

CHEMICAL WARFARE IN BOSNIA?

The Strange Experiences of the Srebrenica Survivors

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OVERVIEW AND DETAILED MAPS

I. SUMMARY AND RECOMMENDATIONS

In the summer of 1995, shortly after the fall of the United Nations “safe area” of Srebrenica in Bosnia and Hercegovina, survivors emerged from a long trek to safety with tales suggesting that Serb forces had attacked them during their flight with some type of chemical incapacitating agent. The presence of chemical weapons in the former Yugoslavia has not been a secret but allegations of actual use have been viewed with a healthy measure of skepticism. Difficult to verify, reports of chemical-weapon use have proliferated more than even the weapons themselves—in the former Yugoslavia as much as in other conflict zones around the world. But the unique character and consistency of some of the testimonies, matched with the certain knowledge that the army of the former Yugoslavia, the Yugoslav People's Army (Jugoslavenska Narodna Armija, JNA), possessed an incapacitating agent named “BZ” and had developed doctrine and a capacity for its use, gave an initial credibility to the allegations.

In 1996, Human Rights Watch carried out an investigation of the claim that Serb forces used JNA-supplied BZ against the people fleeing Srebrenica the year before. Following interviews with some thirty-five survivors, as well as U.N. and other international personnel in the former Yugoslavia, and a review of available documentation relating to events at Srebrenica in 1996-97, Human Rights Watch has found the evidence inconclusive on whether a chemical agent was used. The evidence, while suggestive of the use of a BZ-like compound, is incomplete. Hard evidence—in the form, for example, of chemical traces in the clothes of people who died during the march and whose bodies were exhumed subsequently—has remained elusive.

The reason we have been unable to prove the allegations may be that they are false. But a very plausible alternative explanation is that the investigation so far has been insufficient, due to two key factors: the deaths of the key witnesses, and a lack of resources. Most importantly, it is likely that if a chemical agent was used during the trek from Srebrenica to Tuzla, the people most affected by it are no longer alive to tell their story, having been killed by Serb forces following their incapacitation by BZ or a similar substance. Secondly, Human Rights Watch did not have the resources to do systematic sampling for BZ or a BZ-like compound. Moreover, Human Rights Watch has also not been able to obtain other types of evidence that have been said to exist, including transcripts of Serb radio transmissions from the time of the Srebrenica events.

The United States government apparently took the allegations seriously enough to conduct an investigation, reported to have taken place in late 1996 or early 1997. The results of this investigation have not been made public, but in late 1996 or early 1997 the U.S. intelligence community had information suggesting that chemical weapons may have been used in Srebrenica. The government's refusal to release the findings may, according to a U.S. official interviewed by Human Rights Watch, be based on a belief that making this information public might hurt the international effort to effect peace in the former Yugoslavia.

In the view of Human Rights Watch, the question whether chemical weapons were used during the Bosnian war—by Serb forces in Srebrenica in July 1995 or by any of the parties to the conflict at other times during the war—must be answered satisfactorily. The existence of chemical weapons and a capacity to produce them in the former Yugoslavia is, in and of itself, an extreme cause for concern, given unresolved issues and renewed conflict in the region. Evidence of the actual use of chemical weapons would add an extra dimension, as the knowledge that one side possesses chemical weapons, has used them with impunity, and is prepared to use them again might encourage others to follow suit, giving rise to a dangerous escalation.

The international community, which, as sponsor of the Dayton Accords, has an important stake in the accords' success, must act to prevent further escalation and the future threat of chemical warfare in the former Yugoslavia. Its failure to do so may set the stage for a large-scale use of chemical weapons during a new armed conflict, as it will send a strong signal to those who may have used chemical weapons already once that they can do so with impunity. It should be remembered that if chemical weapons were used in Srebrenica, this would have been a violation of the 1925 Geneva Protocol as well as a war crime—a war crime that was an integral component of the commission of another war crime, the mass killing of civilians fleeing the conquered enclave.

In its main recommendations below, Human Rights Watch therefore calls on the international community to use its considerable resources to investigate allegations that chemical weapons were used in Srebrenica, or instruct U.N. agencies, e.g., the Organization for the Prohibition of Chemical Weapons, the International Criminal Tribunal for the Former Yugoslavia, or the Office of the United Nations Secretary-General, to do so; and to release all information on the development, production, stockpiling, and use of chemical weapons in the former Yugoslavia which international alliances and their member states, including members of the United Nations Protection Force (UNPROFOR), the NATO-led Implementation Force (IFOR) and Stabilisation Force (SFOR), and the International Police Task Force, may have in their possession.

The Fall of the Srebrenica “Safe Area”

The war in Bosnia and Hercegovina began in April-May 1992, when the JNA, with the active assistance of Serb paramilitary forces, instituted a campaign to deport or scare all non-Serb inhabitants from large parts of Bosnia and Hercegovina.¹ Much of eastern Bosnia and Hercegovina quickly came under Bosnian Serb control. Most non-Serb men from the region fled, were put in detention centers, or were killed. Many of the non-Serb women, children, and elderly who did not flee were forcibly expelled.

Thousands of refugees fled to Srebrenica, which, though briefly in Bosnian Serb hands in April 1992, was controlled by territorial defense units loyal to the Bosnian government for most of the war (1992-95).² Because it was one of the few areas held by Bosnian government forces in eastern Bosnia and Hercegovina, Srebrenica’s population surged to an estimated 55,000 to 60,000.³ Most of these people would remain trapped in the enclave deep in Bosnian Serb controlled territory until July 1995.

¹ When the JNA officially withdrew from Bosnia and Hercegovina on May 19, 1992, large quantities of war materiel were left behind and Bosnian Serb soldiers (80 percent of JNA troops stationed in Bosnia and Hercegovina) were free to remain in Bosnia and Hercegovina and fight on behalf of the Serb forces in the republic. The Federal Republic of Yugoslavia (Serbia and Montenegro) also resupplied Bosnian Serb troops during the war and paid the salaries of Bosnian Serb military officers who had been JNA officers before the war.

² The Bosnian government’s official objective was to preserve Bosnia and Hercegovina as a multi-ethnic state. The majority of the people in Bosnian government controlled territory were “Muslim,” a Yugoslav government ethnic category. The Bosnian government and many Bosnian “Muslims” prefer the term Bosniak, or Bosnjak.

³ Approximately 37,000 people—72.5 percent Bosniaks and 25.5 percent Serbs—lived in the Srebrenica municipality before the war. Srebrenica itself was a relatively small town of 8,000 inhabitants before the war. The municipality comprises the town and the villages immediately surrounding it.

Srebrenica's defenders, commanded by Naser Orić, a former police officer and briefly a bodyguard of Slobodan Milošević, then president of Serbia within a federated Yugoslavia, initially resisted Bosnian Serb assaults and even conducted attacks against Serb villages in the surrounding area. Hundreds of Bosnian Serbs, including civilians, were reportedly killed in these attacks.⁴ In a major offensive in early 1993, however, Serb forces reduced the area controlled by Srebrenica's defenders and threatened to capture the enclave. Shelling of the area and the town increased and no humanitarian convoys were allowed in. The humanitarian situation became desperate, with reports that residents were on the verge of starvation.

⁴ Jan Willem Honig and Norbert Both, *Srebrenica: Record of a War Crime* (New York: Penguin Books, 1996), p. 79, and Frank Westerman and Bart Rijs, *Srebrenica: Het Zwartste Scenario* (Amsterdam: Uitgeverij Atlas, 1997), pp. 79-80 and 85.

In late February and early March 1993, the United States led an air-drop operation that delivered some food to the residents, but Serb attacks continued. On March 11, Gen. Philippe Morillon, the French commander of UNPROFOR, finally and after protracted negotiations forced his way into the enclave to assess the situation in eastern Bosnia and Hercegovina. During his stay, not a single shell fell on the town and when he tried to return to Sarajevo, residents, mainly women, prevented his departure until he agreed to guarantee their security.⁵ Unable to leave, General Morillon told them: "You are now under the protection of the U.N. forces....I will never abandon you." Although he did leave a week later with the first food convoy to have reached Srebrenica since November 1992, General Morillon was eventually able to negotiate a cease-fire on March 28. Subsequently, a large number of the town's residents were evacuated with the assistance of the Bosnian Serbs, reducing the population of the enclave to about 40,000.

On April 5—after it became apparent that the Bosnian government was not willing to allow more refugees to leave the enclave—the Bosnian Serb forces renewed their attack. Less than a week later, shells were again routinely hitting Srebrenica town, and the enclave was again in danger of falling. The international community renewed pressure on the leadership of the Federal Republic of Yugoslavia and of the Bosnian Serbs, and on April 16 the U.N. received indications from the Serb leadership that a U.N. force would be allowed into the enclave. Later that day the U.N. Security Council passed Resolution 819 declaring Srebrenica and its surroundings a "safe area."

A condition of the creation of the "safe area" was that Srebrenica be "demilitarized." Bosniak forces would be required to hand in their weapons to the U.N. troops that were set to enter the enclave. In the event, most heavy weapons were collected, but many Bosnian soldiers managed to hold onto their light weapons. These men later conducted a few small raids out of the enclave, which reportedly incensed the Serb population in the surrounding area.⁶

The first contingent of UNPROFOR peacekeepers in Srebrenica was of approximately 140 Canadian soldiers. They were replaced by units of the Dutch UNPROFOR Battalion (DUTCHBAT), a force of 450 men, on March 3, 1994. With its armory limited to armored personnel carriers (APCs) and light weapons, DUTCHBAT could only offer token resistance to units of the Bosnian Serb Army (BSA) equipped with tanks, artillery and mounted guns.⁷

Thus Srebrenica had become a huge, isolated refugee camp deep in Bosnian Serb controlled territory, with no real defense. Although U.N. aid was allowed in and a humanitarian crisis was thereby averted, Bosnian Serb forces occupied all of the surrounding territory and controlled the quantity, content and frequency of the deliveries to the enclave, taking a share of the humanitarian goods in exchange for free passage.

⁵ Honig and Both, *Srebrenica: Record of a War Crime*, pp. 85-90.

⁶ Charles Lane, "The Fall of Srebrenica," *New Republic*, August 14, 1995.

⁷ By 1995, DUTCHBAT's advanced TOW anti-tank missiles were inoperable, because Bosnian Serb forces had confiscated vital spare parts for the weapons that the Dutch tried to bring into the enclave. *Ibid.* The BSA was formed after the JNA officially withdrew from Bosnia; its forces consisted of the 80 percent of the JNA's Bosnian Serb officers who remained in Bosnia and Hercegovina. The Serbs themselves refer to the BSA as the *Vojska Republike Srpske* (the Army of the Serb Republic), a term not used by the international community which does not recognize the Serb Republic.

In early 1995, Bosnian Serb forces apparently began planning an offensive that would eliminate the three Bosnian enclaves in the territory they controlled—Srebrenica, Žepa and Goražde. Preparations included a further limit on the amount of fuel, spare parts and supplies that DUTCHBAT could bring into Srebrenica, thus reducing DUTCHBAT's ability to defend the enclave.

The attack on Srebrenica was predicted several months before it occurred.⁸ BSA troops were observed gathering around the enclave in April.⁹ In a preliminary move, on June 3, Bosnian Serb forces attacked and captured a U.N. observation post, with no forceful U.N. response. That month Gen. Ratko Mladić, the BSA chief of staff, traveled to Belgrade on several occasions to meet with his Yugoslav Army (Vojska Jugoslavije, VJ) counterpart, Gen. Momčilo Perišić, apparently to plan and prepare for the offensive; General Perišić and his top generals, in turn, traveled to Bosnia and Hercegovina several times.¹⁰

Forces continued to build up around Srebrenica, including Serb paramilitary units from Serbia and Croatia. During and after the attack, Dutch U.N. troops reported seeing paramilitary forces they identified as the Drina Wolves, Šešelj's Chetniks, Specialna Policija ("Special Police"), White Eagles, Krajina Serbs, and Arkan's Tigers; Željko Ražnatović, a.k.a. "Arkan," the leader of Arkan's Tigers, was positively identified by U.N. military observers.¹¹ Yugoslav Army troops also reportedly participated in the attack on Srebrenica.¹²

⁸ According to Roy Gutman, U.N. military aides determined that Gen. Ratko Mladić, the BSA chief of staff, would make a major push by the summer to seize the three eastern safe areas. "UN's Deadly Deal," *Newsday*, May 29, 1996.

⁹ Lane, "The Fall of Srebrenica."

¹⁰ This is according to a NATO intelligence officer working for Lt. General Rupert Smith, U.N. Commander in Bosnia and Hercegovina, cited by Roy Gutman in "UN's Deadly Deal." Gutman also said his intelligence source claimed that General Mladić spent most of the time during the battle for Srebrenica at the Yugoslav Army's Tara command center across the Drina River in Serbia.

¹¹ "Report of the Secretary-General Pursuant to Security Council Resolution 1019 (1995) on Violations of International Humanitarian Law in the Areas of Srebrenica, Žepa, Banja Luka and Sanski Most," S/1995/998, November 27, 1995. It is not clear what "Krajina Serbs" refers to, as there is not known to have been a militia by that name during the war.

¹² Gutman, "UN's Deadly Deal."

The attack began on July 6. The Serb forces quickly overran five of the thirteen U.N. posts surrounding the enclave.¹³ The Dutch commander, Col. Ton Karremans, requested close air support, but this was denied. Neither the Dutch troops nor the poorly armed Bosniak soldiers were able to mount effective resistance, and over the next days the Serb forces methodically advanced on the town of Srebrenica. On July 11, the U.N. approved a NATO air strike, after repeated requests by DUTCHBAT. The result was the apparent destruction of one Serb tank and an ultimatum from General Mladić that if any more air strikes were carried out, he would fire on the Dutch compound and the civilian population of Srebrenica, and also execute the more than thirty Dutch hostages his troops had taken. The Dutch defense minister, Joris Voorhoeve, immediately requested that the air strikes be called off. The U.N. complied and by the next day, July 12, General Mladić effectively controlled all of the Srebrenica enclave.

¹³ For greater detail on the attack see Human Rights Watch/Helsinki, "The Fall of Srebrenica and the Failure of U.N. Peacekeeping," *A Human Rights Watch Short Report*, vol. 7, no. 13, October 1995.

