed to harassing agents in residential areas, PHR investigators visited one home in which residents provided “guest gas masks” to visitors exposed to toxic chemical agents in and around the home.

“We’ve been exposed to tear gases almost every day,” said one resident of a Shi’a neighborhood. “We’ve had canisters shot in the house, on the doorstep, and on the roof. We’ve had so many attacks, I can’t count the number of times. You don’t need to go outside to smell the ‘tear gas.’”

PHR documented the presence of hundreds of toxic chemical agent canisters in Shi’a villages and in people’s homes. Bahraini law enforcement officials are also frequently seen on video²¹¹ firing chemical agents into homes.

Bahraini law enforcement officials launch toxic chemical agents at civilian vehicles

In addition to targeting civilians in their homes, law enforcement officials also launch toxic chemical agent canisters as weapons at civilians in their vehicles. PHR interviewed civilians who posed no imminent threat to police or public safety while in their cars, but who were nonetheless targeted by police.

PHR spoke with Mohammad, a 32-year-old man whom police reportedly attacked with tear gas while in his car. Mohammad reported that while he was driving near the site of a protest, police shot a tear gas canister straight through his car window, which hit Mohammad in the head. Two more tear gas canisters were then fired into the back of his car. Mohammad reported that tear gas filled his vehicle and within 30 seconds, he had blurred vision and began vomiting. Mohammad kept driving while sticking his head out the window until a group of local residents pulled Mohammad out of the car. They took him immediately to a private hospital where a doctor stitched Mohammad’s wounds.

*PHR examined Mohammad and confirmed the presence of a healed laceration approximately two centimeters long at the hairline above the left temple, corroborating his testimony.*²¹²

Another interviewee reported that police officers had fired toxic chemical agent canisters at his car as he fled a peaceful protest that he had helped organize.

*Abdullah reported that between 3:00 and 5:00 p.m. on 13 February 2012, he was alone in his vehicle when police fired tear gas at his car from a bridge over Budaiya Highway. Abdullah saw white smoke enter the car through the vents. He immediately had difficulty breathing, and his eyes and nose began to burn. With the windows rolled down, Abdullah managed to stay in his car for approximately two minutes while driving to safety, before he escaped from the car.*²¹³

The blatant misuse of toxic chemical agents, the frequency with which weaponized toxic chemical agent attacks occur, the targeted nature of the attacks, and the lack of solid accountability mechanisms for perpetrators of these attacks imply intentionality on the part of Bahraini law enforcement. The intentional infliction of such targeted violence on Shi’a individuals and families results in adverse health effects. Because toxic chemical agents become

211. For clear examples of an apparent police officer firing chemical agents into a home unprovoked on a peaceful street, see France 24, *Bahraini police caught on camera spraying tear gas into homes*, 5 Jun. 2012, <http://observers.france24.com/content/20120605-bahraini-police-caught-camera-spraying-tear-gas-homes-protest-deaths-video> and YouTube, *How the Bahraini citizen suffocated from tear gas in his house*, 15 Jul. 2011, <http://www.youtube.com/watch?v=ygp6id7xvk8>. For an example of an apparent police officer firing chemical agents into a car seemingly unprovoked, forcing a mother to pull her child hurriedly from the contaminated back seat, see YouTube, *The Bahraini anti-riot police throw tear gas on a child*, 7 Aug. 2011, <http://www.youtube.com/watch?v=zBEcmA5nI7Y>.

212. Interview with key informant no. 78, in Bahrain (9 Apr. 2012).

213. Interview with key informant no. 20, in Bahrain (9 Apr. 2012).

even more dangerous weapons when used in confined spaces,²¹⁴ the Bahraini government has threatened individuals' safety and even their lives with their misuse of toxic chemical agents.

Bahrain's misuse of toxic chemical agents causes severe and long-term pain and suffering

Bahraini law enforcement officials' persistent targeting civilians in enclosed spaces may lead to serious long-term health consequences including (1) miscarriages (clinical spontaneous abortions), (2) severe respiratory distress resulting in premature death, and (3) a projected rise in asthma among the population.²¹⁵ In confined or enclosed spaces, high concentrations of chemical agents are hazardous and can be lethal.²¹⁶ Scientific literature also suggests that some toxic lachrymatory agents may be responsible for genetic mutations and possibly deformities.²¹⁷

Miscarriage. PHR investigators interviewed seven women—from villages that have been repeatedly exposed to toxic chemical agents—who reported having had miscarriages, six of them during their first trimester. All seven women reported they had miscarried just weeks after heavy exposure to toxic chemical agents in and around their homes. PHR investigators were able to examine five of the seven women's sonograms and medical records, which corroborated their testimonies. Two of the women were not able to procure their medical records.

Local medical professionals also reported to PHR that they had begun to associate miscarriage with women's exposure to toxic chemical agents.²¹⁸ One obstetrician/gynecologist said that she had seen an increase in miscarriages—especially in the first trimester—in her practice at a private hospital in a predominately Shi'a community exposed to toxic chemical agents.²¹⁹ Two other female physicians, who live in neighborhoods regularly saturated with toxic chemical agents, also reported an increase in miscarriages among their patients; one physician exposed to toxic chemical agents reported she herself had recently developed abnormal menstrual periods and suspected a miscarriage.²²⁰

A nurse who works at Salmaniya Hospital told PHR investigators, "There are many, many miscarriages. We believe the miscarriage rate has increased, although there is no quantitative evidence. What I want to know is: What is this gas...and what will be the future complications?"²²¹

214. Scientists can project concentrations of chemical lachrymatory agents that would be deadly for 50% of healthy adults, and have determined that the center of gas cloud after a single grenade explosion is approximately one fifth of that number. When toxic chemical agents are detonated in an enclosed space or in a cluster of several canisters, the concentration of toxins would be much higher. *Chemical Warfare Agents: Chemistry, Pharmacology, Toxicology, and Therapeutics*, *supra* note 47, at 361. *Tear Gas – Harassing Agent or Toxic Chemical Weapon?*, *supra* note 37, at 661.

215. "The possibility of long-term health consequences such as tumor formation, reproductive effects, and pulmonary disease is especially disturbing in view of the multiple exposures sustained by demonstrators and non-demonstrators alike in some areas of civilian unrest." *Tear Gas – Harassing Agent or Toxic Chemical Weapon?*, *supra* note 37, at 662. Hu et al. also reported that in situations of high levels of CS exposure, heart failure, liver damage and death have occurred in adults. In animal studies, lung injury is the primary cause of death in subjects exposed to prolonged inhalation of CS. Histologic findings included "pulmonary vascular congestion, accompanied in severe cases by focal hemorrhages and edema." *Id.*

216. *Handbook of Chemical and Biological Warfare Agents*, *supra* note 110, at 403.

217. "[CS gas] is potentially genotoxic... Some researchers have shown CS to be mutagenic.... Little is known regarding its potential for chronic pulmonary or genotoxic effects or for potential effects on reproduction." *Tear Gas – Harassing Agent or Toxic Chemical Weapon?*, *supra* note 37, at 662.

218. For additional information indicating that exposure to toxic chemical agents may correlate with increased rates of stillbirth and miscarriage, see Physicians for Human Rights, *The Casualties of Conflict*, *supra* note 64, at 19.

219. Interview with key informant no. 84, in Bahrain (9 Apr. 2012).

220. Interview with key informant no. 83, in Bahrain (9 Apr. 2012).

221. Interview with key informant no. 67, in Bahrain (8 Apr. 2012).

Three of the seven women who had miscarriages told PHR that their doctors had asked them in which villages they lived immediately after informing them that their fetuses were not viable. All of the doctors communicated to these women that they had recently seen more miscarriages among women living in areas heavily exposed to tear gas compared with women living in neighborhoods not repeatedly exposed to the toxic chemical agent. One woman from Sitra²²² who miscarried during her 11th week of pregnancy²²³ reported that the first question her doctor had asked her, after finding that her baby had no heartbeat, was whether there were problems related to “political unrest” in her village. Presumably, this doctor knew that political unrest in a village implied that toxic chemical agents would be omnipresent.

*One woman questioned whether her exposure to tear gas was responsible for deformities of her fetus when she miscarried. The young woman from Sitra, who miscarried during her 12th week of pregnancy, told PHR that her fetus had deformities of the head and neck. She reported having no history of previous miscarriages, difficulties becoming pregnant, or history of familial genetic disorders.*²²⁴

*Another woman told PHR that when she first discovered she was pregnant, she tried to use a gas mask while at home as she was concerned about the health of her unborn child. She said that using a gas mask proved impossible to do, however, given the need to communicate with her three young children. She miscarried in her seventh week of pregnancy.*²²⁵

*A young woman interviewed by PHR reported that “many Bahraini women are suffering from the psychological effects of losing a baby and extreme fear. They are not able to speak out and they lack their medical records. The hospitals are not giving us the medical records to document the miscarriages and the birth defects that are happening, so I must speak out.”*²²⁶

Respiratory failure and death. PHR spoke with two families who had family members who allegedly died from complications related to toxic chemical agent exposure. In both cases, deceased individuals were only exposed to toxic chemical agents in the privacy of their homes, and died despite treatment in the hospital.