On the afternoon of July 11, with the Bosnian Serb forces set to enter the town of Srebrenica, the Bosniak leadership split the enclave's population into two groups. One group of about 25,000, comprised mostly of women, children, and the elderly, gathered at the U.N. base in the village of Potočari, where they hoped to come under U.N. protection and be evacuated. Most of these people were eventually bused by General Mladić's forces to Kladanj, a city in Bosnian government controlled territory to the north. During the evacuation, people were robbed and mistreated, an undetermined number of women were raped, and hundreds of men and boys—those who had opted to stay with their families—were taken by Serb forces and executed.¹⁴ The second group of between 12,000 to 15,000, comprised mostly of men of military age (fifteen to sixty years old), gathered in the northern part of the enclave near the village of Jaglići. Expecting to be killed if captured by the Serb forces, they intended to march in a long column to Bosnian government controlled territory around Tuzla fifty miles to the north.

Most of those who started the march from Jaglići failed to reach Bosnian government controlled territory. It is estimated that two-thirds of those on the march were either killed or captured by Bosnian Serb forces. Most of the people who were captured are believed to have been summarily executed.

Research Rationale and Methodology

During the course of the march from Jaglići to Bosnian government controlled territory, a large number of the marchers reported having suffered from hallucinations. Many of the survivors of the march concluded—either at the time or afterwards—that the Bosnian Serb forces had made use of a chemical warfare agent to disorient the marchers and create confusion among them.

In the weeks following the fall of Srebrenica, descriptions of the use of “chemical poisons” were reported by a number of different nongovernmental organizations, a U.S. government official, and foreign journalists.¹⁵ On the basis of these reports, Human Rights Watch decided to undertake a preliminary investigation. The chemical agent that became the focus of the investigation was BZ, a psychochemical incapacitant. (See appendix A.)

In February 1996, just over half a year after those terrible events, some of the persons who had been on the march from the Srebrenica enclave gave testimony to Human Rights Watch suggesting that some unusual munitions might have been used by the Bosnian Serb forces. Several of the marchers gave consistent descriptions of shells that

¹⁴ Human Rights Watch/Helsinki, “The Fall of Srebrenica” and “Report of the Secretary-General Pursuant to Security Council Resolution 1019 (1995).”

¹⁵ See Human Rights Watch/Helsinki, “The Fall of Srebrenica”; U.S. Committee for Refugees, “Special Issue: The Death March From Srebrenica,” *Refugee Reports*, vol. 16, no. 7 (July 31, 1995); John H. F. Shattuck, the U.S. assistant secretary of state for democracy, human rights and labor, in “U.S. Rights in Bosnia Official Is Told of Mass Killings,” *Baltimore Sun*, August 2, 1995; Michael Dobbs and Christine Spolar, “12,000 Muslims and a Trek Through Serb Killing Fields,” *International Herald Tribune*, October 27, 1995; and David Rohde, “Bosnian Serbs Poisoned Streams to Capture Refugees, Muslims Say,” *Christian Science Monitor*, October 24, 1995. Rohde later wrote a book about the events at Srebrenica in which he referred to reports by survivors about the possible use by Serb forces of a chemical agent: *Endgame: The Betrayal and Fall of Srebrenica, Europe's Worst Massacre Since World War II* (New York: Farrar, Strauss & Giroux, 1997), pp. 266-73.

had produced thick smoke that did not rise but spread out, and of people who, following exposure to this smoke, began to act strangely and hallucinate. The hallucinations appeared to be concentrated in the second half of the column and to have started generally during the afternoon and evening of the first day of the march, July 12. Most of those interviewed had either suffered from hallucinations themselves or observed them in others, or both.

As a result of these reports, Human Rights Watch decided to organize a separate investigative mission that would attempt to interview a larger cross-section of those who had fled from Srebrenica to determine if in fact they had been exposed to a chemical agent. In the spring of 1996, Dr. Alastair Hay, a toxicologist and reader in chemical pathology at the University of Leeds, designed a questionnaire based on a Canadian government sample questionnaire that had already been modified by Human Rights Watch in consultation with a number of chemical weapons experts (see Appendix B).¹⁶ In July 1996, one year after the events in and around Srebrenica, Dr. Hay, accompanied by Human Rights Watch researcher Ernst Jan Hogendoorn, traveled to Bosnia and Hercegovina to interview survivors of the march.

The thirty-five survivors interviewed by Human Rights Watch were identified and located through inquiries with people living in the displaced persons camps in the area, various Bosnian towns, as well as the Bosnian government's military barracks in Živinice. A number of interviews took place in these locations, as some survivors of the march were found to be there; others were tracked down and visited in the areas to which they had moved. Many of the survivors who had been interviewed during the preliminary investigation in February 1996 could no longer be located in July because much of the refugee population had meanwhile moved to other parts of Bosnia and Hercegovina in search of housing. All interviews were conducted at the interviewees' homes, places of work, or some other location of their choosing. Some of the survivors were interviewed more than once. All interviews were conducted in Serbo-Croatian.

Following the mission, Human Rights Watch conducted additional research into the allegations of chemical weapons use in Srebrenica. The findings on the basis of the thirty-five testimonies and additional research are presented below. Findings on the JNA's capability to produce chemical weapons were presented in a report, "Clouds of War: Chemical Weapons in the Former Yugoslavia," published by Human Rights Watch in February 1997.¹⁷

A Note on the Law

The ban on the use of chemical weapons, as codified in the 1925 Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and Bacteriological Methods of Warfare (1925 Protocol), is considered to

¹⁶ FOR THE CANADIAN SAMPLE QUESTIONNAIRE, SEE DEPARTMENT OF FOREIGN AFFAIRS, *HANDBOOK FOR THE INVESTIGATION OF ALLEGATIONS OF THE USE OF CHEMICAL OR BIOLOGICAL WEAPONS* (OTTAWA: GOVERNMENT OF CANADA, NOVEMBER 1995).

¹⁷ Human Rights Watch Arms Project, "Clouds of War: Chemical Weapons in the Former Yugoslavia." *A Human Rights Watch Short Report*, vol. 9, no. 5, March 1997.

constitute customary international law, applicable to all states regardless of whether they are parties to the protocol.¹⁸ The protocol is therefore applicable to all parties in the war in Bosnia and Hercegovina, and they must comply with its provisions. Moreover, Yugoslavia was a party to the protocol, and successor states are normally bound to the treaty obligations assumed by the predecessor state, unless such obligations are repudiated explicitly. As the Federal Republic of Yugoslavia has not indicated a desire to repudiate its treaty obligations, it remains a party to the 1925 Protocol.

¹⁸ See Theodor Meron, *Human Rights and Humanitarian Norms as Customary Law* (Oxford: Clarendon Press, 1989), fn. 188, pp. 68-69. The possession and use of chemical weapons is also prohibited under the 1993 Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction (the Chemical Weapons Convention, CWC), which came into force on April 29, 1997, after the war in Bosnia and Hercegovina. The CWC, which prohibits not only stockpiling and use but also the development and production of chemical weapons, has been signed and ratified by Bosnia and Hercegovina, Croatia, the Former Yugoslav Republic of Macedonia, and Slovenia, but not—as the only hold-out in Europe—by the Federal Republic of Yugoslavia (Serbia and Montenegro).

In the past certain countries, including the United States—which used massive quantities of tear gas in the Vietnam war—and some of its allies, have maintained that the 1925 Protocol does not ban the use of “riot-control” agents, like tear gas. The U.S., however, never intended to include chemical incapacitants like BZ in this apparent exception.¹⁹ Psychochemical incapacitants, because of their unpredictable and potentially harmful psychological effects, cannot be considered non-lethal agents suitable solely for “riot control.” From this it follows that any individual involved in planning to use, and using, a chemical incapacitant during the war in Bosnia and Hercegovina would have been in breach of the 1925 Protocol. The use of a BZ-type agent against a fleeing column of noncombatants, even if it included a number of combatants, could be considered a crime against humanity, i.e., an inhumane act of a very serious nature, including wilful killing, committed as part of a widespread or systematic attack against a civilian population. “Widespread” means that the acts are directed against a multiplicity of victims, while “systematic” means that they are carried out pursuant to a preconceived plan or policy.²⁰

Moreover, it would be an additional serious violation of humanitarian law to kill or wound unarmed men, or even soldiers who were rendered defenseless because of the incapacitating effect of a weapon such as BZ. According to Common Article 3 of the 1949 Geneva Conventions:

Persons taking no active part in the hostilities, including members of the armed forces who had laid down their arms and those placed *hors de combat* by sickness, wounds, detention, or any other cause, shall in all circumstances be treated humanely, without any adverse distinction founded on race, colour, religion or faith, sex, birth or wealth, or any other similar criteria.

Survivors of the march from Srebrenica reported that many people who appeared to be affected with what they referred to as a “chemical poison” were in no position to defend themselves. Whatever the cause of their incapacitation, these people would have been protected persons under international humanitarian law.

The international community has the responsibility and capability to investigate allegations of chemical weapons production and use. The U.N. secretary-general is charged by the U.N. General Assembly “to carry out investigations in response to reports that may be brought to his attention by any Member State concerning the possible use of chemical and bacteriological (biological) or toxin weapons...and to report promptly the result of any such investigation to all Member States.”²¹ Procedures for investigating such allegations were established in a report of the secretary-general in 1989.²²

Moreover, under the 1993 Chemical Weapons Convention (CWC), a new international agency, the Organization for the Prohibition of Chemical Weapons (OPCW), based in The Hague, is charged with implementing the provisions of the convention and providing a forum for consultation and cooperation among states parties to the treaty. The OPCW is also mandated to investigate allegations of chemical weapons production and use. Although the

¹⁹ The U.S., and also NATO, define a chemical agent as “a chemical substance, which, because of its physiological, or pharmacological effects, is intended for use in military operations to kill, seriously injure, or incapacitate humans (or animals) through its toxicological effects. Excluded are riot control agents, chemical herbicides, and smoke and flame materials. Chemical agents may be nerve agents, incapacitating agents, blister agents (vesicants), lung-damaging agents, blood agents, and vomiting agents.” Headquarters, Departments of the Army, the Navy, and the Air Force, *Treatment of Chemical Agent Casualties and Conventional Military Chemical Injuries*, FM 8-285, NAVMED P-5041, AFM 160-11 (Washington, DC: February 1990), p. 3-2.

²⁰ The Nuremberg Principles specify that all individuals involved in the commission of a crime against humanity, including its planning, will be held responsible. Charter of the International Tribunal, August 8, 1945.

²¹ United Nations General Assembly Resolution 42/37 C, November 30, 1987.

²² United Nations General Assembly, “Chemical and Bacteriological (Biological) Weapons: Report of the Secretary General,” A/44/561 (New York: United Nations, 1989).

OPCW does not have the authority to investigate claims concerning the purported use of chemical weapons prior to the date on which the CWC came into force (April 1997), it can by mandate investigate continuing allegations of chemical weapons development, production and stockpiling in the republics of the former Yugoslavia that have ratified the CWC. It can also, and should, urge the Federal Republic of Yugoslavia to accede to the CWC.

In the view of Human Rights Watch, any investigation of chemical weapons development, production, stockpiling, or use, carried out by the OPCW, the U.N., or individual states (for example, states that participate in the U.N. forces in the former Yugoslavia), needs to be transparent and impartial, and be held to rigorous international standards.

Recommendations

To the International Community:

- Investigate allegations that chemical weapons were used in Srebrenica or instruct United Nations agencies, e.g., the Organization for the Prohibition of Chemical Weapons (OPCW), the International Criminal Tribunal for the Former Yugoslavia, or the Office of the United Nations secretary-general, to do so. The investigation should include a sampling of clothing (especially leather parts) from bodies exhumed from mass graves in the Srebrenica area, as well as an analysis of documents, including transcripts of radio transmissions, available from the time of events (July 1995).
- Release all information on the development, production, stockpiling, and use of chemical weapons in the former Yugoslavia which the United Nations and its member states, including members of the Stabilization Force, may have in their possession. Encourage greater candor and transparency on chemical weapons use and proliferation.
- Urge the Federal Republic of Yugoslavia to accede to the 1993 Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction (the Chemical Weapons Convention), and link ratification and adherence to any further guarantees of security assistance. If the Federal Republic of Yugoslavia does not accede to the Chemical Weapons Convention, states parties to the convention should immediately suspend the sale to the Federal Republic of Yugoslavia of chemicals listed in Schedule I to the convention, and require end-use statements from the Federal Republic of Yugoslavia for chemicals exported to it that are listed in Schedules II and III, as required by the convention.
- Instruct the OPCW to monitor and inspect the implementation of the Chemical Weapons Convention by all the republics of the former Yugoslavia once these republics have ratified the convention. Ensure that the OPCW can operate in the countries of the former Yugoslavia freely and fully within its mandate.

To the Government of the Federal Republic of Yugoslavia (Serbia and Montenegro):

- Declare whether any chemical weapons were transferred to Bosnia and Hercegovina during the war. Investigate to determine whether Bosnian Serb forces used chemical weapons during the war, and make public the findings of the investigation.
- Accede to the Chemical Weapons Convention.
- Declare and destroy all stockpiles of chemical munitions and agents. Declare and dismantle all chemical agent production and filling equipment.
- Urge the Bosnian Serb leadership to declare and halt all production and development of chemical munitions, and declare and destroy all stockpiles of chemical munitions and agents.

To the Government of Bosnia and Hercegovina:

- Release all information about the possible use of chemical weapons in Bosnia and Hercegovina, including transcripts of Serb radio transmissions from July 1995.

To the Government of the United States:

- Investigate, as required by U.S. Public Law 102-182, the “Chemical and Biological Weapons Control and Elimination Act of 1991,” whether chemical weapons have been used in the former Yugoslavia. If a determination is made that chemical weapons were used, impose sanctions as mandated by P.L. 102-182.
- Release all information on the development, production, stockpiling, and use of chemical weapons in the former Yugoslavia which the United States government may have in its possession, especially the findings of investigations conducted into the allegations of chemical weapons use in Srebrenica which, according to U.S. officials, were carried out.

II. CHEMICAL INCAPACITANTS IN THE SERB ARSENAL

Before the breakup of Yugoslavia in 1991, the JNA's chemical weapons program produced the nerve agent sarin, the blister agent sulfur mustard, the psychochemical incapacitant BZ, and the irritants CS and CN, and turned these chemical agents into weapons. In addition, the JNA also produced the choking agent phosgene, the psychochemical incapacitant LSD-25, and the irritant chloropicrin, and experimented with laboratory quantities of the nerve agents soman, tabun and VX, the blister agents nitrogen mustard and lewisite, and the blood agent cyanogen chloride.²³

Most of the JNA's infrastructure, production capability, and expertise were inherited by the Federal Republic of Yugoslavia after the breakup of Yugoslavia in 1992. There are no indications that the Federal Republic of Yugoslavia has destroyed its stockpiles of chemical agents or disassembled its chemical agent production equipment since that time.²⁴ The Federal Republic of Yugoslavia has not acceded to the 1993 Chemical Weapons Convention, and the Yugoslav Army continues to maintain a significant chemical defense posture, despite the absence of an external chemical weapons threat.²⁵

Moreover, during the war in Bosnia and Hercegovina, the Bosnian government produced crude chemical munitions at a factory near Tuzla, according to a former Bosnian military officer and other sources in the former Yugoslavia. These sources assert that after the war, the Bosnian government stopped production of chemical munitions.²⁶ Bosnia and Hercegovina ratified the CWC on February 25, 1997.

²³ For more information, see Human Rights Watch Arms Project, "Clouds of War."

²⁴ Acknowledgment of the existence of the JNA's chemical weapons program is contained in a 1995 NATO-wide intelligence assessment of chemical and biological weapons programs in the former Yugoslavia, excerpts of which were obtained by Human Rights Watch; and in the U.S. Department of Defense, *Bosnia Country Handbook* (December 1995), pp. 6-32 to 6-33, a copy of which was obtained by Human Rights Watch under the Freedom of Information Act.

²⁵ The U.S. Department of Defense's 1995 *Bosnia Country Handbook* describes how the Yugoslav Army has special units dedicated to chemical warfare defense and trains individual soldiers in chemical detection and decontamination. U.S. Department of Defense, *Bosnia Country Handbook*, p. 6-33.

²⁶ Human Rights Watch interviews, Tuzla and Sarajevo, July-August 1996.

In the 1970s and 1980s, the JNA conducted extensive research on psychochemical incapacitants, and in 1981 produced and distributed a manual on the use of hand grenades filled with CS, a tear agent, and BZ, a psychochemical incapacitant.²⁷ This suggests that these weapons had been produced in some quantity at that time. Several sources indicate that the JNA continued to experiment with incapacitating agents during the 1980s, and it appears that at some point it started filling 82mm and 120mm mortar shells with BZ.²⁸ (See appendix A for a review of the characteristics of BZ and other chemical incapacitants). At least one source, Lt. Col. Zvonko Orehovac, the chief of the Department of NBC Defense at the Croatian Ministry of Defense, has claimed that “among combat toxins with nonfatal action, the former Yugoslav Army [had] decided on ‘CS’ from the group of irritants and ‘BZ’ from the group of psychochemical combat toxins. In order to install and employ them, hand grenades, toxic-smoke containers, rifle grenade projectiles, mortar rounds, and a shoulder mounted sprayer have been developed thanks to which these chemical weapons have attained the name ‘tactical chemical weapons for incapacitating and disabling people.’”²⁹

Doctrine

According to former JNA officers, high-ranking army officers were trained in the offensive use of chemical weapons.³⁰ Special JNA chemical and biological warfare units were trained to use chemical weapons and defend against CW attacks. The 1981 JNA manual on “special” BZ- or CS-filled hand grenades and CS sprayers and a 1988 JNA manual on CS-filled rifle-propelled “school” grenades both describe how and under what circumstances these agents should be used.³¹ According to the U.S. Department of Defense, JNA special operations teams were also trained to use toxic agents for sabotage.³²

²⁷ Yugoslav People's Army, “*Specijalne Ručne Bombe M79 I Leđni Raspršivač M1*” (Special Hand Grenade M-79 and Sprayer M-1), (Belgrade, 1981). The effects of BZ received a comprehensive review in a Yugoslav journal in 1974. N. ROSTIĆ, “PSYCHOCHEMICAL WAR CASES OF BZ TYPE,” *VOJNO-SANITETSKI PREGLED*, VOL. 31 (1974), PP. 393-96. (IN SERBO-CROATIAN.) IT IS UNCLEAR WHETHER THE CHEMICAL AGENT DESIGNATED BZ BY THE JNA IS THE SAME AS THAT STANDARDIZED BY THE U.S. ARMY IN THE 1960S. THE UNITED STATES DESTROYED ITS BZ STOCKPILE BECAUSE ITS EFFECT WAS UNPREDICTABLE AND IT WAS THEREFORE CONSIDERED UNRELIABLE AS A WEAPON.

²⁸ Human Rights Watch interview, Belgrade, March 15, 1997, and other interviews in the former Yugoslavia, March 1997.

²⁹ Zvonko Orehovac, “Incapacitant and irritant chemical weapons of the armed forces of the so-called Federal Republic of Yugoslavia.” *Hrvatski Vojnik* (Zagreb), vol. 4, no. 74 (October 7, 1994), pp. 49-52, translated into English by the U.S. Department of the Army, National Ground Intelligence Center (June 15, 1995), and obtained by Human Rights Watch under the Freedom of Information Act.

³⁰ This is based on conversations with numerous ex-JNA officers, both in Croatia and in Bosnia and Hercegovina. Most claimed that they did not know whether the JNA had possessed chemical weapons, but said that they had been told by their superiors before the breakup of Yugoslavia that they would receive chemical weapons from “friends” in case they were needed. It was unclear to them who these “friends” were, but they said they assumed that they might be either the Warsaw Pact or NATO, depending on which alliance were to invade Yugoslavia. Yugoslavia had long positioned itself as nonaligned between NATO and Warsaw Pact states, and its defense planning sought to anticipate an invasion by either alliance. Human Rights Watch interviews, Zagreb and Sarajevo, February-March and July-August 1996.

³¹ Yugoslav People's Army, “*Specijalne Ručne Bombe M79*”; and Yugoslav People's Army, *Tromblonske Hemijske Školske Mine M83* (Rifle-Propelled School Grenade M-83), (Belgrade, 1988). Both the Croatian and Bosnian armies possess multiple original copies of the 1981 manual. Concerning the term “school” munitions, apparently many chemical munitions in the JNA were designated this way to give the appearance that they were not intended for wartime use. Numerous western chemical weapons experts interviewed by Human Rights Watch said they had never heard of the use of CS-filled rifle-propelled grenades for training purposes.

³² U.S. Department of Defense, *Bosnia Country Handbook*, p. 6-18.

The JNA's 1981 manual is of particular interest in any investigation of claims concerning the use of BZ during the war in Bosnia and Hercegovina. It suggests the use of a chemical incapacitant to create severe mental confusion in a military formation in order to destroy its military cohesion, render it less effective as a fighting force, and facilitate the killing or capture of its members. According to the manual, a small dose of an incapacitating agent will affect memory, problem-solving capabilities, attention span, and comprehension; larger doses will destroy completely the ability to perform any task.³³

The JNA apparently thought that BZ could be used with little danger to its own troops, and might go relatively undetected, affording it plausible deniability in case accusations of the use of chemical weapons were to surface. To be sure, the manual suggests that the use of BZ be disguised, for example by mixing it with CS tear gas, lest the enemy forces realize at once that they are being attacked with a chemical incapacitant.

According to the manual, JNA doctrine suggested the use of BZ in the following situations:

³³ According to a U.S. military manual on the treatment of chemical agents, exposure to an anticholinergic incapacitant like BZ can produce a variety of symptoms, including "restlessness, dizziness or giddiness, failure to obey orders, confusion, erratic behavior, stumbling or staggering, vomiting, slurred or nonsensical speech, hallucinatory behavior, disrobing, mumbling and picking behavior, stupor and coma." Headquarters, Departments of the Army, the Navy, and the Air Force, *Treatment of Chemical Agent Casualties*, p. 3-2.

- **When a group is blocked** (Section 35): BZ should be used against a “blocked” group, i.e., a group that is pinned down and cannot maneuver, “[w]hen it is desired to exhaust the blocked group and bring them to a condition of mental confusion. Mental confusion should appear one hour after application of the bombs and should last several hours to several days. Then, appropriate action can be taken to capture, disarm or destroy the blocked group.”³⁴
- **In an ambush** (Section 41): “[BZ] is very effective for the ambush of a certain person or group, but not when there is an immediate need to capture or destroy the group, but rather to disable them for a later operation.”³⁵
- **In surrounding and destroying a group** (Section 45): BZ can be used to “destroy” a surrounded group “when it is unimportant that the task is accomplished immediately. Under these conditions the destruction, or capture, of the group which is surrounded should be attempted one or more hours after application of the [chemical agent], and after clear and positive signs of the effect of the chemical are registered (some of them may be shouting, coming out of the shelter, uncoordinated fire, etc.).”³⁶

The manual also warns that if BZ is used, “enemy individuals or groups should not be captured or destroyed immediately, because it can be expected that such individuals or groups will subsequently, under the effects of [this chemical agent], inflict great damage and losses on their own forces.”³⁷

Furthermore, Lieutenant Colonel Orehovac (see above) has stated that the Yugoslav Army’s nonlethal chemical weapons are “technically designed mainly for defensive combat operations, ambush, surprise raids, as well as for special psychological operations; under certain conditions they can also be used in offensive combat operations.” About the use of “tactical chemical weapons,” including BZ, he remarked that they can

by and large cause a series of negative effects on people and military formations, from toxicological to psycho-physical effects for an individual, and from disruption of planned speed and depth of attacking operations to provocation of panic and disorganization in command and control of the formation. In conditions of specific use of these weapons, such as the mixed use of weapons filled with CS and BZ, or BZ with other conventional rounds and grenades, against formations, logistical units and command points and such, it is possible to cause panic in the formation and violence among members of the formation itself as a result of the delayed psychological effect of the BZ.³⁸

³⁴ Yugoslav People’s Army, “*Specijalne Ručne Bombe M79*, p. 37. (Translated by Human Rights Watch.)

³⁵ *Ibid.*, pp. 38-39.

³⁶ *Ibid.*, p. 40.

³⁷ *Ibid.*, section 41, p. 39.

³⁸ Zvonko Orehovac, “Incapacitant and irritant chemical weapons.”

Using BZ in Srebrenica: A Scenario

It is conceivable that the Bosnian Serb leadership anticipated that the planned capture of the Srebrenica “safe area” might yield the kind of situation particularly well-suited to the effective use of an incapacitating agent like BZ. The attack on Srebrenica had been planned for quite some time. General Mladić, himself a former high-ranking JNA officer, reportedly consulted with a number of Yugoslav Army generals, including Gen. Momčilo Perišić, the Yugoslav Army’s chief of general staff, in the preceding month. (See chapter 1.) They would all have been familiar with the JNA doctrine for the use of a chemical incapacitant, and, if they anticipated any of the scenarios described in the 1981 JNA manual, it is possible they considered using BZ in Srebrenica.³⁹ Interestingly, in early July—right before the assault on Srebrenica—Nedeljko Pristojivić, chairman of the Military Council of Ilidža, alleged that Bosniak forces had carried out a chemical attack on two Serb-held suburbs of Sarajevo, Ilidža and Nedarići. Human Rights Watch has not been able to substantiate this allegation, but Pristoiyovich used it to make a threat, by saying: “This criminal act gives the Serbs the right to respond in kind.”⁴⁰

In planning the taking of Srebrenica, General Mladić, his counselors and staff would have calculated that, if the men from Srebrenica did not surrender, they had few avenues of escape. The thousands of Bosnian men could flee to Žepa, another U.N. “safe area” about thirteen miles distant, or they would have to undertake a fifty-mile trek through Bosnian Serb territory to Tuzla, which was under Bosnian government control. If they decided to march, it could be anticipated that the lightly armed group would head for Tuzla along a frequently used smuggling route that avoided Han Pijesak, General Mladić’s headquarters, and the main roads, which the Bosnian Serbs controlled with tanks, armored personnel carriers, and truck-mounted anti-aircraft guns. Given that the march would last a number of days, the Bosnian Serb leadership would have plenty of time to carry out its plan to intercept and destroy the escaping column.

The Serb military planners would further have calculated that because the terrain around Srebrenica is hilly and heavily forested, and counts only a few well-maintained paved roads, Serb forces would not be able to bring in their heavy equipment. Moreover, the U.N.-instituted no-fly zone also prevented them from using airplanes to bomb the column. The hills and the trees reduced both visibility and mobility, and placed Bosnian Serb troops at risk of ambushes (which did occur a number of times during the march) and flanking attacks. In this situation, a primary military goal would be to disrupt the column and break it into smaller groups that would be easier to capture and destroy, with minimum risk to their own forces. To accomplish this goal a chemical incapacitant would be an ideal weapon, precisely as suggested in the JNA manual.

In chapter 3 we present an account of the march based on the testimonies of survivors. In chapter 4 we conclude this report with a preliminary assessment of claims made by some of the marchers that a chemical incapacitant was used against them shortly after they set off on their trek to safety on that fateful morning of July 12, 1995.

³⁹ The use of a chemical incapacitant on other occasions during the war has been alleged a number of times by both the Bosnian Army and the Croatian Army. Because very few people claim to have been affected directly by such an agent, Human Rights Watch has not been in a position to investigate these allegations further.

⁴⁰ “Use of CW in Sarajevo,” *Krasnaya Zvezda* (Moscow), July 4, 1995.

III. THE MARCH OF DEATH

On Tuesday, July 11, when the fall of the enclave appeared imminent, its military leadership ordered the men of military age to assemble in the area of Jagličići, the northern-most part of the "safe area," about fifteen kilometers from the center of town. There they prepared for a fifty-mile march through Serb-held territory to Tuzla, the nearest area controlled by the Bosnian government. The acting military leader of the enclave was Maj. Ramiz Bećirović, who, according to many of the marchers, did not have firm control over the soldiers in Srebrenica.⁴¹

According to Major Bećirović, between 12,000 and 15,000 people assembled on the afternoon of July 11 to take part in the exodus.⁴² According to survivors, approximately half of the marchers were registered as soldiers in Srebrenica, most of whom had been conscripted after 1992. Of these, about 3,000 to 4,000 are thought to have been armed at the time of the march.⁴³ One of the survivors, Lt. Džemail Bećirović (not a relation of Maj. Ramiz Bećirović) reports:

All the men were in Jagličići. We sent the women, young boys, and old men to the camp in Potočari. Some of the women and girls who didn't want to be separated from their husbands and boyfriends stayed with the group.

There were about 12,000 to 15,000 people in Jagličići. We couldn't all leave at once. We had to make plans. So we contacted Sarajevo but they said they couldn't help us. We were on our own.⁴⁴

Departure

⁴¹ The military leader of the enclave, Naser Orić, and a number of high-ranking officers had been ordered to travel to the main part of Bosnia and Hercegovina under government control in April. They never returned to Srebrenica.

⁴² HUMAN RIGHTS WATCH INTERVIEW, ŽIVINICE, JULY 19, 1996.