*Two sisters from Shela, for example, told PHR investigators how their father had died at age 55 following nearly daily exposure to tear gas in his home. The sisters explained that each time their father—who had a heart condition—was exposed to “tear gas,” he developed shortness of breath, turned reddish-purple, became dizzy, and at times became confused and disoriented. With each passing episode he became worse, they reported. On one occasion, police reportedly “bombarded” their house with tear gas canisters, shooting them into the house, onto the roof, and in the streets outside. After their father developed severe symptoms and said, “I feel like I’m going to die,” they carried him across the road and took him to Salmaniya Hospital. Their father died the following day. While the doctor reportedly told the sisters that their father had died from “breathing gas,” the death certificate attributes death to “septic shock and severe right-sided pneumonia.”*²²⁷

Bahraini law²²⁸ requires medical workers to report wounded protesters to the very law enforcement officials who have harmed them, thereby creating a conflict of dual loyalty wherein health professionals have competing obligations to their patients and the government.

222. Sitra is a predominantly Shi’a neighborhood that is routinely saturated with toxic chemical agents.

223. Interview with key informant no. 75, in Bahrain (9 Apr. 2012).

224. Interview with key informant no. 76, in Bahrain (9 Apr. 2012).

225. Interview with key informant no. 77, in Bahrain (9 Apr. 2012).

226. Interview with key informant no. 79, in Bahrain (9 Apr. 2012).

227. This individual was reportedly known to have had a heart condition and had previously had a “small stroke,” according to his daughters.

228. Bahrain’s Ministry of Health issued a “circular” to all private hospitals and clinics, according to a focus group of eight physicians PHR surveyed. This 31 January 2012 Government circular stated that private hospitals and clinics were now obligated to report to Government security authorities all incoming patients “with injuries due to suspected criminal activities and/or accidents irrespective [of] their causes.... Violation of these requirements shall constitute collaboration with such activities and is criminalized by law.” See Physicians for Human Rights, Under the Gun: Ongoing Assaults on Bahrain’s Health System 4 (2012), <http://physiciansforhumanrights.org/library/reports/under-the-gun-ongoing-assaults-on-bahrains-health-system.html>

As the above case illustrates, medical personnel are extremely reluctant to document their patients' reported exposure to tear gas.²²⁹ As one doctor told PHR, he purposely omits writing in the medical record the patient's history, cause of injury, or any other information related to excessive use of force by Bahraini law enforcement officials, to protect these patients and their families.²³⁰

PHR also met with relatives of Muhammad, a young asthmatic man from a Shi'a village, who died of acute respiratory failure following 25 days of hospitalization after exposure to toxic chemical agents.

Muhammad's family reported that he was routinely exposed to tear gas and sought medical care in private hospitals, but never told doctors about his severe adverse reactions to the gas for fear of being reported to authorities and sent to prison.²³¹ Family members reported that police had fired tear gas canisters into their village, and particularly around their home, on an almost daily basis. On the day of his death, Muhammad left the hospital (where he had been treated for respiratory problems due to tear gas exposure) to visit his family, when he was exposed to yet another tear gas explosion in his village. That evening, he reportedly developed severe shortness of breath and returned to the hospital where he went into respiratory failure.²³² Medics administered CPR, but failed to resuscitate him. Muhammad's doctor reported to PHR investigators that his death certificate stated he died of cardiac arrest, secondary to severe pulmonary hypertension caused by "mediastinal mass."²³³ The doctor then told investigators, "There was no indication in his chart that he had a mass, nor were there any studies to substantiate it. He was cyanosed and died of an acute respiratory failure."

Asthma. Demonstrators as well as civilians who never participated in protests reported to PHR that they suffered from new symptoms, including persistent coughing, shortness of breath, chest tightness, and wheezing,²³⁴ all of which may indicate onset of asthma.²³⁵ Respondents told PHR investigators that they believed their ongoing respiratory distress was due to chronic contact with tear gas that they could not escape,²³⁶ others reported that symptoms continued long after exposure.²³⁷

A specialist physician working with Bahrain's Ministry of Health reported to PHR that the most common medical complications he currently treats relate to inhalation problems.²³⁸ He reported to PHR that he had recently seen a dramatic rise in asthma-like symptoms affecting people of all ages in Bahrain. Patients exhibiting respiratory distress, he reported, have not necessarily been involved in protests. For certain individuals, he noted that breathing in allergy-causing materials or "triggers" can lead to onset of asthma.²³⁹

The injuries and attendant negative health effects that PHR documented are most probably not the result of exposure to toxic gas from having participated in protests or from having been a bystander to those assemblies where toxic chemical agents were used. Rather,

229. Interview with key informant no. 11, in Bahrain (8 Apr. 2012).

230. *Id.*

231. Interview with key informant no. 85, in Bahrain (9 Apr. 2012).

232. Muhammad's doctor reported that he was cyanotic and gasping and ultimately suffered a cardiac arrest. Interview with key informant no. 84, in Bahrain (9 Apr. 2012).

233. *Id.*

234. *Id.*

235. Asthma is a disorder in which airways in the lungs become inflamed. PubMed Health, *Asthma*, 1 May 2011, <http://www.ncbi.nlm.nih.gov/pubmedhealth/PMH0001196/>. Scientists do not know precisely what causes asthma, but sustained exposure to certain materials may trigger asthma symptoms in adults. Asthma and Allergy Foundation of America, *Adult Onset of Asthma*, <http://www.aafa.org/display.cfm?id=8&sub=17&cont=157> (last visited 30 Jun. 2012).

236. Interview with key informant no. 20, in Bahrain (9 Apr. 2012).

237. Interview with key informant no. 26, in Bahrain (9 Apr. 2012).

238. Interview with key informant no. 11, in Bahrain (8 Apr. 2012).

239. *Id.*

these cases illustrate the serious long-term harm that results from Bahraini law enforcement officials' persistent targeting of civilians with toxic chemical agents in enclosed spaces. Miscarriages, severe respiratory distress resulting in premature death, an apparent rise in asthma rates, and genetic mutations causing deformities represent some of the possible health consequences that PHR predicts will become more prevalent in Bahrain as a direct result of police violence. These actions contravene international human rights law, which the Kingdom of Bahrain must uphold.

Legal analysis of Bahrain's human rights violations

Based on extensive interviews and medical evaluations of wounded civilians and review of their medical records, Physicians for Human Rights finds that Bahraini law enforcement officials failed to respect and protect human dignity and maintain and uphold the human rights of all citizens.²⁴⁰ Specifically, Bahraini law enforcement officials (1) subjected men, women, and children, including vulnerable disabled and elderly persons, to torture or cruel, inhuman, or degrading treatment; (2) unlawfully entered families' homes and destroyed property; (3) intentionally committed acts that impair people's health; and (4) discriminated against one religious sect by targeting Shi'a homes and neighborhoods.

Torture or cruel, inhuman, or degrading treatment. The Bahraini government's willful and unrelenting attacks against Shi'a neighborhoods and homes with toxic chemical agents constitute torture or cruel, inhuman, or degrading treatment as defined in international law. The Convention Against Torture, to which Bahrain is a party, defines torture as "any act by which severe pain or suffering, whether physical or mental, is intentionally inflicted on a person for... any reason based on discrimination of any kind, when such pain or suffering is inflicted by or at the instigation of or with the consent or acquiescence of a public official".²⁴¹ The weaponized toxic chemical agent attacks against Bahraini civilians cause severe pain and suffering among affected populations, including severe respiratory distress resulting in premature death as well as possible connections to miscarriages or genetic mutations. The attacks are intentional—and may be official policy—because of the frequency of the attacks by officials throughout the police force and the lack of accountability for those who perpetrate the attacks. Based on interviews with those subjected to toxic chemical agent attacks, the attacks are meant to intimidate the victims and are based on ethnic discrimination against the Shi'a community. Lastly, the attacks documented were indeed perpetrated by law enforcement officials and not independent civilians. The attacks violate Bahrain's obligations under the Convention Against Torture as well as the Bahraini Constitution, which outlaws physical or mental torture.²⁴²

The weaponized toxic chemical agent attacks may also constitute cruel, inhuman, or degrading treatment (CIDT). While definitions of CIDT are debated by international legal experts, one accepted definition of CIDT is an act that entails severe physical or mental pain or suffering.²⁴³

240. "In the performance of their duty, law enforcement officials shall respect and protect human dignity and maintain and uphold the human rights of all persons." U.N. Code of Conduct for Law Enforcement Officials, *supra* note 1, at art. 2.

241. Convention Against Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, art. 1, 10 Dec. 1984, 1465. U.N.T.S. 85 (acceded 6 Mar. 1998) [hereinafter CAT]. See also the International Covenant on Civil and Political Rights which states: "No one shall be subjected to torture or to cruel, inhuman or degrading treatment or punishment." ICCPR *supra* note 175, at art. 7.

242. "No person shall be subjected to physical or mental torture, enticement or degrading treatment, and the law shall provide the penalty for these acts. Any statement or confession shall be null and void if it is proved to have been made under duress or enticement or degrading treatment or threat thereof." Constitution of the Kingdom of Bahrain, *supra* note 13, at art. 19[d].

243. Elements of Crimes for the ICC, Definition of torture as a war crime (ICC Statute, Article 8(2)(a)(ii) and (c)(i)). The definition relates to the International Criminal Court, but other courts have referred to this language when analyzing incidents of CIDT.

Manfred Nowak, former UN Special Rapporteur on Torture, explains that the application of CIDT is a relative concept and that outside a situation of detention, the prohibition of CIDT is subject to the proportionality principle.²⁴⁴ Excessive use of police force, for example, would constitute CIDT. The conduct and the powerlessness of the victim is part of Nowak's examination of proportionality. The Bahraini law enforcement officials' toxic chemical agent attacks on civilians in their homes violate the principle of proportionality; the harm of the attack is grossly imbalanced given the lack of security threat posed by many of the victims.

Case law supports the argument that weaponized misuse of toxic chemical agents may be cruel, inhuman, or degrading treatment. The European Court of Human Rights found that unwarranted spraying of pepper spray in an individual's face subjected the victim to intense physical and mental suffering, given the health effects of the toxic chemical agent. The court concluded that the spraying amounted to inhuman and degrading treatment.²⁴⁵

Unlawful interference with privacy, family, home. Every person has the right to be protected against arbitrary or unlawful interference with one's privacy, home, or family, according to the International Covenant on Civil and Political Rights, to which Bahrain is a party.²⁴⁶ Bahrain's Constitution also ensures the inviolability of one's residence, which cannot be entered or searched without permission of the occupant.²⁴⁷ Bahrain's penal code similarly prohibits anyone from unlawfully entering another person's home,²⁴⁸ damaging someone's property,²⁴⁹ or endangering another's property by attempting to use explosives.²⁵⁰ Therefore, when Bahraini law enforcement officials intentionally target and shell homes with canisters containing toxic chemical agents, break into people's residences, and destroy their property, as PHR documents in this report, the Government of Bahrain is in flagrant violation of its national and international obligations.

Impairing health. State obligations regarding the promotion of and respect for people's right to health are minimal under international law, as states only pledge to progressively realize this right. When a government deliberately and knowingly impairs the health and well-being of its population by weaponizing toxic chemical agents and attacking their homes, however, it immediately erodes this fundamental right and inflicts long-term damage on people's health. Bahraini law enforcement officials who brazenly fire toxic chemical agent shells into civilian homes

244. Manfred Nowak & Elizabeth McArthur, *The Distinction Between Torture and Cruel, Inhuman or Degrading Treatment*, 16 *Torture* 147, 149 (2006).

245. *Ali Günes v. Turkey* (dec.), no. 9829/07, ECHR, (2012) <http://hudoc.echr.coe.int/sites/eng/pages/search.aspx?i=001-110262>.

246. "No one shall be subjected to arbitrary or unlawful interference with his privacy, family, home or correspondence... Everyone has the right to the protection of the law against such interference or attacks." ICCPR *supra* note 175, at art. 17.

247. "Places of residence shall be inviolable. They may not be entered or searched without the permission of their occupants except in the circumstances and manner specified by the law." Constitution of the Kingdom of Bahrain, *supra* note 13, at art. 25.

248. "A prison sentence for a period of no more than six months or a fine of no more than BD 50 shall be the penalty for any person who enters an inhabited place, [or] a place intended for dwelling.... The penalty shall be imprisonment for no more than two years if the crime is committed at night or with the use of violence against persons or property or with the use of a weapon...." Bahrain Penal Code, *supra* note 187, at art. 361.

249. "A punishment of imprisonment or a fine, or either penalty, shall be inflicted upon every civil servant or officer entrusted with public service who has, as a result of his own failure, caused serious damage to some properties for which he is responsible for safekeeping as part of the duties of his office." *Id.*, at art. 200.

250. "A punishment of imprisonment for a period of not exceeding ten years shall be inflicted upon any person who willfully uses or attempts to use explosives in a manner that is likely to expose others' property to danger." *Id.*, at art. 281.

flout the Bahraini Constitution, which grants the right to health to Bahraini citizens,²⁵¹ and the International Covenant on Economic, Social, and Cultural Rights, to which Bahrain is a party.²⁵²

In addition, Bahrain's penal code metes out severe punishment to anyone who endangers public health:

*"Life or term imprisonment shall be the penalty for any person who exposes human lives or safety of the public to danger by placing materials, germs or other things in a water well or tank or anything that is intended for public use, that may cause death or serious damages [sic] to public health."*²⁵³

Discrimination. A government discriminates against a group of people when it singles out the group because of the race, religion, origin, language, or other status of the group's members, and based on that status denies them any of the rights and freedoms to which they are entitled.²⁵⁴ Based on analysis of the patterns and frequency of toxic chemical agent attacks against homes and neighborhoods in Bahrain, Physicians for Human Rights concludes that the Government of Bahrain intentionally targets the Shi'a Muslim community,²⁵⁵ contravening the Bahraini Constitution²⁵⁶ and Bahrain's international legal obligations.²⁵⁷ Preliminary analysis of data suggests that among approximately 65 Shi'a residential areas—roughly 80% of all neighborhoods in Bahrain—the majority of Shi'a neighborhoods have been exposed to toxic chemical agent attacks at least once per week since February 2011. Sunni-dominated neighborhoods have largely remained free from toxic chemical agent attacks.

251. "Every citizen shall have the right to health welfare. The State shall care for public health and ensure means of prevention and treatment...." Constitution of the Kingdom of Bahrain, *supra* note 13, at art. 8.

252. "The States Parties to the present Covenant recognize the right of everyone to the enjoyment of the highest attainable standard of physical and mental health." International Covenant on Economic, Social and Cultural Rights, art. 12(1), 16 Dec. 1966, 993 U.N.T.S. 3 (acceded 27 Sep. 2001) (hereinafter ICESCR).

253. Bahrain Penal Code, *supra* note 187, at art. 283.

254. "[T]he Committee believes that the term "discrimination" ... should be understood to imply any distinction, exclusion, restriction or preference which is based on any ground ... and which has the purpose or effect of nullifying or impairing the recognition, enjoyment or exercise by all persons, on an equal footing, of all rights and freedoms." UN Human Rights Committee (HRC), *CCPR General Comment No. 18: Non-discrimination*, ¶ 7, 10 Nov. 1989, available at <http://www.unhcr.org/refworld/docid/453883fa8.html>.

255. Protests in Bahrain occur exclusively in Shi'a or mixed neighborhoods.

256. "People are equal in human dignity, and citizens shall be equal in public rights and duties before the law, without discrimination as to race, origin, language, religion or belief." Constitution of the Kingdom of Bahrain, *supra* note 13, at art. 18.

257. "Each State Party to the present Covenant undertakes to respect and to ensure to all individuals within its territory and subject to its jurisdiction the rights recognized in the present Covenant, without distinction of any kind, such as race, color, sex, language, religion, political or other opinion, national or social origin, property, birth or other status." ICCPR, *supra* note 175, at art. 2(1).