⁴³ IN 1994, THE UNITED NATIONS PROTECTION FORCE (UNPROFOR) HAD ATTEMPTED TO DISARM THE SOLDIERS IN THE SREBRENICA ENCLAVE. ACCORDING TO MAJOR BEĆIROVIĆ, THIS WAS THE REASON WHY SO FEW OF THE MEN HAD WEAPONS. HE PUT THE NUMBER OF ARMED MEN AT ONLY ABOUT 500. HUMAN RIGHTS WATCH INTERVIEW, ŽIVINICE, JULY 19, 1996. According to Lt. Džemail Bećirović, the Dutch U.N. contingent returned the light weapons to the men of Srebrenica on July 11, as it became clear that the enclave would fall to Serb forces: "[That day] the Dutch returned our light weapons to us, but not our tanks and artillery. It was too late because the Serbs were already in town. When we saw that the air strikes were ineffective, we decided to withdraw to Jagličići." Human Rights Watch interview, Tuzla, July 20, 1996.

⁴⁴ Human Rights Watch interview, Tuzla, July 20, 1996. Lieutenant Bećirović had been a judge in Srebrenica, and was the officer in charge of morale during the march.

From testimonies it emerges that, after some initial confusion, the marchers set out in an organized and disciplined manner in the early hours of July 12, but that groups leaving later proceeded in a more helter-skelter fashion. The assembled column, with the leadership and most of the armed men in the front, started to leave Jagličići between midnight and 12:30 a.m. on July 12, and the main group set off at around 5 a.m. The last marchers left at approximately 1 p.m., a full twelve hours later. Front and rear ends of the column were able to communicate with each other via hand-held radios.

The column was able to progress only slowly. Because of concern about minefields, the marchers were required to walk in single file, allowing them to walk in one another's footsteps and avoid getting lost in the forest in the dark. Some held hands to facilitate their way. De-miners at the very front of the column cleared the path as they moved forward.⁴⁵

Following daybreak on July 12, the situation among those starting out later appears to have become more disorganized. According to Lt. Samir Delić:

I left Jagličići at 12:30 p.m. on July 12. I was in the rear. Many had left before me. The situation was very confused. People were leaving singly and joining the column. Others were warning of mines ahead. It was very crowded. Everyone wanted to leave as soon as possible. I remained with the group who left last. I was thinking for a while and I saw that no one was taking care of anything. I asked twenty of my colleagues if they wanted to come with me. They agreed. We passed several sections of the column.⁴⁶

The route taken by the majority of marchers is shown on a map drawn by one of the survivors of the march, an officer by the name of Memo Osmanović. According to Osmanović, the route drawn represents a rough approximation of the ground covered.⁴⁷ (See map.)

The first planned stopping point after Jagličići was a hill overlooking the village of Kamenica, some six kilometers into the journey. Marchers began to arrive at Kamenica Hill early on the morning of July 12 and remained in that area, spreading out along a series of hills, until dusk. According to Major Bećirović, the decision had been taken by the military leadership to allow the whole column to reassemble as a single group in the Kamenica area.⁴⁸

⁴⁵ In the words of Lieutenant Bećirović: "We planned who would cross first, who would break through the Serb lines and who would hold the rear. Since my commander and I knew the terrain well, we had the honor of breaking through the front lines....When the Serbs saw us, they opened the lines, perhaps because there were so few of them. We had to walk in single file because we went through a mine field." Human Rights Watch interview, Tuzla, July 20, 1996.

⁴⁶ Human Rights Watch interview, Seona, July 21, 1996.

⁴⁷ Human Rights Watch interview, Živinice, July 22, 1996.

⁴⁸ Human Rights Watch interview, Živinice, July 19, 1996.

The Serb Shelling Starts

Most of the front section of the column was able to reach Kamenica Hill without incident, but late in the morning of July 12 the Bosnian Serb troops, referred to as "Chetniks" by the Bosniaks, apparently located sections of the column that were still leaving the enclave and began firing rifles, mortars, anti-aircraft guns and artillery at the marchers, from positions on Rogač Mountain and another hill above Kravići.⁴⁹ Those who left Jagličić later in the morning report having been shelled almost constantly throughout the march to Kamenica Hill.⁵⁰ There are also reports that Serb forces used megaphones to call on the marchers to surrender, telling them that they would be exchanged for Serb soldiers held captive by Bosniak forces.⁵¹

Much of the shelling was inaccurate because the Serb forces were not able to identify the precise location of the column as long as it passed through forested areas. The shelling became lethally precise any time the column had to cross open ground. According to Capt. Zulfo Salihović, who had left Jagličić late in the morning of July 12, whenever the column crossed a clearing, "Chetniks started shelling inside the column. I saw the bodies of four people killed by a shell. It was about 4 p.m. on July 12. These were the first dead I saw. In this area many people had stopped to fill their plastic bottles with water. The Serbs then started with their heavy shelling."⁵² Another witness, Mensur Memić, reports

⁴⁹ This is according to Nedžib Budović, Capt. Zulfo Salihović, and Nijaz Masić. Human Rights Watch interviews, Bosnia and Hercegovina, July 20-24, 1996. From Mount Rogač, where they had artillery and mortar emplacements, Bosnian Serb forces had a commanding view of the whole area. According to Mr. Masić, "At 10 a.m. they started shelling us with mortars, and the first shell fell in a clearing under Kamenica Hill. The place is two or three kilometers from the hill. A few people were killed and wounded in the clearing. This mortar attack stopped the progress of the column for about two hours. No one passed. Because they were constantly shelling the hill, the rest of the column had to make a detour and took longer to reach us."

⁵⁰ This is the reported experience of Zulfo Salihović, Nedžib Budović, Ibro Huseinović, and Mensur Memić. Human Rights Watch interviews, Bosnia and Hercegovina, July 20-24, 1996.

⁵¹ Human Rights Watch interviews with Dr. Ilijaz Pilav, Vogošća, July 24, 1996, and with Nijaz Masić, Tuzla, July 20, 1996.

⁵² Human Rights Watch interview, Tuzla, July 24, 1996.

that during most of the day the shelling was intermittent, with shells landing every four or five minutes, but that in the evening the shells were falling at a deadly rate of every ten or fifteen seconds.⁵³

Many were injured or killed as they made their way to Kamenica Hill. Ramiz Masić, who had arrived safely in the area earlier in the day but went back with some thirty others to collect the wounded, reports that "it was a horrible sight. There were dead bodies all around."⁵⁴ Most of the victims appear to have been killed either by the blasts of the exploding shells or by shrapnel. According to a second witness, Senad Grabovica: "Most of the dead died from shelling. People had limbs missing."⁵⁵

Mohamed Matkić says he arrived at Kamenica Hill at 8:30 p.m.: "My part of the column was being shelled continuously. When we arrived at Kamenica, they were still shelling. The shells were falling all the time. The Serbs fired everything they had at us."⁵⁶

⁵³ Human Rights Watch interview, Tuzla, July 24, 1996.

⁵⁴ Human Rights Watch interview, Tuzla, July 3, 1996.

⁵⁵ Human Rights Watch interview, Tuzla, July 24, 1996. Other people apparently died from rifle fire.

⁵⁶ Human Rights Watch interview, Gornji Tuzla, July 19, 1996.

Around 8 p.m., when most of the marchers had finally reached the hilly area around Kamenica and the front of the column had already begun to move on, those still at Kamenica Hill were ambushed by Serb forces, who started shelling and firing from all directions. According to several witnesses, the ambush began with a loud noise, which Fahrudin Omerović described as a “loud wind” but which from other testimonies appears to have been the sound of a large tree crashing down.⁵⁷ As many of the marchers had been shelled en route to Kamenica Hill and as a result were very nervous, the ambush caused great panic and chaos.⁵⁸ Those who were armed returned fire, apparently at random.⁵⁹ All scattered.

Later in the evening following the attack, a group of men returned to the site of the ambush using cigarette lighters to light their way. There, they said, they found between eighty and ninety bodies. Captain Salihović reports: “We realized that the ambush had been set up at close range. They were using Zolja anti-tank weapons. I knew this because many people were burned. The shell, when it hits, burns everything around. These weapons have a range of 300 meters.”⁶⁰

Many people remained in the Kamenica Hill area for a number of days, unable to move on, the column having been cut in two where it crossed an asphalt road, with the remaining part’s escape route blocked by Bosnian Serb forces. It is likely that most of the people in the latter part of the column either were killed in the Kamenica area, or surrendered and were executed soon afterwards. Very few ever returned home, and the majority must be presumed dead. Those who managed to escape crossed the asphalt roads to the north or the west of the area.⁶¹ A number of them, including Kadrija Softić and Samir Delić, set out to walk to Žepa, another U.N.-protected “safe area.” The Žepa enclave fell to Serb forces a couple of weeks later, on July 25; Mr. Softić and Mr. Delić were forced to flee again, finally reaching Bosnian government controlled territory on September 11.⁶²

⁵⁷ Human Rights Watch interview, Živinice, July 20, 1996. Most marchers who had heard the crashing sound were unable to say what had caused the tree to fall down. According to Nijaz Masić, the tree was struck by a shell. Human Rights Watch interview, Tuzla, July 20, 1996.

⁵⁸ This was described in great detail by both Samir Delić and Zulfo Salihović. Human Rights Watch interviews, Seona, July 21, 1996, and Tuzla, July 24, 1996.

⁵⁹ According to Samir Delić, the Bosnian soldiers were “shooting in all directions.” Human Rights Watch interview, Seona, July 21, 1996.

⁶⁰ Human Rights Watch interview, Tuzla, July 24, 1996. The Zolja is a Belgrade-manufactured 64mm RBR-M80 light anti-armor weapon (LAW) that fires high-explosive anti-tank (HEAT) rounds in an operational range of 250 meters. Ian V. Hogg, editor, *Infantry Weapons 1994-95*, 20th edition (London: Jane’s Information Group, 1994), p. 354. Ekrem Salihović, who was in the middle part of the column that reached Kamenica Hill, reports that “the column was very long, and the Chetniks tried to cut off its rear, the last third. Then they allowed the first group to go on, the intention probably being to catch that group later on. When we tried to stop and help the last third of the column, we were unable to do this, as the Serbs were attacking us with infantry weapons.” Human Rights Watch interview, Živinice, July 19, 1996.

⁶¹ Human Rights Watch interview with Dževad Sinanović, Srebrenik, July 21, 1996. Ibro Huseinović says that it took him a full five days to get from Jagličići to Kamenica Hill, and that he spent most of the time wandering about, trying not to be detected. He then spent another two days near Kamenica Hill, finally finding a way across the Jadar river and on to Tuzla. Human Rights Watch interview, Tuzla, July 23, 1996. CLEARLY, NOT ALL OF THOSE WHO SUCCESSFULLY COMPLETED THE MARCH TO BOSNIAN GOVERNMENT CONTROLLED TERRITORY MANAGED TO REACH IT ON JULY 16, 1995. FOR SOME, LIKE MOHAMED MAJKIĆ, THE ORDEAL LASTED ALMOST THREE WEEKS, WHILE CAPT. ZULFO SALIHOVIĆ REACHED TUZLA ONLY AFTER THIRTY-TWO DAYS; FOR OTHERS, WHO DECIDED TO WALK TO ŽEPA, THE JOURNEY TOOK NEARLY TWO MONTHS.

⁶² Human Rights Watch interview, Tuzla, July 20, 1996. Another survivor, Mujo Tuzlić, walked directly to Žepa from Srebrenica. He reports that some 500 marchers who had tried to walk to Tuzla went to Žepa instead after they failed to cross the road between Kamenica Hill and Udrč, some arriving after wandering about for ten or fifteen days. When all were forced to leave Žepa after that enclave’s collapse, they all had to return to the Kamenica Hill area before proceeding to Tuzla. Human Rights Watch interview, Vousa, July 23, 1996.

The Long Trek to Safety

The front of the column had already left Kamenica Hill by the time the ambush occurred. As it prepared to move on at about 4:30 p.m. on July 12, its leaders sent out reconnaissance groups to scout out the route toward Burnice and then began to move at about 6 p.m. This forward group reached the main asphalt road, located roughly equidistant between Kasaba and Konjevići Polje, at about 11 p.m. Heading for Mount Udrč, the marchers crossed the road and subsequently forded the river Jadar. They reached the base of the mountain early on the morning of Thursday, July 13.

Here the column regrouped. Only an estimated 3,000-4,000 people of the original group that had left Srebrenica arrived in Udrč.⁶³

On the afternoon of July 13, sometime between 2 and 4:30 p.m., Serb forces located the column on Mount Udrč. At around 4 p.m., they fired several shells, which landed some distance from the marchers, prompting them to push on.⁶⁴

From Udrč the marchers moved toward the River Drinjaka and on to Mount Velja Glava, continuing as darkness fell and through the night. Serb forces fired at the column only occasionally. Finding a Serb presence at Mount Velja Glava, where they arrived on Friday, July 14, the column was forced to skirt the mountain and wait on its slopes until 4 p.m. before it was able to move on toward Liplje and Marčiči.

Arriving at Marčiči in the evening of July 14, the marchers were ambushed by Bosnian Serb forces equipped with anti-aircraft guns, artillery, and tanks.⁶⁵ According to Lt. Džemail Bećirović, the column managed to break through the ambush and, in so doing, capture a Serb officer. This prompted an attempt at negotiating a cessation in the fighting, but negotiations with local Serb forces failed.⁶⁶ Alija Jusić reports that, nevertheless, the act of repulsing the ambush had a positive effect on the marchers' morale.⁶⁷

⁶³ Human Rights Watch interview with Maj. Ramiz Bećirović, Živinice, July 19, 1996.

⁶⁴ Human Rights Watch interview with Nijaz Masić, Tuzla, July 20, 1996. For the reported nature of these shells, see below.

⁶⁵ Human Rights Watch interview with Maj. Ramiz Bećirović, Živinice, July 19, 1996.

⁶⁶ Human Rights Watch interview, Tuzla, July 20, 1996. Nijaz Masić names the officer as Zoran Janković. Human Rights Watch interview, Tuzla, July 20, 1996. Human Rights Watch was told by several sources that the officer was subsequently executed by the Bosniaks.

⁶⁷ Human Rights Watch interview, Živinice, July 22, 1996.