Policy Recommendations

To the Government of Bahrain:

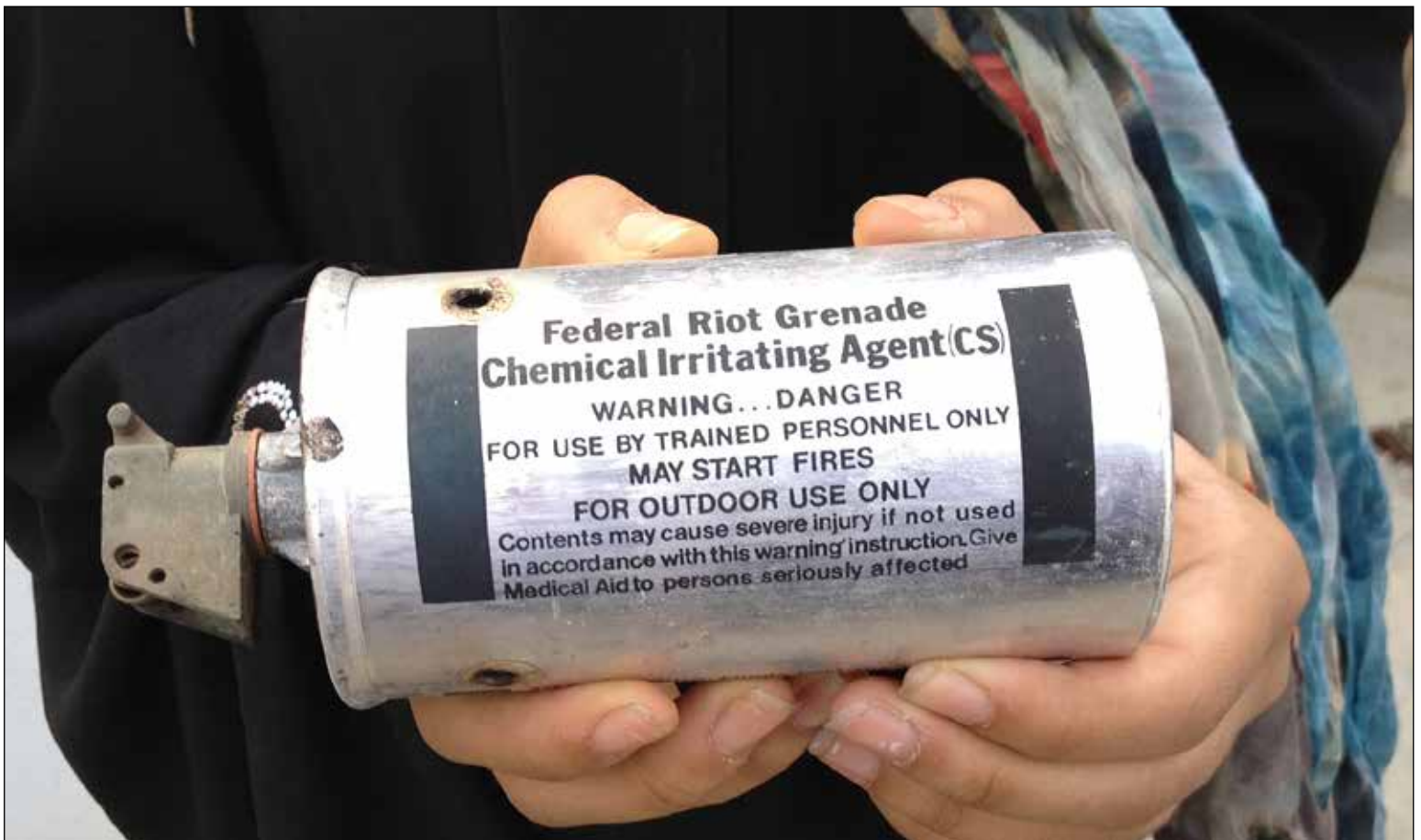
- End all attacks on civilians, including tear gas attacks on civilians and homes.
- Given the harmful effects of tear gas misuse in the country, suspend all use of tear gas until such time as the Government of Bahrain conducts a full and impartial investigation of the events detailed in this report, retrains the national security forces in the proper use of tear gas, and holds the perpetrators of excessive or improper use of force accountable. After such initial benchmarks are met, adhere to United Nations guidelines on the use of force and to the Bahraini penal code in order to stem future misuse of tear gas.
- Establish an independent body consisting of individuals familiar with human rights and legal norms regarding the use of force to investigate the deliberate misuse of toxic chemical agents in Bahrain.
- Disclose information about the varieties of toxic chemical agents used by law enforcement officials in Bahrain, given the disturbing evidence of the harmful effects of toxic chemical agents from PHR's investigation as well as the BICI report. This information will be important to the current treatment of exposed Bahraini citizens, and to drive future scientific research on the effects of all toxic chemical agents.
- Allow scientists, health professionals, and epidemiologists to conduct critical toxicological and survey research on the use and effects of tear gas in Bahrain.

To the international community:

- Suspend global exports of tear gas and its relevant precursor chemical agents to Bahrain until such time as the Government of Bahrain conducts a full and impartial investigation of the events detailed in this report, retrains the national security forces in the proper use of tear gas, and holds the perpetrators of excessive or improper use of force accountable.
- Convene an interdisciplinary group of health professionals, lawyers, law enforcement officials, and public health experts to draft guiding principles on the proper use of all toxic chemical agents, especially those classified as lachrymatory agents, and to determine whether the application and toxicity of certain lachrymatory agents necessitate re-classification under the Chemical Weapons Convention.
- Support scientific research into the health effects of tear gas, including research on the possible connection to miscarriage and/or genetic disorders as well as long-term respiratory sequelae of excessive exposure.
- Review international, regional, national, and local guidelines on tear gas use and ensure that they follow the parameters of the UN Guidelines on the Use of Force, including mechanisms for accountability for misuse.

To the United States:

- Continue to deny export licenses for tear gas to Bahrain until the Government of Bahrain adheres to UN Guidelines on the Use of Force regarding its tear gas use, investigates the weaponization of tear gas, and establishes accountability for law enforcement officials who use excessive force or otherwise violate the UN Guidelines.
- Revoke tear gas licenses for other countries that show warning signs of improper use of tear gas or other riot control items against peaceful civilians.
- As a matter of policy, ensure that all tear gas and related materials are listed on the State Department's US Munitions List, given the fatal consequences of the improper use of tear gas.
- Provide stricter end-use monitoring of tear gas and related materials through the Department of Defense.
- Ensure that any military assistance to Bahrain comports with the Leahy Law and section 502(b) of the Foreign Assistance Act of 1961.
- Fully support international efforts to draft guiding principles on the proper use of all toxic chemical agents, and lead the international community in supporting scientific research on the health effects of these agents.



A Bahraini woman displays an exploded canister of CS gas that was shot into her home. Photo: Richard Sollom, PHR

Appendix A

Select list of countries that have recently deployed toxic chemical agents against civilians

CHILE

Police routinely resorted to toxic chemical agents to disperse student protests across Chile from May to August 2011, as thousands of civilians assembled to demand educational and social reforms.²⁵⁸ Collectively, these protests became known as the “Chilean Winter,” named after the “Arab Spring.”²⁵⁹ Observers expressed concerns over excessive use of toxic chemical agents and police force in Chile,²⁶⁰ as violent clashes left hundreds of people injured and thousands of demonstrators arrested.²⁶¹ The use of toxic chemical agents against youth in Chile is not unprecedented, but is reminiscent of crackdowns on student protests in 2006²⁶² and 2008.²⁶³

EGYPT

Egypt’s use of toxic chemical agents during the unfolding 2011 Egyptian Revolution drew international attention, as media reported that government law enforcement officials used British-made²⁶⁴ and US-made²⁶⁵ toxic chemical agents to suppress pro-democracy demonstrations. Nationwide, occasionally violent protests leading up to the resignation of Hosni Mubarak as president in February resulted in hundreds of deaths as riot police met civilians with toxic chemical agents and excessive force.²⁶⁶ Riot police continued to generate criticism for repeatedly using toxic chemical agents against demonstrators,²⁶⁷ most notably during protests in June 2011²⁶⁸ and renewed clashes in Tahrir Square in November 2011.²⁶⁹ Some physicians also argued that Egyptian law enforcement officials used a more powerful variation of toxic chemical lachrymatory agents that led to seizures and convulsions for those exposed.²⁷⁰