Early on the morning of Saturday, July 15, the column crossed the asphalt road linking Zvornik with Caparde and headed in the direction of Planinci, leaving a unit of some one hundred to 200 armed marchers behind to wait for stragglers.⁶⁸ It reached Križevici later that day, and remained there while an attempt was made to negotiate with local Bosnian Serb forces for safe passage through the Serb lines into Bosnian government controlled territory. According to Lt. Džemail Bećirović, the members of the column were advised to stay where they were, and to allow the Serb forces time to arrange for safe passage. It soon became apparent, though, that the small Serb force deployed in the area was only trying to gain time to organize a further attack on the marchers.⁶⁹

At this point, the column's leaders decided to form several small groups of between one hundred and 200 persons and send these to reconnoiter the way ahead. On the evening of July 15, a heavy hailstorm caused the Serb forces to take cover. The column's advance group took advantage of this to attack the Serb rear lines at Baljkovica. During the fighting, the main body of what remained of the column began to move from Križevici. It reached the area of fighting at about 3 a.m. on Sunday, July 16, just as the forward groups managed to breach the Serb line. Unable to move three captured tanks, they used them to fire into the Serb front line. Thus the column finally succeeded in breaking through to Bosnian government controlled territory—at between 1 p.m. and 2 p.m. on July 16. Only some 3,000 to 4,000 of the marchers who had left Srebrenica four days earlier arrived safely in Tuzla on that day.

“Strange Smoke”

A number of the marchers interviewed by Human Rights Watch report having been attacked with unusual shells that produced slowly spreading colored smoke rather than shrapnel on several occasions during the trek to Tuzla. Following these attacks, some of the marchers—the numbers are unclear—began to hallucinate and behave in an irrational manner. Most of those who are reported to have been thus affected apparently never reached Tuzla and could therefore not be interviewed; they are presumed dead.

It is not clear how many such attacks occurred, but from the available testimonies of survivors there appear to have been at least two, and perhaps three, distinct episodes: the first one on the first day, when a number of attacks including smoke-producing shells were reported in the Kamenica Hill area from the afternoon on and lasting into the evening; the second one in the same area on the second day, July 13; and a third one at Udrč on the second day of the march. However, the survivors' memories were often confused about exact times and locations, and the group that was most affected, the one bringing up the rear, yielded the fewest survivors.

The first such reported attack occurred in the afternoon of July 12. Nedžad Malik, who was in the rear section of the column that had not yet reached Kamenica Hill, describes what he saw, around 3:30 p.m.:

They used different shells. Some exploded, others gave out a strange smoke. I didn't notice all the details. I was running away. There were some shells which caused shrapnel, others which gave out smoke, and some duds. It was like when it rains. Shells were falling ten to fifty meters away. One dud fell just in front of my father. He was just lucky.

⁶⁸ This is according to Lieutenant Bećirović. Human Rights Watch interview, Tuzla, July 19, 1996.

⁶⁹ Human Rights Watch interview, Tuzla, July 19, 1996.

The shells that emitted smoke—at first I thought those shells were marking shells; they emitted black smoke and then it changed color, green and red....I was well equipped because my brother, who was a captain in Srebrenica, warned us and told us to take gauze, cloth, and food. As soon as I saw the shell, my father and I covered our faces and we started to run away.⁷⁰

Ibro Huseinović, who wandered around in the Kamenica Hill area for several days, reports that the column was shelled on the first day

...with regular shells and those that made people surrender. Fifteen minutes or half an hour after those shells fell people started shouting and wanting to surrender. The grenade gave out shrapnel and some blue-grey smoke. There was a fair amount of smoke. It rose like a mushroom—about three meters high and then spread.⁷¹

Mensur Memić, whose knapsack was struck by an anti-aircraft bullet on the morning of July 12, describes one shell which landed in the column, killing one man and wounding two others, sometime that day, and he refers to other shells that landed between seventy and a hundred meters away:

⁷⁰ Human Rights Watch interview, Vogošća, July 24, 1996.

⁷¹ Human Rights Watch interview, Banovice, July 23, 1996.

Those shells had no shrapnel. I didn't see any shrapnel. When it [the shell] landed I only heard a detonation and then I saw purple and yellow smoke. The smoke didn't rise in the air. It spread around at about the height of a man. It spread toward the column.⁷²

Samir Delić says that the ambush at Kamenica Hill caused great confusion, and included shelling with shells that "exploded, emitting a yellow smoke. I could see it. The shells were falling below me. They exploded with a low flash lasting three to four seconds. The smoke rose, and then I couldn't see it anymore...I don't think it came in my direction."⁷³

Mujo Salihović has described his actions when he noticed shells that did not explode but produced smoke as he was moving through a clearing on one side of Kamenica Hill around 11 p.m. on July 12. He says that he saw five shells fall but that more must have landed,

...because I heard them. I couldn't see anything [at that point], because I was lying down with gauze on my face. It was around 11 p.m.; it was dark. It looked like fog. It was spreading slowly and it went directly to a large group of people, a mix of soldiers and civilians. The smoke was coming toward me. When I saw there was no shrapnel and no deaths, I warned others that it might be poison. I had seventy pieces of gauze and gave these to others. They all lay down in a hollow. We were above the smoke. It was below us. The wind started to blow it uphill toward us. We lay on the ground and the smoke passed over us. We were lying down for about half an hour.⁷⁴

Other witnesses who were in the Kamenica Hill area at the time of the ambush have been unable to confirm these reports. Capt. Zulfo Salihović, for example, has described the impact of the shells as follows:

The detonations caused soil to be thrown up and smoke to rise. I did notice some strange smells, but I wouldn't know if it was because of the shells or just some mistaken perception on my part. All the shells falling around me were 82mm [mortar shells] causing shrapnel. I didn't pay attention to shells falling some distance from me.⁷⁵

Likewise, Mohamed Matkić, who was in the front section of the column, reports: "I haven't seen any unusual shells with a lot of smoke, nor did I talk to anyone who saw anything unusual prior to the arrival in Kamenica."⁷⁶ Ibro

⁷² Human Rights Watch interview, Tinja, July 23, 1996.

⁷³ Human Rights Watch interview, Seona, July 21, 1996.

⁷⁴ Human Rights Watch interview, Tuzla, July 20, 1996.

⁷⁵ Human Rights Watch interview, Tuzla, July 24, 1996.

⁷⁶ Human Rights Watch interview, Gornji Tuzla, July 19, 1996.

Hodžić, on the other hand, reports that from his vantage point on a hill overlooking the Kamenica Hill area, at some two kilometers' distance, he saw smoke there: "I thought it wasn't regular combat smoke. It hung around and seemed yellow and grey."⁷⁷ The fact that the ambush occurred as dark had just started to fall, when visibility was restricted, may account for these contradictory reports about events at Kamenica Hill.

Strange smoke was observed in the area of Kamenica Hill on July 13 as well, after the head of the column had already moved on. Senad Grabovica remained in the area for some time before proceeding to Žepa. On July 13, he says,

⁷⁷ Human Rights Watch interview, Tuzla, July 20, 1996.

when we were on the hill, a shell landed about forty meters away from me. It was red. It was different from the yellow ones of the day before. It had an unpleasant odor. I can't describe it. It irritated my throat...When the shell exploded there was much more smoke than dust. The smoke spread uphill. There wasn't a strong wind. It blew toward us. I put a bandage to my mouth.⁷⁸

A third attack with what were described as unusual shells is reported to have occurred on the second day of the march, around 4 p.m. on July 13, between Udrč and Baljkovica, a mountain north of Udrč. One witness, Nijaz Masić, claims that a shell, which landed some fifty meters from him, emitted smoke which did not rise, remaining at the level of a person's height. The shell exploded, but no one was hurt. According to Masić, smoke from the shell went toward some of the marchers and blew over a group of some fifty people. About thirty were affected by the shell and started hallucinating. The shell was "of a regular green color. The smoke emitted was of a dark yellow color."⁷⁹

Likewise, Ibrahim Ibrahimović reports that as he and others were on Udrč Mountain, at about 4 p.m. on July 13:

⁷⁸ Human Rights Watch interview, Tuzla, July 24, 1996. This was the only account Human Rights Watch was able to obtain of the possible use of an unusual munition causing strange phenomena in the Kamenica Hill area on the second day of the march, July 13. The account could not be corroborated.

⁷⁹ Human Rights Watch interview, Tuzla, July 20, 1996. According to Mr. Masić, "Some people later picked up pieces [of the shell]. Some said that this was a shell made to contain chemicals. On the shell was written 'Kruševac,' which is the name of a town in Serbia." Kruševac has been identified as a town in Serbia where chemical weapons were produced by the JNA—before the war but apparently continuing during the war. According to a U.S. intelligence document, "the production of chemical weapons is done at the factory 'Miloje Zakić' in Kruševac," south-east of Belgrade. The factory is said to produce four different types of chemical weapons: nerve gas (tabun, soman and sarin), plikavci, zagušljivci, and nadražljivci. (Untitled and undated document excerpts provided by the Defense Intelligence Agency to Granada Television, London, under the Freedom of Information Act, May 14, 1997. Similar information is contained in Gen. Zlatko Binenfeld, "Chemical Weapons Development Program," a paper distributed at a seminar on "National Authority and National Implementation Measures for the Chemical Weapons Convention" in Warsaw, Poland, December 7-8, 1993). This information was widely known within the intelligence communities on all sides in the Bosnian war in July 1995, and a number of marchers can be presumed to have known about this as well. Human Rights Watch was unable to verify whether Mr. Masić was aware of this information during the march, and has no corroborating testimonies.

Serb forces fired a shell at us. It landed about 300 meters away. It hit the mountain directly, and we saw the exact place where it landed. Yellow smoke was emitted, which I think is an example of chemical weapons. I said [at the time] that we should all move, as this seemed like chemical weapons, and we had no gas masks....The smoke was thick and yellow and it spread in a circle...but because it was windy, it blew away from us and dispersed....About 100-200 people were about twenty meters from the shell....They said that their eyes were stinging, and they called out for water.⁸⁰

No further reference was made to unusual munitions in descriptions of the journey from Udrč to Baljkovica, or from Baljkovica to Tuzla.

“People Acting Strangely”

⁸⁰ Human Rights Watch interview, Živinice, July 22, 1996.

Some of those present at Kamenica Hill at the time of the ambush in the evening of July 12 refer to the fear, panic and confusion that ensued from the surprise attack,⁸¹ while others, especially those in the rear section that reached the hill later in the day, like Ismet Hasanović, report that there was “something in the air” which seemed to have certain unusual effects on some of the marchers:

I think that they may have used tear gas because people were crying. I was sneezing and my eyes were irritated. Everyone was saying, ‘What is it?’ There was no coughing, only sneezing. I had never experienced anything like it before.⁸²

According to several witnesses, it was after the ambush that a number of the marchers gathered on the hill began to hallucinate and act strangely. Marchers in the front of the column later recounted receiving reports about hallucinations from the rear, which surprised them as they had not had any such experiences. Asim Omerović, for example, said: “As we approached the asphalt road [on the evening of July 12], information reached us that people at the back were hallucinating. We didn’t have that problem at the front. Soldiers coming from the rear told us...that close to Jagličić they were attacked with shells which emitted yellowish or reddish smoke.”⁸³

There are even earlier reports of hallucinations. Captain Salihović, who was one of the last to leave Jagličić on July 12, speculated that Serb forces had poisoned the water in the streams along the marchers’ route from which they were drinking. He described the experiences he witnessed in the afternoon of July 12 as follows:

About an hour after people drank water [from the streams], they began to act strangely. It was very hot. About half an hour after [they had drunk], I drank from the water as well. Another half hour or an hour later, I began to feel queasy in the stomach. At first I attributed this to the pace and the heat.

There was someone behind me—his name was Jurif Nukić—who was very strong. He was an economist, smart and rational. We were talking as we were walking and he [suddenly] started talking gibberish. I tried to talk to him but realized that this was impossible. He was acting as if he was talking to some of his friends who were already dead. These were people who had died some time ago.

At one point he left the column and started hugging a tree. He was acting as if it was his wife. He seemed to think his children were there. He was acting as if he was already in Tuzla...I approached him and slapped him a couple of times. But even that didn’t help. He left the tree, started shouting and began to walk in the direction of the Chetniks. I never saw him after that. We were all supposed to stay quiet, but he was shouting, acting crazily, and running up the hill toward the Chetniks.

According to Captain Salihović, as time passed on that day, the number of people acting in this manner grew in number:

⁸¹ This is according to Samir Delić and Fahrudin Omerović, among others. Human Rights Watch interviews, Bosnia and Hercegovina, July 20-24, 1996.

⁸² Human Rights Watch interview, Tuzla, July 19, 1996.

⁸³ Human Rights Watch interview, Crveno Brdo (“Red Hill,” above Lukavac), July 22, 1996.

There were very few people you could talk to normally. Most people were not normal. Most people wouldn't register what you would tell them. Most of them were very sleepy, showed no interest, and were very passive. I noticed this because I was walking around and trying to organize groups. There were very few conversations. They were acting as if they were already in free territory. It was very unusual. At first, I thought it was just exhaustion, but as we were sitting, people were also throwing up.

During this time, the shelling was intense, and increasing. The Bosnian Serb forces, Captain Salihović said, were firing conventional 82mm shells.⁸⁴

Nedžib Budović likewise reports unusual behavior among the marchers that first afternoon of the march: "There were some shells which landed three or four meters away from me. These were mostly mortar shells. Some of them were conventional shells, and some were shells that caused people to behave strangely. I didn't see what these shells looked like. People lost consciousness and control. I saw people do this."⁸⁵ Mensur Memić, who saw shells that produced purple and yellow smoke that day, says that "some time after this, the man walking ahead of me started talking gibberish."⁸⁶ Nedžad Malkić, who saw shells that produced strange smoke but managed to cover his mouth with cloth as he ran away, says that when he arrived at Kamenica Hill in the evening, "people couldn't get up. But this is impossible after just a day's walk. People couldn't be that exhausted after just a day's walk. Some would stay behind and catch up later."⁸⁷

Another person in the Kamenica area, Valid Osmanović, who both observed and experienced strange behavior after two shells fell that produced no shrapnel and injured no one but yielded a "yellowish smoke that spread horizontally, ten to fifteen meters away," says: "People in the column panicked a little, and someone said: 'It's poison.' Then we all ran away and covered our mouths." He found his brother who had been close to the impact of the shell. His brother got up and started to rip all the hair out of his head, was scratching himself, and tearing at his body and clothes, begging for water. He died sixteen hours later. Osmanović says that about twenty minutes after the shells fell, he saw several people kill themselves, while others were screaming and shouting, making unusual voices and sounds. "The smoke seemed to affect me also," he reports. "I suddenly started to feel very nervous and began to itch all over my body and face. I started to sweat and became very thirsty. Two hours later I fell into a stream. The water cooled me off, and I drank a lot of it. The water may have saved my life."⁸⁸

⁸⁴ Human Rights Watch interview, Tuzla, July 24, 1996.

⁸⁵ Human Rights Watch interview, Vousa, July 23, 1996.

⁸⁶ Human Rights Watch interview, Tinja, July 23, 1996.

⁸⁷ Human Rights Watch interview, Vogošća, July 24, 1996.

⁸⁸ Human Rights Watch interview, Tuzla, March 18, 1996.

Senad Grabovica refers to the strange behavior that followed an attack with shells that produced smoke that had an unpleasant smell and irritated his throat on the second day in the Kamenica Hill area, where he had remained before proceeding to Žepa:

Some people in our group concluded that it was poison and that we should put a cloth over our mouths....Those who didn't put something over their mouths in one to three minutes began to panic and scream. Some committed suicide, after five to ten minutes.⁸⁹

A number of people also experienced hallucinations after they reached Udrč, where the column regrouped. At around 4 p.m. on July 13, Serb forces located the marchers and began to shell them. According to Lt. Ibrahim Ibrahimović, one smoke-producing shell landed very near a number of the marchers (see above): "We set off immediately. We formed a column and left...I began to see changes and hallucinations in people twenty minutes after the detonation. People were talking and saying: 'Look at this town. Look at this flock of sheep.' They also started singing when we told them to be quiet." They also complained of stomach cramps and needed to relieve themselves. Some had diarrhea.⁹⁰

Maj. Ramiz Bećirović reports that there were people who were "foaming at the mouth" at Udrč in the night from July 12 and 13, one of whom he saw with his own eyes, though he did not know his name.⁹¹ Salih Mulalić says he saw two people with foam in their mouths shortly after the attack on Kamenica Hill on July 12.⁹²

A number of marchers apparently suffered repeated hallucinations over a number of days. In one case, on July 12, Ibro Huseinović, a primary school teacher who had been a soldier during the two years before the Srebrenica events, was struck by the shrapnel of a shell. He says he experienced a smell like that of rotten eggs shortly after he had been hit. The shrapnel wounded him in the thigh, penetrating to a depth of between two and three centimeters. His wounds bled freely, but he managed to stop the bleeding with his clothing: "I felt exhausted after this. We had to continue. If you stayed in the same spot for a while, you were shot. I had to move. I was exhausted. I was hungry, thirsty and exhausted. We were drinking water from streams. We had no food. I would hallucinate. The hallucinations occurred on the second, third, and fourth day, mostly at night. This lasted about three days."

⁸⁹ Human Rights Watch interview, Tuzla, July 24. He added: "But there were also Chetniks who infiltrated us and created panic."

⁹⁰ Human Rights Watch interview, Živinice, July 22, 1996. Asim Omerović also reported strange behavior among the marchers after shells fell in the Udrč area, but he did not see any unusual shells there. Human Rights Watch interview, Crveno Brdo, July 22, 1996.

⁹¹ Human Rights Watch interview, Živinice, July 19, 1996.

⁹² Human Rights Watch interview, Živinice, July 19, 1996.

According to Huseinović, he wandered about in the Kamenica area for a period of perhaps seven days. During this time, he did not act in a directed fashion. He was exhausted but remained conscious. He suffered from nausea but was never physically ill. He was unable to recognize people or to hear well. His breathing and heartbeat, he said, were both accelerated at the time.⁹³

Another survivor who suffered from hallucinations during the march was Nijaz Masić, a high school history teacher, who had witnessed shells that produced smoke near Udrč on the second day (see above). He was sweating profusely during the march, he said, and was drinking copiously. He was unable to sleep and eventually slept only with the help of a sedative.

His first hallucinations occurred at Kamenica on the first day, July 12, and he had a second bout of hallucinations on the second day, after the column had passed Udrč. He attributed these hallucinations to the possibility that he might have drunk poisoned water. According to his account, "I was drinking water constantly, but I drank water from [only] two wells, and I think these were poisoned. Others also drank from the wells, but not everyone drank. People would sometimes stop walking and refill their bottles. I filled up mine with two liters. Everyone who carried water hid it from the others." Then, he continued, "everyone was in Jošanica until 5 a.m. [on July 14]. Around midnight on July 13-14, the poison started to affect some. I mixed up one of our soldiers with the Chetniks, and started to strangle him. There were guys called Meholjić Hakija and Džemail [Bećirović] present. They took me away and it took them half an hour to convince me that this wasn't a Chetnik."

On the following morning, July 14, he said, he was given a sedative and he then fell asleep. Upon waking, he felt much better. Later that day, the column was ambushed by Serb forces, but the marchers managed to break through. From this point onwards, Mr. Masić required help from others, as he was unable to walk. Early in the morning of July 15, the column crossed a road. Mr. Masić reports:

We were ordered to run across the road. The guys carrying me were frightened and dropped me in the road. I lost consciousness. I felt as though I was dreaming—that I was in a museum with small statues that had water coming out of them. There were vineyards above the statues and these had water in them. I tried to drink the water. I woke at 10 a.m. and I was in Križevacke Livade. I presumed that I had been carried there.

I woke up and was given another tablet, which helped me to sleep for a further three hours. It was the same kind of pill. That time I was dreaming about a lot of blood and the Chetniks beating us.

Mr. Masić then reports that on the evening which followed the hailstorm on July 15:

⁹³ Human Rights Watch interview, Banovice, July 23, 1996.

We were traveling the whole night and arrived at a point two kilometers from where there was fighting, and at 4 a.m. I lost consciousness again. I don't remember but people said I was jumping around and yelling at people. I was spitting at them, yelling that they were Chetniks. People didn't know what to do with me. I was asking for help.⁹⁴

This witness was hospitalized in Tuzla for a period of four days, after the column had managed to break through the Serb lines. He was diagnosed as suffering from nervousness and from minor physical injuries.⁹⁵

Other witnesses also described having experienced hallucinations. Maj. Ramiz Bećirović reports that there were inadequate supplies of water for the marchers, so they filled their water bottles whenever they came across a stream. The hot weather contributed to what he describes as his "great thirst." Then, "at one time, possibly on July 14, I saw water. I tried to drink it, but it wasn't there. On the night of July 14-15, I saw castles and towns." Major Bećirović claims that he had never hallucinated before. When he told others that he had seen water, they in turn told him that there was none present. He describes the castles which he saw as, "like those in a horror movie, lonely and dark."⁹⁶

⁹⁴ Human Rights Watch interview, Tuzla, July 20, 1996.

⁹⁵ His account was corroborated by Lt. Džemail Bećirović, who witnessed the events Mr. Masić described. Human Rights Watch interview, Tuzla, July 20, 1996.

⁹⁶ Human Rights Watch interview, Živinice, July 19, 1996.

Another soldier who took part in the march, Ekrem Salihović, reports that: “On the second day [July 13], I saw an unarmed Chetnik two meters away from me—but he wasn’t there. At one time I had a buzzing in my ears. When I tried to clear my head, it disappeared.”⁹⁷

Yet a third soldier, Fadil Hotić, reports being trapped in an area which was patrolled by Bosnian Serb forces. He was trying to avoid detection. On the second day of the march, July 13, he began to hallucinate: “I saw the Serbs. We saw only their feet. We couldn’t see their uniforms. They were shouting: ‘This is the Serb line—get out!’ We didn’t see their equipment. Here I started hallucinating. At one point I saw a Serb graveyard with flowers. [I had these hallucinations] only from time to time. It happened to others as well. They were also hallucinating. One of them was Bajro Mehmedović, who kept calling me by the name of his brother. Every time he talked to someone, he mistook him for his brother. This was on July 13. We had had no sleep.”⁹⁸

Others began to hallucinate toward the end of the march. Lieutenant Bećirović, for example, reports that at that point he started having hallucinations every time he closed his eyes. He did not mention this to others, he said, because people around him were saying that they would be caught by the Serbs and would die. According to Lieutenant Bećirović, “On the road, I lay down and closed my eyes. I was seeing a town, not woods. I couldn’t speak about this as I was an officer—in charge of morale. I was seeing towers and buildings in front of me. Because of this I didn’t want to close my eyes.”⁹⁹ Mensur Memić, who had observed people with hallucinations on the first day of the march, reports that toward the end of the journey the hallucinating he witnessed got worse: “At Križevacke Njive [during the heavy storm], the biggest problems occurred. People were going crazy. There were a few cases of suicides and murders.”¹⁰⁰

Lt. Kadrija Softić escaped from Kamenica Hill with about thirty others in the direction of Žepa. He says that one person in his group, Radžo Muminovic, complained that he was suffering from hallucinations and from a sensation of pressure in his chest. He appeared to think that every tree or bush was a Chetnik. Muminovic had these hallucinations for a number of days, during which period he was occasionally lucid but ate or drank very little. He would vomit immediately after taking in food. According to Lieutenant Softić, the man recovered after about three or four days.¹⁰¹

⁹⁷ Human Rights Watch interview, Živinice, July 19, 1996.

⁹⁸ Human Rights Watch interview, Tuzla, July 21, 1996.

⁹⁹ Human Rights Watch interview, Tuzla, July 20, 1996.

¹⁰⁰ Human Rights Watch interview, Tinja, July 23, 1996.

¹⁰¹ Human Rights Watch interview, Tuzla, July 29, 1996.

The Doctors' Experiences

Three of the five medical doctors who were on the march to Tuzla, all of whom were in the front section of the column, also report having experienced hallucinations, and observing hallucinations in others.¹⁰² One of them, Dr. Fatima Dautbašić, recalled that people, some of whom she had known in Srebrenica, were acting “strangely” and in an unrecognizable way on the first day of the march:

Until we reached Kamenica Hill, my part of the column was not fired on. I was hearing loud detonations behind me. On Kamenica Hill I noticed that people were acting strangely when the first wounded arrived. I explained this as panic symptoms. People were very restless. It was impossible to calm them down. They had the characteristic face of someone in a state of panic, with scared eyes. Most people had protuberant eyes. People were pale.

“These conditions,” she said, “were occurring with greater frequency as the march continued. There are a lot of cases where I saw people commit suicide—in my vicinity at least four or five people”:

The husband of the head nurse of our hospital, who was in the column, killed himself by activating a hand grenade. He wounded about ten others. It surprised me very much because he had been walking with his brother. Early in the morning I passed by him when they were resting. His brother was exhausted and he was helping him wash his face.

¹⁰² Srebrenica’s five doctors all decided to join the march, fearing that Serb forces would treat them as soldiers if they decided to join the civilian evacuees at Potočari, and realizing that the marchers might be in great need of medical expertise. Human Rights Watch was able to interview three of the five doctors: Dr. Fatima Dautbašić, Dr. Ilijaz Pilav, and Dr. Avdo Hasanović.

At about 6 o'clock that evening I heard the detonation, and when we jumped up they said that Kemo had been killed. When they said it was him, I said it was impossible, it must be his brother. But it was true, it was him. It could happen in a flash, like that.¹⁰³

A second doctor, Dr. Ilijaz Pilav, was also near the front of the column that had already left Kamenica Hill by the time Serb forces ambushed the marchers still assembled there. He reports that the [noise of the] firing on Kamenica Hill was terrifying. His section of the column was also fired on, but the principal firing was directed at Kamenica Hill behind him. Total panic ensued.¹⁰⁴ Night was falling, and in the situation of general chaos, hallucinations started to occur. Dr. Pilav described some of those in his vicinity as being in a normal state at one moment, and then suddenly losing their self-control. He states that, "those who had weapons were firing without control. There was a general feeling of 'no way out.'"

According to Dr. Pilav, some of the people who were acting strangely had probably marched with him from Kamenica: "At Kamenica some people joined me who had not been with me from the beginning [at Jagličići]. They arrived on the hill after I had already arrived there. Until Kamenica, everything was happening so fast. Every time Serbs called out to us on the megaphone there was an eruption of hallucinations."

It was at such moments that suicides occurred. Dr. Pilav witnessed some of these: "Three friends hugging each other, and one pulling the [pin from the hand] grenade and killing them all is a horrible sight, one you cannot ever forget."

Dr. Pilav also described some persons who had been wounded in the shelling at Kamenica behind him and were brought to him for treatment:

They brought me two men who had no wounds at all. They looked like psychiatric cases. They were young boys between twenty and twenty-five years of age. They couldn't tell me their names. Their faces were deformed. They couldn't walk. I knew both personally.

One has survived. He stayed with me [after Kamenica], and after two days with me he regained his senses. Until then, his main thought was how to kill himself. He didn't faint, but he wasn't connected with reality. He was saying: "Please call my wife, she's in the next room," and "I want to go to the bathroom," and "Bring me a bed, I want to sleep here." These were examples.

Dr. Pilav says he could not remember whether these two men were physically ill. The one who survived, he reports, was at first unable to walk, but after a day he could walk with help, and another day later he was able to walk unaided.

¹⁰³ Human Rights Watch interview, Zenica, July 24, 1996.

¹⁰⁴ Dr. Pilav described the scene as follows: "We were escorting the wounded in the front of the column, and had to take care of them. As we were also being fired at, some people were wounded twice, and some of those transporting them were wounded as well. Some of these we had to leave behind. Even today it is hard to say what we should have done at the time. In those moments—as a human being—there is an urge to save one's own life. Brother would leave brother. Father would leave son, and son would leave father. Everything was broken up. No one knew what was going on or where to go."

Dr. Pilav also reports that, after the attack on Kamenica Hill and the days which ensued, hallucinations occurred on a mass scale: "Most hallucinations occurred at night, but as time passed they occurred with increasing regularity during both day and night. Later on I can't recall how many people had hallucinations."¹⁰⁵

A third doctor, Dr. Avdo Hasanović, also reports having experienced hallucinations during the march. (See chapter 4).

¹⁰⁵ Human Rights Watch interview, Vogošća, July 24, 1996.

IV. THE USE OF A CHEMICAL AGENT IN SREBRENICA: AN ASSESSMENT

As described in chapter 2, the former Yugoslav People's Army is known to have been equipped with grenades and other munitions containing the hallucinogen BZ, and to have developed doctrine for its use, which depended on the strength of the opposing forces, where they were, and how they were deployed. Effectively used, BZ would force any persons who were hidden to betray their presence by coughing and sneezing as a result of their exposure to smoke spreading from an exploding munition. They would also be likely to betray their presence by their behavior. The full effects of BZ would start after approximately one hour or later and would be observable in that affected persons would start acting in an unpredictable way.