258. Gideon Long, *Chile student protests point to deep discontent*, BBC, 11 Aug. 2011, <http://www.bbc.co.uk/news/world-latin-america-14487555>.
259. Alexei Barrionuevo, *With Kiss-Ins and Dances, Young Chileans Push for Reform*, New York Times, 4 Aug. 2011, <http://www.nytimes.com/2011/08/05/world/americas/05chile.html>.
260. Amnesty International cited by Gideon Long, *Chile’s Patagonia region sees mounting unrest*, BBC, 6 Mar. 2012, <http://www.bbc.co.uk/news/world-latin-america-17256697>; Human Rights Watch, *World Report 2012: Chile 1* [2012], http://www.hrw.org/sites/default/files/related_material/chile_2012.pdf.
261. *The fraught politics of the classroom*, Economist, 29 Oct. 2011, <http://www.economist.com/node/21534785>.
262. Human Rights Watch, *Chile: Dismissal of Riot Police Chief Welcomed*, 2 Jun. 2006, <http://www.hrw.org/news/2006/06/01/chile-dismissal-riot-police-chief-welcomed>; Jonathan Franklin, *Protests paralyse Chile’s education system: Student-led strike is largest in country’s history: First major test for Bachelet’s government*, Guardian, 7 Jun. 2006, at International Pages 14.
263. Rodrigo Martinez, *Rocks and tear gas in Chile’s annual youth protests*, Reuters, 29 Mar. 2008, <http://www.reuters.com/article/2008/03/29/us-chile-protest-idUSN2843349620080329>; *Movilización estudiantil suma más de 300 detenidos* [Student mobilization numbers more than 300 detainees], Radio Cooperativa, 28 May 2008, http://www.cooperativa.cl/movilizacion-estudiantil-suma-mas-de-300-detenidos/prontus_nots/2008-05-28/104948.html.
264. Sarah Morrison and Bel Trew, *British-made tear gas was used on Egypt’s protesters*, The Independent, 4 Dec. 2011, <http://www.independent.co.uk/news/uk/home-news/britishmade-tear-gas-was-used-on-egypts-protesters-6272117.html>.
265. Jack Shenker and Luke Harding, *US firm’s teargas used against Tahrir Square protesters*, The Guardian, 21 Nov. 2011, <http://www.guardian.co.uk/world/2011/nov/21/tahrir-square-us-teargas-used-egypt>.
266. Human Rights Watch, *World Report 2012: Egypt 3* [2012], http://www.hrw.org/sites/default/files/related_material/egypt_2012.pdf.
267. Amnesty International, *Egypt’s military rulers must protect protesters as they promised and end military trials of civilians*, Jan. 2012, <http://www.amnesty.org/zh-hant/node/28299>.
268. Patrick Werr and Yasmine Saleh, *Egypt police clash with youths; over 1,000 hurt*, Reuters, 29 Jun. 2011, <http://www.reuters.com/article/2011/06/29/us-egypt-protest-idUSTRE75R7ZM20110629>.
269. David Kirkpatrick, *Egypt’s Cabinet Offers to Resign as Protests Rage*, New York Times, 21 Nov. 2011, <http://www.nytimes.com/2011/11/22/world/middleeast/facing-calls-to-give-up-power-egypts-military-battles-crowds.html>.
270. Peter Beaumont and John Domokos, *Egyptian military using ‘more dangerous’ teargas on Tahrir Square protesters*,

Police officials' use of toxic chemical agents to disperse demonstrations sparked by the Greek debt crisis received national and international criticism.²⁷¹ Government crackdown on protests peaked in the summer of 2011, when several months of rallies drew tens of thousands of civilians who were unhappy about austerity cuts.²⁷² In February 2012, police used toxic chemical agents against thousands of protesters,²⁷³ despite an ongoing investigation by the Athens prosecutor into excessive use of police force.²⁷⁴ In 2008, Greek law enforcement officials used at least 4,600 tear gas capsules to quell demonstrations and riots in Athens.²⁷⁵

HONDURAS

In February 2012, a devastating prison fire that killed at least 350 prisoners drew crowds of inmates' relatives eager to enter the complex and reach their family members or access their remains.²⁷⁶ Police dispersed these relatives with toxic chemical agents,²⁷⁷ renewing concerns that national police in Honduras have a history of firing toxic chemical agents against civilians indiscriminately.²⁷⁸ Several cases of police abuse of toxic chemical agents were reported in 2010,²⁷⁹ as well as during the demonstrations and constitutional crisis that followed the coup d'état of June 2009.²⁸⁰

ISRAEL

International observers have expressed concerns over recent abuse of toxic chemical agents against demonstrators²⁸¹ amid tension over Israeli settlements in the West Bank. In June

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- The Guardian, 23 Nov. 2011, <http://www.guardian.co.uk/world/2011/nov/23/egyptian-military-teargas-tahrir-square>.
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2012, a UN Special Rapporteur called attention to the Israeli Defense Forces' use of toxic chemical agent canisters as projectiles that cause severe injury and death.²⁸²

LIBYA

In mid-February 2011, before Libyan unrest escalated into a full-fledged civil war, law enforcement officials killed and injured civilian protesters in Benghazi and elsewhere in the country using toxic chemical agents, batons, and live ammunition.²⁸³ International Criminal Court evidence suggested that authorities had planned to use toxic chemical agents and excessive force against civilians as soon as unrest began in neighboring Tunisia and Egypt in January 2011.²⁸⁴

MALAYSIA

The Malaysian government received international criticism for its use of toxic chemical agents in crackdowns on pro-democracy protests in April 2012.²⁸⁵ Tens of thousands of civilians assembled peacefully on 28 April to call for election reform,²⁸⁶ in a demonstration organized by opposition leaders as a follow-up to the 2007²⁸⁷ and 2011²⁸⁸ Bersih rallies (similarly broken up by police). An interim report by the Malaysian Bar Council established that the use of toxic chemical agents was indiscriminate and excessive,²⁸⁹ while media accounts documented dozens of injuries and hundreds of arrests.²⁹⁰

SOUTH KOREA

Authorities in South Korea in 1987 used hundreds of thousands of canisters containing toxic chemical agents over the course of two months (June and July) in the streets of Seoul to crush civilian uprisings.²⁹¹ Civilians exposed to high quantities of toxic chemical agents suffered acute illnesses and severe health impairments; affected individuals went without medical

The Misuse of Tear Gas by Israeli Army Personnel in the Israeli Occupied Territories June (2008), <http://adalahny.org/sites/default/files/legacy/images/image/June11988MisuseofteargasbyIDFpersonnelMDE15-26-88.pdf>.

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attention for fear of police and government harassment.²⁹² Physicians for Human Rights reported following a July 1987 investigation that South Korea's use of toxic chemical agents was indiscriminate, inhumane, and medically unacceptable because of lasting health repercussions.²⁹³

TUNISIA

Tunisian law enforcement officials used toxic chemical agents against civilians throughout the 2010–2011 protests that inspired the Arab Spring, killing hundreds and injuring thousands.²⁹⁴ Protests continued despite the January 2011 resignations of President Ben Ali and Prime Minister Mohammed Gannouchi,²⁹⁵ during which time reports of improper use of toxic chemical agents increased.²⁹⁶ Law enforcement officials dropped a canister containing toxic chemical agents in a mosque in January 2011,²⁹⁷ and killed one foreign photographer after hitting him in the head with a toxic chemical agent canister at point blank range.²⁹⁸

TURKEY

Turkish authorities have primarily targeted Kurdish minorities in the southeastern region of the country with toxic chemical agents in recent years because of ongoing protests against political restrictions.²⁹⁹ In March 2012, police used toxic chemical agents to violently disperse traditional Navroz celebrations that drew thousands of demonstrators.³⁰⁰ Several large Kurdish protests also took place throughout 2011,³⁰¹ over the course of which police employed toxic chemical agents and arrested thousands.³⁰² The Turkish Parliament met in April 2011 to discuss police use of the riot control agent, but supported use of toxic chemical agents³⁰³ despite ongoing criticism.³⁰⁴

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293. *Id.*, at 4.

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UGANDA

Doubts about the fairness of the reelection process for President Museveni,³⁰⁵ now in his 26th year in office, inspired protests which escalated after the violent arrest of Uganda's opposition leader in April 2011.³⁰⁶ For weeks, peaceful demonstrations in Kampala were met with excessive police force including indiscriminate use of toxic chemical agents in houses and against non-protesters.³⁰⁷ The incidents resulted in hundreds of injuries and arrests, as well as reported deaths.³⁰⁸ Despite apologies from Uganda's Inspector General of Police, human rights organizations and donor nations condemned the crackdowns and called for further investigations.³⁰⁹

YEMEN

Inspired by the Arab Spring, the Yemeni Uprising in 2011 drew tens of thousands of protesters to the capital in antigovernmental demonstrations.³¹⁰ Protests grew in size when major tribes joined the movement in February 2011,³¹¹ but were met on several occasions with excessive force by the police,³¹² resulting in hundreds of injuries and some deaths attributed to toxic chemical agents.³¹³ Evidence suggested that the toxic chemical agents used by security officers not only had expired, but also contained chemicals much more powerful than those usually used for crowd control.³¹⁴

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Appendix B

Timeline of relevant events in Bahrain (2011-2012)