The Yugoslav military doctrine envisaged the use of a number of so-called diversionary agents in an ambush, including CS gas (a potent tear gas) and possibly also chemical agents similar in nature to BZ.¹⁰⁶ The apparent thinking behind the mixing of BZ (or a BZ-like compound) and CS in an attack was that the victims would be led to believe that they were being attacked with CS gas only, the effects of which they knew to be light and of short duration. Their concerns about exposure to the gas would therefore be lessened, and they also would not be prepared for the kind of effects that BZ, or a BZ-like compound, would produce in a person after some time had passed. According to the doctrine, the use of an incapacitating agent on an armed group during an ambush would facilitate the capture of large groups, which would be disoriented and cease to be an effective fighting force. The doctrine notes that the ideal place for the use of such munitions would be where escape opportunities for those attacked were limited, for example ravines, bridges, narrow streets, or similar places.

Given that the column marching from Srebrenica passed frequently through woodland areas and as such was often not visible to Bosnian Serb forces, the circumstances might have been conducive to the use of a wind-borne agent that would spread out over the area where the marchers were suspected of being and cause disorientation among those affected by it. The disorientation might result in some individuals revealing their presence and in this way allowing Bosnian Serb forces to direct their fire more accurately at the column. Generally, the chemical agent would create mayhem in the ranks, with those affected acting in a most irrational manner, thereby facilitating their killing or capture.¹⁰⁷

¹⁰⁶ According to a U.S. intelligence document, "To produce an agent-obscuring cloud, an irritant chemical agent (usually a riot-control agent) is added to a neutral obscurant mixture composed of a neutral obscurant agent, a fuel, and an oxidizer. After the disseminating device is ignited, the high temperature causes the irritant agent to sublime and disperse with the smoke. Known irritant agents include: Three-quinuclidinyl benzilate (BZ), adamsite (DM), chloro-acetophenone (CN), chloropicrin (PS), etc." U.S. Defense Intelligence Agency, "Nonlethal Chemical Effectors Worldwide," in *Nonlethal Technologies—Worldwide (U)*, a Defense Intelligence Reference Document (May 1995), p. 30, obtained by Human Rights Watch under the U.S. Freedom of Information Act. BZ, in its pure form, is an aerosol or white powder.

¹⁰⁷ Human Rights Watch also has in its possession a copy of a Yugoslav civil defense manual which describes the effect of a variety of chemical warfare agents, and notes the dangers of an enemy's poisoning of water sources such as wells. *Obrana i Zastita*, pp. 144-45. (The copy was in poor condition; its title page with some of the relevant reference information was missing.)

Some Question Marks

Some of the testimonies concerning strange smoke and bizarre behavior do indeed suggest that something out of the ordinary may have happened in Srebrenica. Yet it would be wise to question at least some of the evidence that emerges from the testimonies.

A number of the persons interviewed by Human Rights Watch described circumstances in which they observed explosions of munitions that apparently did not release much, or any, shrapnel. Instead the shells broke into sizable chunks upon impact, indicative of the absence of an explosive like TNT (present in a standard high-explosive shell), and released smoke that, rather than rising straight up into the air, spread out in a mushroom-like cloud. The reports of bizarre behavior following the sightings of these shells would suggest a possible connection between the two.

On the other hand, it could be supposed that the shells (or at least some of them) may have been ordinary smoke shells, which are frequently used in warfare for marking purposes during daytime conditions. There would have been nothing unusual per se about the use by Serb forces of shells containing smoke to signal the location of the column, which at times moved through dense woods, to the Serb batteries seeking to fire high-explosive shells and other munitions at the marchers.

Moreover, some of the descriptions of the smoke's behavior should be approached with skepticism, as visibility was restricted at the time of some of the events in question, either because they occurred at dusk or at night, or because of the wooded terrain through which the column passed. However, if in fact such shells were used at night, as indicated for example in the testimony of Mujo Salihović (see chapter 3), this would have been unusual, as smoke is less useful as a marker at night than alternative flare-type agents such as phosphorus. Moreover, the design of regular smoke shells makes smoke rise, not spread out.

In addition to difficulties with the physical identification of munitions and their manifestations upon explosion, the accuracy of the marchers' recollections should also be approached with caution. One year after the Srebrenica death march, when survivors were interviewed, they still vividly remembered the terror and trauma they had suffered. Understandably, though, there are limits on the level of detail one might reasonably expect a person who suffered such an experience to recall a full year later. The primary concern of everyone involved in the march was to escape, not to document the experience. It is likely, for example, that some of the details that might have been helpful in determining whether a chemical attack occurred had been forgotten by the summer of 1996. These include such apparently trivial information as, for example, the marchers' physical condition and their need to urinate and defecate at the time.

To this should be added the role that the marchers' prior knowledge of the existence of chemical weapons in the Federal Republic of Yugoslavia's military arsenal might have played. The possible expectation that Serb forces might use chemical weapons may have led to hasty conclusions about the nature of munitions actually used during the march. Moreover, a number of the military officers among the marchers who had served in the JNA may have been aware of the existence of the manuals describing the doctrine for the use of BZ, cited above. Some of those interviewed asserted that the Bosnian Serb forces had used chemical weapons *in order to disorient the marchers*, adding their own analysis to their observations.¹⁰⁸ At the same time, it would be difficult to ascribe the hallucinations to a mass hysteria induced

¹⁰⁸ The expected use of chemical weapons may also affect the victims' behavior, even if no chemical weapons are used in reality. In 1985, a battalion of the French Foreign Legion stationed in Corsica prepared itself for an exercise during which it was to be exposed to a water vapor simulant of a chemical warfare agent, administered during an attack. The soldiers were briefed extensively about the nature of the exercise. A single plane was to be scheduled to pass above the troops, at low altitude, and water vapor was to be emitted in the place of a chemical gas. The trainees were not warned that the water vapor was to be replaced with an inert red substance.

It is recorded that, immediately following the discharge of this inert material, even those legionnaires who were most experienced in combat situations were severely shaken by the experience. It was believed that a tragic error had taken place, and the troops scattered in confusion. Many of the legionnaires fell to the ground, apparently writhing in agony. Their symptoms appeared to be like those which might be expected following a genuine chemical attack.

Some of the individuals affected during this incident appeared to be close to death, although their problems were of

by the marchers' belief that their adversary was using chemical weapons, as not all those who described their hallucinations to Human Rights Watch claimed that chemical weapons might have been used, or even showed any awareness that the Bosnian Serb forces might have had that capability.

Prior knowledge about Serb capabilities may also explain the contradictory information collected by Human Rights Watch about the reported presence among Serb forces of another item associated with the use of chemical weapons: gas masks. One witness, Kadrija Softić, a lieutenant in the Bosnian army, says that at around 2 p.m. on July 13 he saw about a dozen Serb soldiers wearing "side-mounted gas masks" near the bodies of marchers who had died in the clearing near Kamenica Hill that had been the site of a major attack the previous day and possibly the site of a second attack on July 13 (see chapter 3). The clearing was some 300-400 meters away from him, and he says he observed them through binoculars.¹⁰⁹

psychological origin and not due to exposure to any actual chemical agent. The remaining troops either panicked and ran from the site, or else they stood still, as if waiting for death. This exercise demonstrated in a vivid fashion the reaction of the most disciplined of soldiers in circumstances when they believed themselves to be the victims of an attack with chemical weapons. R. A. Gabriel, "Les armes chimiques," in R.A. Gabriel, editor, *Il n'y a plus d'héros: folie et psychiatrie dans la guerre moderne* (Paris: Albin Michel, 1990), p. 54.

¹⁰⁹ Human Rights Watch interview, Tuzla, July 20, 1996. Another soldier, Samir Delić, also an army lieutenant, who was with Lieutenant Softić at the time, says that when he used the same binoculars immediately after Lieutenant Softić had made his observations, he did not see any Serb soldiers wearing gas masks, and that he had wondered at the time whether Lieutenant Softić might have been mistaken. Human Rights Watch interview, Seona, July 21, 1996. The details of the event as recounted by Lieutenant Delić differ from those provided by Lieutenant Softić in other respects as well. According to Lieutenant Delić, they obtained the binoculars on July 14, not July 13, and from where they were at that time, they could not even see Kamenica Hill. When re-interviewed, Lieutenant Softić stated that he stood by his original statement, reaffirming that he had indeed seen Serb

No other witnesses interviewed by Human Rights Watch claimed that they had seen Serb soldiers wearing or carrying gas masks.¹¹⁰ One witness, though, Ramiz Masić, who had been in a party which returned to Kamenica Hill to rescue some of the wounded, said that he found plastic bags on the ground with blue cloths in them. These cloths, he said, would have been intended for cleaning gas masks, and would have been kept in the bags along with the masks. He also said that he had pointed out the presence of the cloths to his comrades at the time, and had remarked to them that the Serb forces were always well-equipped because they carried gas masks with them.¹¹¹

Yet despite this inconclusive and sometimes apparently contradictory information, the fact remains that a combination of strange sightings and aberrant behavior occurred during the march that remains unexplained. Witnesses, often not acquainted with one another and interviewed separately, have told by and large consistent stories about what happened to them and their comrades during their trek to safety. They must be taken seriously.

In addition to questions about the nature of the strange shells, the smoke that these shells produced, and the accuracy of the marchers' recollections of these phenomena, the nature and causes of the critical element in the possible use of BZ—hallucinations—have also defied definitive resolution in the Srebrenica case. The march from Jagličići on the periphery of the Srebrenica enclave to safe territory around Tuzla was a terrifying experience for those involved, who were at a distinct disadvantage: They were ill-equipped for this type of journey, lacking basic necessities; and they

soldiers wearing gas masks: "I was looking through the binoculars. I saw Chetniks for two or three minutes. I didn't talk to anyone [about this at the time] because I thought it would create panic among the others. We borrowed the binoculars from a boy called Husnija....I'm not even certain now that I'm sitting here, but I'm 98 percent certain that I saw them wearing gas masks. Samir [Delić] was doing something else when I was looking through the binoculars. During these few days, Samir wasn't behaving completely rationally." Human Rights Watch interview, Tuzla, July 23, 1996.

¹¹⁰ It is worth noting that agents such as BZ, according to a U.S. military handbook, are likely to be "dispersed by smoke-producing munitions or aerosols, using the respiratory tract as a portal of entry. The use of the protective mask, therefore, is essential." Departments of the Army, the Navy, and the Air Force, *NATO Handbook on the Medical Aspects of NBC Defensive Operations, AMedP-6* (Washington, D.C.: 1973), part III, p. 6-2.

¹¹¹ Human Rights Watch interview, Tuzla, July 3, 1996. Mr. Masić also said: "At that time I wasn't thinking that chemical weapons had been used. I was laughing at [the Chetniks], as a gas mask seemed an unnecessary burden. In the former Yugoslavia, every citizen was given a gas mask....In the JNA I practiced wearing gas masks. In all these situations the cloths were with the masks, so I couldn't have mistaken them. The use of these cloths is in case your mask doesn't fit well, and if the eye piece gets fuzzy, you can use the cloth to clean it."

were under constant pressure from Serb forces, with little or no opportunity to sleep. Many were in a fragile mental state. Many experienced what they described as hallucinations.

The marchers themselves offered various theories about what had caused the hallucinations which they had experienced themselves or observed in others: attacks with chemical shells by Serb forces, poisoned water sources along the route, and the cumulative impact of a combination of stress and a shortage of food, water and sleep. Regardless of the cause, one pattern emerged starkly from the marchers' testimonies—that there had been two distinct types of hallucinations: one, predominant during the first two days of the journey particularly among those exposed to direct shelling attacks by Serb forces, and which was accompanied by erratic and aggressive behavior; and the other, manifested throughout the trek to Tuzla but increasing in preponderance as the journey wore on, which was more akin to the experience of having visions or illusions.¹¹²

The Doctors' Interpretations of the Unusual Phenomena

The testimony of three of the doctors who were on the march is very important in determining what happened because, while not one of them is an expert on the phenomenon of hallucinations and its possible causes, all three were particularly well-qualified, as medical practitioners, to describe the symptoms which they observed in the persons who appeared to suffer from hallucinatory behavior, and to distinguish between the different types of hallucination.¹¹³ Dr. Fatima Dautbašić, for example, contrasted the hallucinations she had observed in others with the more common form that she herself had experienced: "Every one of us had minor hallucinations, particularly when we came out of the woods into the light. I saw roofs of houses. I attributed this to sleep deprivation."

By contrast, she said, "the people who had real hallucinations, they were shouting and acting aggressively, very strongly so. They couldn't recognize their surroundings and were acting as if they didn't recognize any one of us." She attributed the hallucinations from which many of these other marchers suffered to extreme stress. She explained that conditions had been bad even before the fall of Srebrenica, and that

¹¹² Many of the marchers report having seen visions toward the end of their ordeal. Some individuals observed stairways and castles in the air. These visions appear to have been commonly encountered when there was a change in the conditions of the light. This could occur when people marched out of the woods into a clearing, or when the reverse happened. Some of these later episodes appear to fit into the category of visual illusion. Other episodes as described are more like hallucinations.

The difference between illusion and hallucination is often not understood. Illusion is a tendency to misjudge, for example the length of a vertical or horizontal line when it is set in a particular visual context. In contrast, the sensory deception in hallucination involves a much greater degree of misperception which, according to one review, "is based on an apparently internally generated stimulus, which has major consequences for the individual's immediate experience, his behavior and his future circumstances." P. D. Slade and R. P. Bentall, *Sensory Deception: A Scientific Analysis of Hallucinations* (London: Croom Helm, 1988), p. 51.

¹¹³ All three were in the front section of the column and therefore did not themselves experience directly the heavy shelling that took place around Kamenica Hill in the late afternoon and early evening of July 12.

even at the beginning of the trip people were off balance. I and all the others were aware of how dangerous the journey was going to be, and what we would have to go through. The psychological pressure was considerable even at the beginning, and it lasted the whole journey. You can imagine what you might expect would happen, and when things happen and they are what you imagined, it makes things really bad, especially because at the very beginning of the route, everything terrible started.

Some people, she said, had hallucinations on the first full day of the march, whereas none had occurred in Srebrenica in the preceding days.¹¹⁴

Dr. Ilijaz Pilav had an experience similar to that of Dr. Dautbasic. During the four days before the column left the Srebrenica enclave, he had been working constantly in the operating theater, tending to those who were wounded during the Serb assault. He did not sleep during those four days. According to Dr. Pilav:

I was surprised how well I felt for the first four days of the march. When we started I didn't think I would last through. After four days I had a crisis. But it was for a short time. I had a hallucination. It wasn't a real hallucination. Maybe it was just the effect of a change of scenery, and fear and exhaustion.