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|------------------|---|
| 14 February 2011 | Bahraini protesters call for a “day of rage,” demanding political and economic reform. Law enforcement officials kill one person and injure dozens. |
| 17 February 2011 | Hundreds of riot police attack protesters camped in Pearl Square with toxic chemical agents and rubber bullets. Law enforcement officials take over the square, killing five and injuring hundreds. |
| 14 March 2011 | The King of Bahrain calls on Arab Gulf states to send military support. Fifteen-hundred troops from Sunni Gulf states, two-thirds from Saudi Arabia, are deployed in Bahrain. |
| 15 March 2011 | The King declares a three-month state of emergency, giving the commander in chief of Bahrain’s military authority to disperse protests. |
| 16 March 2011 | Bahraini law enforcement officials attack protesters at Pearl Square and occupy Salmaniya public hospital, preventing injured demonstrators from receiving medical treatment and arresting doctors and wounded protesters. |
| 9 April 2011 | Bahraini law enforcement officials arrest Abdulhadi al-Khawaja, a prominent human rights activist, along with his two sons-in-law. |
| 22 April 2011 | PHR releases its report <i>Do No Harm: A Call for Bahrain to End Systematic Attacks on Doctors and Patients</i> , detailing violations of medical neutrality in Bahrain. |
| 1 June 2011 | Government of Bahrain lifts its state of emergency. |
| 13 June 2011 | Government of Bahrain puts 24 physicians and 24 nurses and paramedics on trial, accusing them of working with the opposition at Salmaniya hospital and hiding arms. |
| 22 June 2011 | A hybrid military court sentences eight opposition activists, including Abdulhadi al-Khawaja, to life in prison for plotting to overthrow the Government. Thirteen additional activists each receive a sentence ranging from two to 15 years in jail. |
| 29 June 2011 | King Hamad al-Khalifa establishes the Royal Independent Investigation Commission (later known as the Bahraini Independent Commission of Inquiry, or BICI) to investigate the events of February and March 2011. |
| 8 July 2011 | Political party Al-Wefaq pulls out of the parliament to protest the allotment of only 35 out of 300 seats to the Shi’a majority. |
| 31 August 2011 | Fourteen-year-old Ali Jawad Ahmad dies from the impact of a toxic chemical agent canister fired at his head by law enforcement officials in Sitra. Tens of thousands protest. |

- 29 September 2011* A hybrid military court convicts 20 health professionals for allegedly using the Salmaniya Medical Complex for opposition activity; they receive sentences ranging from five to 15 years in jail.
- 5 October 2011* Bahrain's attorney general orders a retrial of those medical professionals sentenced on 29 September.
- 23 November 2011* BICI releases its report, which confirms the Bahraini government's use of torture on detainees and the excessive use of force against civilians.
- 31 December 2011* New Year's Eve protests in Sitra result in the death of 15-year-old Sayed Hashim Saeed, whom law enforcement officials struck with two canisters of toxic chemical agents.
- 8 January 2012* PHR's Richard Sollom is denied entry to Bahrain to observe the trial of the 20 medical professionals, despite possessing a valid five-year visa.
- 5 March 2012* Forty-five-day-old infant Yahya Yousif Ahmed dies reportedly due to complications from tear gas exposure, after law enforcement officials launch toxic chemical agents into her mother's home eight times over the course of the pregnancy.
- 20 March 2012* United Nations expresses concern over Bahrain's misuse of toxic chemical agents and the death of civilians, after receiving reports of over 30 possible toxic chemical agent-related deaths.
- 22 April 2012* Formula 1 Grand Prix takes place in Manama, despite intense protests against the event. Police reportedly shoot and kill one protester.
- 30 April 2012* Bahrain's Appeals Court orders a retrial in civilian court for 21 opposition activists convicted by military court, including hunger striker Abdulhadi al-Khawaja.
- 21 May 2012* UN Human Rights Council holds its second Universal Period Review for Bahrain. The Bahraini delegation denies allegations of many well-documented human rights abuses. PHR releases its report *Under the Gun: Ongoing Assaults on Bahrain's Health System* detailing impacts of Bahrain's militarization and politicization of healthcare on the public health system.
- 14 June 2012* High Court of Appeals convicts 11 of the 20 medical professionals on trial for charges of illegal protesting and trying to overthrow the monarchy. The court acquits nine of the defendants.

Appendix C

UN Basic Principles on the Use of Force and Firearms by Law Enforcement Officials

Adopted by the Eighth United Nations Congress on the Prevention of Crime and the Treatment of Offenders, Havana, Cuba, 27 August to 7 September 1990

Whereas the work of law enforcement officials* is a social service of great importance and there is, therefore, a need to maintain and, whenever necessary, to improve the working conditions and status of these officials,

Whereas a threat to the life and safety of law enforcement officials must be seen as a threat to the stability of society as a whole,

Whereas law enforcement officials have a vital role in the protection of the right to life, liberty and security of the person, as guaranteed in the Universal Declaration of Human Rights and reaffirmed in the International Covenant on Civil and Political Rights,

Whereas the Standard Minimum Rules for the Treatment of Prisoners provide for the circumstances in which prison officials may use force in the course of their duties,

Whereas article 3 of the Code of Conduct for Law Enforcement Officials provides that law enforcement officials may use force only when strictly necessary and to the extent required for the performance of their duty,

Whereas the preparatory meeting for the Seventh United Nations Congress on the Prevention of Crime and the Treatment of Offenders, held at Varenna, Italy, agreed on elements to be considered in the course of further work on restraints on the use of force and firearms by law enforcement officials,

Whereas the Seventh Congress, in its resolution 14, inter alia, emphasizes that the use of force and firearms by law enforcement officials should be commensurate with due respect for human rights,

Whereas the Economic and Social Council, in its resolution 1986/10, section IX, of 21 May 1986, invited Member States to pay particular attention in the implementation of the Code to the use of force and firearms by law enforcement officials, and the General Assembly, in its resolution 41/149 of 4 December 1986, inter alia, welcomed this recommendation made by the Council,

Whereas it is appropriate that, with due regard to their personal safety, consideration be given to the role of law enforcement officials in relation to the administration of justice, to the protection of the right to life, liberty and security of the person, to their responsibility to maintain public safety and social peace and to the importance of their qualifications, training and conduct,

The basic principles set forth below, which have been formulated to assist Member States in their task of ensuring and promoting the proper role of law enforcement officials, should be taken into account and respected by Governments within the framework of their national legislation and practice, and be brought to the attention of law enforcement officials as well as other persons, such as judges, prosecutors, lawyers, members of the executive branch and the legislature, and the public.

General provisions

- (1) Governments and law enforcement agencies shall adopt and implement rules and regulations on the use of force and firearms against persons by law enforcement officials. In developing such rules and regulations, Governments and law enforcement agencies shall keep the ethical issues associated with the use of force and firearms constantly under review.
- (2) Governments and law enforcement agencies should develop a range of means as broad as possible and equip law enforcement officials with various types of weapons and ammunition that would allow for a differentiated use of force and firearms. These should include the development of non-lethal incapacitating weapons for use in appropriate situations, with a view to increasingly restraining the application of means capable of causing death or injury to persons. For the same purpose, it should also be possible for law enforcement officials to be equipped with self-defensive equipment such as shields, helmets, bullet-proof vests and bullet-proof means of transportation, in order to decrease the need to use weapons of any kind.
- (3) The development and deployment of non-lethal incapacitating weapons should be carefully evaluated in order to minimize the risk of endangering uninvolved persons, and the use of such weapons should be carefully controlled.
- (4) Law enforcement officials, in carrying out their duty, shall, as far as possible, apply non-violent means before resorting to the use of force and firearms. They may use force and firearms only if other means remain ineffective or without any promise of achieving the intended result.
- (5) Whenever the lawful use of force and firearms is unavoidable, law enforcement officials shall:
 - (a) Exercise restraint in such use and act in proportion to the seriousness of the offence and the legitimate objective to be achieved;
 - (b) Minimize damage and injury, and respect and preserve human life;
 - (c) Ensure that assistance and medical aid are rendered to any injured or affected persons at the earliest possible moment;
 - (d) Ensure that relatives or close friends of the injured or affected person are notified at the earliest possible moment.
- (6) Where injury or death is caused by the use of force and firearms by law enforcement officials, they shall report the incident promptly to their superiors, in accordance with principle 22.
- (7) Governments shall ensure that arbitrary or abusive use of force and firearms by law enforcement officials is punished as a criminal offence under their law.
- (8) Exceptional circumstances such as internal political instability or any other public emergency may not be invoked to justify any departure from these basic principles.

Special provisions

- (9) Law enforcement officials shall not use firearms against persons except in self-defence or defence of others against the imminent threat of death or serious injury, to prevent the perpetration of a particularly serious crime involving grave threat to life, to arrest a person presenting such a danger and resisting their authority, or to prevent his or her escape, and only when less extreme means are insufficient to achieve these objectives. In any event, intentional lethal use of firearms may only be made when strictly unavoidable in order to protect life.

- (10) In the circumstances provided for under principle 9, law enforcement officials shall identify themselves as such and give a clear warning of their intent to use firearms, with sufficient time for the warning to be observed, unless to do so would unduly place the law enforcement officials at risk or would create a risk of death or serious harm to other persons, or would be clearly inappropriate or pointless in the circumstances of the incident.
- (11) Rules and regulations on the use of firearms by law enforcement officials should include guidelines that:
- (a) Specify the circumstances under which law enforcement officials are authorized to carry firearms and prescribe the types of firearms and ammunition permitted;
 - (b) Ensure that firearms are used only in appropriate circumstances and in a manner likely to decrease the risk of unnecessary harm;
 - (c) Prohibit the use of those firearms and ammunition that cause unwarranted injury or present an unwarranted risk;
 - (d) Regulate the control, storage and issuing of firearms, including procedures for ensuring that law enforcement officials are accountable for the firearms and ammunition issued to them;
 - (e) Provide for warnings to be given, if appropriate, when firearms are to be discharged;
 - (f) Provide for a system of reporting whenever law enforcement officials use firearms in the performance of their duty.

Policing unlawful assemblies

- (12) As everyone is allowed to participate in lawful and peaceful assemblies, in accordance with the principles embodied in the Universal Declaration of Human Rights and the International Covenant on Civil and Political Rights, Governments and law enforcement agencies and officials shall recognize that force and firearms may be used only in accordance with principles 13 and 14.
- (13) In the dispersal of assemblies that are unlawful but non-violent, law enforcement officials shall avoid the use of force or, where that is not practicable, shall restrict such force to the minimum extent necessary.
- (14) In the dispersal of violent assemblies, law enforcement officials may use firearms only when less dangerous means are not practicable and only to the minimum extent necessary. Law enforcement officials shall not use firearms in such cases, except under the conditions stipulated in principle 9.

Policing persons in custody or detention

- (15) Law enforcement officials, in their relations with persons in custody or detention, shall not use force, except when strictly necessary for the maintenance of security and order within the institution, or when personal safety is threatened.
- (16) Law enforcement officials, in their relations with persons in custody or detention, shall not use firearms, except in self-defence or in the defence of others against the immediate threat of death or serious injury, or when strictly necessary to prevent the escape of a person in custody or detention presenting the danger referred to in principle 9.
- (17) The preceding principles are without prejudice to the rights, duties and responsibilities of prison officials, as set out in the Standard Minimum Rules for the Treatment of Prisoners, particularly rules 33, 34 and 54.

Qualifications, training and counselling

- (18) Governments and law enforcement agencies shall ensure that all law enforcement officials are selected by proper screening procedures, have appropriate moral, psychological and physical qualities for the effective exercise of their functions and receive continuous and thorough professional training. Their continued fitness to perform these functions should be subject to periodic review.
- (19) Governments and law enforcement agencies shall ensure that all law enforcement officials are provided with training and are tested in accordance with appropriate proficiency standards in the use of force. Those law enforcement officials who are required to carry firearms should be authorized to do so only upon completion of special training in their use.
- (20) In the training of law enforcement officials, Governments and law enforcement agencies shall give special attention to issues of police ethics and human rights, especially in the investigative process, to alternatives to the use of force and firearms, including the peaceful settlement of conflicts, the understanding of crowd behaviour, and the methods of persuasion, negotiation and mediation, as well as to technical means, with a view to limiting the use of force and firearms. Law enforcement agencies should review their training programmes and operational procedures in the light of particular incidents.
- (21) Governments and law enforcement agencies shall make stress counselling available to law enforcement officials who are involved in situations where force and firearms are used.

Reporting and review procedures

- (22) Governments and law enforcement agencies shall establish effective reporting and review procedures for all incidents referred to in principles 6 and 11 (f). For incidents reported pursuant to these principles, Governments and law enforcement agencies shall ensure that an effective review process is available and that independent administrative or prosecutorial authorities are in a position to exercise jurisdiction in appropriate circumstances. In cases of death and serious injury or other grave consequences, a detailed report shall be sent promptly to the competent authorities responsible for administrative review and judicial control.
- (23) Persons affected by the use of force and firearms or their legal representatives shall have access to an independent process, including a judicial process. In the event of the death of such persons, this provision shall apply to their dependents accordingly.
- (24) Governments and law enforcement agencies shall ensure that superior officers are held responsible if they know, or should have known, that law enforcement officials under their command are resorting, or have resorted, to the unlawful use of force and firearms, and they did not take all measures in their power to prevent, suppress or report such use.
- (25) Governments and law enforcement agencies shall ensure that no criminal or disciplinary sanction is imposed on law enforcement officials who, in compliance with the Code of Conduct for Law Enforcement Officials and these basic principles, refuse to carry out an order to use force and firearms, or who report such use by other officials.
- (26) Obedience to superior orders shall be no defence if law enforcement officials knew that an order to use force and firearms resulting in the death or serious injury of a person was manifestly unlawful and had a reasonable opportunity to refuse to follow it. In any case, responsibility also rests on the superiors who gave the unlawful orders.

* In accordance with the commentary to article 1 of the Code of Conduct for Law Enforcement Officials, the term “law enforcement officials” includes all officers of the law, whether appointed or elected, who exercise police powers, especially the powers of arrest or detention. In countries where police powers are exercised by military authorities, whether uniformed or not, or by State security forces, the definition of law enforcement officials shall be regarded as including officers of such services.

Appendix D

UN Code of Conduct for Law Enforcement Officials

Adopted by General Assembly resolution 34/169 of 17 December 1979

Article 1

Law enforcement officials shall at all times fulfill the duty imposed upon them by law, by serving the community and by protecting all persons against illegal acts, consistent with the high degree of responsibility required by their profession.

Commentary:

- (a) The term “law enforcement officials” includes all officers of the law, whether appointed or elected, who exercise police powers, especially the powers of arrest or detention.
- (b) In countries where police powers are exercised by military authorities, whether uniformed or not, or by State security forces, the definition of law enforcement officials shall be regarded as including officers of such services.
- (c) Service to the community is intended to include particularly the rendition of services of assistance to those members of the community who by reason of personal, economic, social or other emergencies are in need of immediate aid.
- (d) This provision is intended to cover not only all violent, predatory and harmful acts, but extends to the full range of prohibitions under penal statutes. It extends to conduct by persons not capable of incurring criminal liability.

Article 2

In the performance of their duty, law enforcement officials shall respect and protect human dignity and maintain and uphold the human rights of all persons.

Commentary:

- (a) The human rights in question are identified and protected by national and international law. Among the relevant international instruments are the Universal Declaration of Human Rights, the International Covenant on Civil and Political Rights, the Declaration on the Protection of All Persons from Being Subjected to Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, the United Nations Declaration on the Elimination of All Forms of Racial Discrimination, the International Convention on the Elimination of All Forms of Racial Discrimination, the International Convention on the Suppression and Punishment of the Crime of Apartheid, the Convention on the Prevention and Punishment of the Crime of Genocide, the Standard Minimum Rules for the Treatment of Prisoners and the Vienna Convention on Consular Relations.

- (b) National commentaries to this provision should indicate regional or national provisions identifying and protecting these rights.

Article 3

Law enforcement officials may use force only when strictly necessary and to the extent required for the performance of their duty.

Commentary:

- (a) This provision emphasizes that the use of force by law enforcement officials should be exceptional; while it implies that law enforcement officials may be authorized to use force as is reasonably necessary under the circumstances for the prevention of crime or in effecting or assisting in the lawful arrest of offenders or suspected offenders, no force going beyond that may be used.
- (b) National law ordinarily restricts the use of force by law enforcement officials in accordance with a principle of proportionality. It is to be understood that such national principles of proportionality are to be respected in the interpretation of this provision. In no case should this provision be interpreted to authorize the use of force which is disproportionate to the legitimate objective to be achieved.
- (c) The use of firearms is considered an extreme measure. Every effort should be made to exclude the use of firearms, especially against children. In general, firearms should not be used except when a suspected offender offers armed resistance or otherwise jeopardizes the lives of others and less extreme measures are not sufficient to restrain or apprehend the suspected offender. In every instance in which a firearm is discharged, a report should be made promptly to the competent authorities.

Article 4

Matters of a confidential nature in the possession of law enforcement officials shall be kept confidential, unless the performance of duty or the needs of justice strictly require otherwise.

Commentary:

By the nature of their duties, law enforcement officials obtain information which may relate to private lives or be potentially harmful to the interests, and especially the reputation, of others. Great care should be exercised in safeguarding and using such information, which should be disclosed only in the performance of duty or to serve the needs of justice. Any disclosure of such information for other purposes is wholly improper.

Article 5

No law enforcement official may inflict, instigate or tolerate any act of torture or other cruel, inhuman or degrading treatment or punishment, nor may any law enforcement official invoke superior orders or exceptional circumstances such as a state of war or a threat of war, a threat to national security, internal political instability or any other public emergency as a justification of torture or other cruel, inhuman or degrading treatment or punishment.

Commentary:

- (a) This prohibition derives from the Declaration on the Protection of All Persons from Being Subjected to Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment, adopted by the General Assembly, according to which:
 “[Such an act is] an offence to human dignity and shall be condemned as a denial of the

purposes of the Charter of the United Nations and as a violation of the human rights and fundamental freedoms proclaimed in the Universal Declaration of Human Rights [and other international human rights instruments].”

- (b) The Declaration defines torture as follows:

“... torture means any act by which severe pain or suffering, whether physical or mental, is intentionally inflicted by or at the instigation of a public official on a person for such purposes as obtaining from him or a third person information or confession, punishing him for an act he has committed or is suspected of having committed, or intimidating him or other persons. It does not include pain or suffering arising only from, inherent in or incidental to, lawful sanctions to the extent consistent with the Standard Minimum Rules for the Treatment of Prisoners.”
- (c) The term “cruel, inhuman, or degrading treatment or punishment” has not been defined by the General Assembly but should be interpreted so as to extend the widest possible protection against abuses, whether physical or mental.

Article 6

Law enforcement officials shall ensure the full protection of the health of persons in their custody and, in particular, shall take immediate action to secure medical attention whenever required.

Commentary:

- (a) “Medical attention”, which refers to services rendered by any medical personnel, including certified medical practitioners and paramedics, shall be secured when needed or requested.
- (b) While the medical personnel are likely to be attached to the law enforcement operation, law enforcement officials must take into account the judgment of such personnel when they recommend providing the person in custody with appropriate treatment through, or in consultation with, medical personnel from outside the law enforcement operation.
- (c) It is understood that law enforcement officials shall also secure medical attention for victims of violations of law or of accidents occurring in the course of violations of law.

Article 7

Law enforcement officials shall not commit any act of corruption. They shall also rigorously oppose and combat all such acts.

Commentary:

- (a) Any act of corruption, in the same way as any other abuse of authority, is incompatible with the profession of law enforcement officials. The law must be enforced fully with respect to any law enforcement official who commits an act of corruption, as Governments cannot expect to enforce the law among their citizens if they cannot, or will not, enforce the law against their own agents and within their agencies.
- (b) While the definition of corruption must be subject to national law, it should be understood to encompass the commission or omission of an act in the performance of or in connection with one’s duties, in response to gifts, promises or incentives demanded or accepted, or the wrongful receipt of these once the act has been committed or omitted.
- (c) The expression “act of corruption” referred to above should be understood to encompass attempted corruption.

Law enforcement officials shall respect the law and the present Code. They shall also, to the best of their capability, prevent and rigorously oppose any violations of them.

Law enforcement officials who have reason to believe that a violation of the present Code has occurred or is about to occur shall report the matter to their superior authorities and, where necessary, to other appropriate authorities or organs vested with reviewing or remedial power.

Commentary:

- (a) This Code shall be observed whenever it has been incorporated into national legislation or practice. If legislation or practice contains stricter provisions than those of the present Code, those stricter provisions shall be observed.
- (b) The article seeks to preserve the balance between the need for internal discipline of the agency on which public safety is largely dependent, on the one hand, and the need for dealing with violations of basic human rights, on the other. Law enforcement officials shall report violations within the chain of command and take other lawful action outside the chain of command only when no other remedies are available or effective. It is understood that law enforcement officials shall not suffer administrative or other penalties because they have reported that a violation of this Code has occurred or is about to occur.
- (c) The term “appropriate authorities or organs vested with reviewing or remedial power” refers to any authority or organ existing under national law, whether internal to the law enforcement agency or independent thereof, with statutory, customary or other power to review grievances and complaints arising out of violations within the purview of this Code.
- (d) In some countries, the mass media may be regarded as performing complaint review functions similar to those described in subparagraph (c) above. Law enforcement officials may, therefore, be justified if, as a last resort and in accordance with the laws and customs of their own countries and with the provisions of article 4 of the present Code, they bring violations to the attention of public opinion through the mass media.
- (e) Law enforcement officials who comply with the provisions of this Code deserve the respect, the full support and the co-operation of the community and of the law enforcement agency in which they serve, as well as the law enforcement profession.

Appendix E

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Glossary

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|------------------------------------|---|
| <i>Biological weapon</i> | “(1) Microbial or other biological agents, or toxins whatever their origin or method of production, of types and in quantities that have no justification for prophylactic, protective or other peaceful purposes; (2) Weapons, equipment or means of delivery designed to use such agents or toxins for hostile purposes or in armed conflict.” ³³⁰ |
| <i>Chemical riot control agent</i> | “Any chemical... which can produce rapidly in humans sensory irritation or disabling physical effects which disappear within a short time following termination of exposure.” ³³¹ |
| <i>Chemical warfare agent</i> | “Chemical substances, whether gaseous, liquid or solid, which might be employed because of their direct toxic effects on man, animals and plants.” ³³² |
| <i>Chemical weapon</i> | “(a) Toxic chemicals and their precursors, except where intended for purposes not prohibited under this Convention, as long as the types and quantities are consistent with such purposes; (b) Munitions and devices, specifically designed to cause death or other harm through the toxic properties of those toxic chemicals specified in subparagraph (a), which would be released as a result of the employment of such munitions and devices; (c) Any equipment specifically designed for use directly in connection with the employment of munitions and devices specified in subparagraph (b).” ³³³ |
| <i>Chemical Weapons Convention</i> | International treaty aimed to prevent the stockpiling, retention and production of weapons of mass destruction. ³³⁴ |
| <i>Disproportionate</i> | “Not acting in proportion to the seriousness of the offence and the legitimate objective to be achieved.” ³³⁵ |
| <i>Lachrymator</i> | “Any substance which causes irritation and copious watering of the eyes when it comes into contact with them (in the form of a gas, spray, dust, or the like).” ³³⁶ |
| <i>Law enforcement officials</i> | “[A]ll officers of the law whether appointed or elected, who exercise police powers, especially the powers of arrest or detention.” ³³⁷ |
| <i>Molotov cocktail</i> | “A makeshift incendiary device for throwing by hand, consisting of a bottle or other breakable container filled with flammable liquid and with a piece of cloth, etc., as a fuse.” ³³⁸ |

330. Convention on the Prohibition of the Development, Production and Stockpiling of Bacteriological (Biological) and Toxin Weapons and on Their Destruction, (“Biological Weapons Convention”) art. 1, 26 Mar. 1975, available at <http://www.opbw.org/convention/documents/btwctext.pdf>.

331. Chemical Weapons Convention, *supra* note 52, at art 2.7.

332. Steven L. Hoening, Handbook of Chemical Warfare and Terrorism, 24 (2002).

333. Chemical Weapons Convention, *supra* note 52, at art. 2.1.

334. *Id.*, at art. 1.

335. U.N. Principles on the Use of Force, *supra* note 108, at art. 5(a).

336. Lachrymator, in Oxford English Dictionary, *supra* note 44.

337. U.N. Code of Conduct for Law Enforcement Officials, *supra* note 1, at art. 1(a).

338. Molotov, in Oxford English Dictionary (3rd ed. 2002, online version 2012).

Torture

"[A]ny act by which severe pain or suffering, whether physical or mental, is intentionally inflicted on a person for such purposes as punishing him for an act he or a third person has committed or is suspected of having committed, or intimidating or coercing him or a third person, or for any reason based on discrimination of any kind, when such pain or suffering is inflicted by or at the instigation of or with the consent or acquiescence of a public official or other person acting in an official capacity." ³³⁹

Toxic chemical

"Any chemical which through its chemical action on life processes can cause death, temporary incapacitation or permanent harm to humans or animals." ³⁴⁰

Use of force

"Amount of effort required by law enforcement to compel compliance by an unwilling subject." ³⁴¹

339. Convention against Torture *supra* note 241, at art 1.1.

340. Maciej J. Bogusz, Forensic Science, Volume 6, 406 (2002).

341. US Department of Justice, Review of the Department of Justice's Use of Less-Lethal Weapons, *supra* note 107, at i.

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