We were walking on a wild trail and suddenly we had to turn left into the wood and it was twilight. The wood was very big. The trees were huge, and as I was entering the woods I was completely calm. Immediately after I entered the woods I saw buildings and a stairway that I should go down. I stopped and realized that it couldn't be real.

It scared me because things were happening to me which were happening to others. I knew that my brain was functioning well, but my eyes saw something different. I stopped, and I also stopped the first guy next to me and asked him what he could see. He told me that he could also see buildings. So I stepped aside from the column and closed my eyes.

After a few moments I opened them and I saw that I was in the woods. There were no buildings and there was no stairway. Later on when I talked to others I found that many had these visual effects. Mostly they had these 'hallucinations' when they went from light to dark. Consider that we were very thirsty. So I think that the visual effects were what people wanted to see.

I don't link these effects to the use of chemical weapons, in contrast to the first hallucinations. In these cases, including mine, there was no aggressive behavior, no suicides, and people recovered very quickly. We need to distinguish between [phenomena] caused by exhaustion, fear and hunger, and, in my opinion, those caused by some kind of poisons.

About the earlier hallucinations, Dr. Pilav noted that there was "one indisputable fact: The number of hallucinations increased after each Serb attack." He also theorized about the possibility of the Serb forces poisoning water sources along the marchers' projected route:

We knew that there were large parts of the march where we had no water, and when we came to water we didn't check to see if it was clean or if someone was standing in it. After this, the number of hallucinations increased. I thought about this later on, but not at the time.

¹¹⁴ Human Rights Watch interview, Zenica, July 24, 1996.

....After [the Serbs] realized where we were going, it is possible that some springs were poisoned. Not everyone drank at every spring, because we didn't all pass the same spots....What made me come to this conclusion in the last days before we reached Tuzla, and particularly the last night, was that it was increasing in intensity.

The symptoms in one particular case, referred to above, Dr. Pilav specifically ascribed to some form of chemical poisoning.¹¹⁵

A third doctor, Dr. Avdo Hasanović, made a similar distinction between the two types of hallucination. He reports having witnessed the behavior of many soldiers who appeared to suffer from hallucinations and were unable to orient themselves, and who were mistaking those around them for Bosnian Serb soldiers. According to Dr. Hasanović, many of those thus affected eventually surrendered.

He says he thought it extremely odd that so many people were affected in that particular way, and speculates that, had the Serbs attacked at that time, everyone could have been killed. Perhaps, Dr. Hasanović says, Bosnian Serb forces put "chemical poisons" in the water along the route that had caused psychological effects among the marchers. He remembers drinking water and noting that it had an odd taste.

Dr. Hasanović himself experienced hallucinations on the fourth night of the march. He describes seeing a huge building with lights and a feeling that he needed to sleep.¹¹⁶

Alternative Explanations for Hallucinations

From the interviews it is not possible to identify the number of individuals who suffered from serious hallucinations, including psychotic episodes leading to bizarre, even aggressive behavior. It is evident that there were some who hallucinated on the first day on which the column marched. These were not persons who had shown other signs or symptoms prior to this behavior. Had an agent such as BZ been used on the column, it is reasonable to expect that larger groups of individuals would have displayed this aberrant behavior. However, it is possible that the wooded terrain may have limited the movement of any chemicals that could have been present in the air.

Moreover, had an agent such as BZ been used, some if not all of those affected could be expected to have suffered from a range of *physical* symptoms (nausea, increased heart rate, decreased sweating, and blurred vision, among others) before the onset of delusional complaints. Yet there are no reports that these individuals had this combination of symptoms after the attacks and before they began to have hallucinations. On the other hand, it is difficult to rule out that there might not indeed have been some physical symptoms of this nature in those who subsequently began to hallucinate. Such symptoms might have been minor compared to the hardship of the journey generally and the disorientation caused by the hallucinations, and therefore may not have been remembered as clearly one year after the events. As for the doctors on the march, who might have observed such symptoms, they were

¹¹⁵ Human Rights Watch interview, Vogošća, July 24, 1996. The case is that of two men, one of whom survived, who were unable to tell the doctor their names and who couldn't walk. The person in question was saying things like: "Please call my wife; she's in the next room." (See chapter 3.)

¹¹⁶ Human Rights Watch interview, Tuzla, August 3, 1996.

extremely hard pressed and unable to tend to all in need. According to Dr. Dautbašić: "There were far too many injured, including those who were hallucinating, for us to be able to help them all. We tried to help them."¹¹⁷

¹¹⁷ Human Rights Watch interview, Zenica, July 24, 1996. Dr. Dautbašić also said that she and her four medical colleagues had very limited supplies of medicine during the march. These included a few ampules of antibiotics and a few tablets of analgesics (painkillers) and sedatives. This was quite inadequate for the treatment many of the marchers required.

It should be noted that there is a distinct possibility that an incapacitating agent other than BZ—but in its effects resembling BZ—was used. The use of such an agent might not result in the types of physical or psychological symptoms that are triggered by exposure to BZ. A U.S. military manual, for example, states that “some anticholinergics are capable of causing marked disorientation, incoherence, hallucinations and confusion (the pathognomonic features of delirium) with very little, if any, evidence of peripheral autonomic effect (such as tachycardia and dilated pupils).”¹¹⁸

There are also questions about the nature of the hallucinations: According to at least one expert, calming talk would not have reduced, even temporarily, the effect of hallucinations induced by a BZ-type agent.¹¹⁹ Dr. Dautbasic reports that individuals who were very agitated and who experienced hallucinations had, at times, to be physically restrained by friends who also talked to the affected individuals to calm them down. In some cases she administered sedatives which, she says, had some effect: “The tablets didn’t help in the acute phase when they were shouting and being [hyper-]active. Only restraint helped at this stage. After we talked to them and calmed them down, the sedatives

¹¹⁸ The manual goes on to say: “This should not dissuade the medical officer from considering the likelihood of a centrally predominant anticholinergic being the causative agent, since very few other pharmaceutical classes can produce delirium in militarily effective doses.” Departments of the Army, the Navy, and the Air Force, *NATO Handbook*, part III, p. 6-2.

¹¹⁹ Letter from Dr. Jan Willems, professor of toxicology at the University of Ghent, Belgium, to Human Rights Watch, October 14, 1996. The matter has yet to be adequately researched, but it appears that the content of hallucinations is greatly influenced by the culture in which individuals find themselves and by the historical period in which events take place. G.L. Belenky, “Unusual Visual Experiences Reported by Subjects in the British Army Study of Sustained Operations, Exercise Early Call,” *Military Medicine* (October 1979), pp. 695-96; and A. Briere de Boismont, *Hallucinations: On a Rational History of Apparitions, Visions, Dreams, Ecstasy, Magnetism and Somnambulism* (Philadelphia: Lindsay and Blakiston, 1853), p. 27. According to Slade and Bentall, “It seems reasonable to assume that even when hallucinations are caused primarily by biological factors, their content may reflect important psychological concerns or conflicts.” (Slade and Bentall, p. 51). Hallucinations may also consist of what individuals would wish to see. For example, miners trapped underground have reported seeing stairways and other routes of escape. *Ibid.*, p. 88.

began to work. What really helped them most was having someone next to them to talk to them and calm them down.”¹²⁰

One possible explanation for the occurrence of hallucinations is stress.¹²¹ Clearly, for most of those interviewed, the march was an extremely stressful experience, conducted under physically demanding conditions. The need to escape and not be detected by Bosnian Serb forces placed great strains on those who were marching.

¹²⁰ Human Rights Watch interview, Zenica, July 24, 1996. Earlier in the interview, Dr. Dautbašić stated: “People were very restless. It was impossible to calm them down.” Dr. Ilijaz Pilav described the treatment of a young medical student who began hallucinating after having been wounded in both legs. The student had not lost any blood. Dr. Pilav administered painkillers, and these stopped the student’s pain but did nothing to stop the hallucinations. Human Rights Watch interview, Vogošća, July 24, 1996.

¹²¹ According to one expert who reviewed the information collected by Human Rights Watch, “my overall impression is that four different factors may have contributed to the terrible suffering endured during the march from Srebrenica: PTSD [post-traumatic stress disorder], sleep deprivation, water deprivation, and an incapacitating psychoactive chemical agent. None of these are mutually exclusive.” Letter from Dr. Matthew J. Friedman, professor of psychiatry and pharmacology at Dartmouth Medical School and executive director of the National Center for PTSD, to Human Rights Watch, March 3, 1997.

Investigations by clinicians attending Israeli soldiers who fought in the war in Lebanon in 1981 revealed a wide spectrum of symptoms and behaviors in those who were diagnosed as suffering from combat-stress reaction (CSR). CSR victims were anxious, depressed, apathetic, unresponsive, tense, and/or phobic. An inability to concentrate, a lack of understanding or ability to communicate, and forgetfulness were also documented in the casualties. Observed physical symptoms included heavy perspiration, vomiting, nausea, headaches, dizziness, palpitations, tics, and tremors. The victims' behavior was highly variable. Some became listless and were found gazing into space. Others displayed symptoms of restlessness and irritability. Some expressed rage out of proportion to any provocation that might have been offered. There were others who became unduly concerned about the state of their equipment. Those affected reacted badly to any rumors which they heard, and were vulnerable to panic.¹²²

In addition to stress, the cumulative impact of food, drink, and sleep deprivation has been offered as an explanation for the strange behavior that afflicted many of the Srebrenica marchers. Most of the marchers were totally unprepared for the arduous journey which they were compelled to undertake. Many were exhausted, forced to march for many days with little food, water, or sleep.¹²³ This condition was further exacerbated by the constant presence of Serb forces.

Many witnesses report having been extremely thirsty and obtaining supplies of water whenever they encountered streams or wells. Because of the shortage of water, most of the marchers gave little thought to hygiene and

¹²² Z. Solomon, *Combat Stress Reaction: The Enduring Toll of War* (New York and London: Plenum Press, 1993), pp. 30-31.

¹²³ According to Dr. Fatima Dautbašić, one of the five medical doctors on the march: "No one had enough food. We couldn't predict how long the journey would take, and even so we couldn't carry that much food with us." Moreover, she said, many had thrown away the little food they were carrying when they were forced to run to avoid the shelling. Human Rights Watch interview, Zenica, July 24, 1996. By contrast, Asim Omerović opined: "I think the lack of food didn't cause these problems, because 70 percent of the people [who made it all the way to Tuzla] had enough food." Likewise, he said, "We rested during the day. In my opinion, we had more than enough time to rest. I saw others who slept during the day. I personally never hallucinated. I had enough food en route. I didn't use all my sugar and salt. I was eating very little. I had bread with me but didn't eat it all; I shared it with others." Human Rights Watch interview, Crveno Brdo, July 22, 1996.

water quality. In these circumstances, they drank water which they would not consider fit to drink under normal circumstances.¹²⁴

Food and water deprivation are generally recognized as being conducive to the experience of hallucinations.¹²⁵ The degree of deprivation appears to be crucial to the onset of the condition. Vision, hearing, and the supporting nervous system are reported to remain relatively unaffected by severe undernutrition.¹²⁶ Hallucinations may occur when death from starvation approaches, or where any organic basis for the phenomenon is present. Numerous reports document hallucinations in survivors of shipwrecks where there is the threat of starvation, together with the fear associated with a sudden calamity. The transition from relative security to a hazardous existence may trigger severe psychic trauma.¹²⁷

¹²⁴ Human Rights Watch interviews with Maj. Ramiz Bećirović, Živinice, July 19, 1996; Samir Delić, Seona, July 21, 1996; and Dr. Fatima Dautbašić, Zenica, July 24, 1996.

¹²⁵ See E. Lomax, *The Railway Man* (London: Jonathan Cape, 1995), and Slade and Bentall, *Sensory Deception*.

¹²⁶ A. Keys, et al., *Biology of Human Starvation* (Minneapolis, MN: University of Minnesota Press, 1950), vol. I, p. 581.

¹²⁷ *Ibid.*, vol. II, pp. 767-836 and 905-18.

Sleep deprivation can also cause an individual to hallucinate. When deprived of sleep, it has been shown that even the most disciplined of soldiers can be prey to visual illusions or full-blown hallucinations, and the longer someone is deprived of sleep, the greater the tendency to hallucinate. In subjects who are deprived of sleep but are also required to carry out activities, it appears that an interaction occurs between the two, the physical activity appearing to sensitize subjects to the onset of these perceptual distortions.¹²⁸ From the evidence presented by the marchers, it is clear that some went without sleep for a period of several days before they set off on the march, and then didn't sleep much, if at all, during the five-day trek.¹²⁹

On the other hand, the hallucinations appear to have started generally during the afternoon and evening of the first day of the march, July 12, when exhaustion, and the symptoms associated with it, could be expected to have been less severe than later on during the journey. Moreover, not all marchers suffered from hallucinations, even if their overall experience during the march was similar to that of others who did. Lieutenant Ibrahimović, for example, who has described the explosion of a smoke-producing shell at Udrč (see chapter 3), did not attribute the hallucinations he witnessed in others following the impact to exhaustion and the stresses of the journey under constant enemy fire: "I'm sure that it wasn't because of exhaustion. I was exhausted and others were too. In the six days [that it took to reach Tuzla] I slept for only two hours. I didn't behave like this. I never hallucinated. Among the first 200 men at the head of the column, none that I know of hallucinated."¹³⁰

In another example, Nedžib Budović, who spent eighteen days wandering in the area between Srebrenica and Tuzla before reaching safety, remarked on the condition of himself and a handful of companions that "none of the thirteen in my group behaved strangely. Our group had no food. We didn't rest much, and in this situation you shouldn't [allow yourself to] fall asleep."¹³¹

Likewise, a policeman who was on the march, Mehmed Efendić, noted that most of those who had suffered from hallucinations had also been very sleepy. But, he said, in December 1992 he had been part of a group which had traveled for five days from Tuzla to Srebrenica. Although the members of this group had not slept or eaten very much, he said, they did not experience any hallucinations.¹³² Other witnesses who were able to describe hallucinations

¹²⁸ Slade and Bentall, *Sensory Deception*, p. 88. See also H. Babkoff, "Perceptual Distortions and Hallucinations Reported During the Course of Sleep Deprivation," *Perceptual and Motor Skills*, vol. 68 (1989), pp. 787-98.

¹²⁹ Human Rights Watch interview with Dr. Ilijaz Pilav, Vogošća, July 24, 1996. For contrast, see the interview with Asim Omerović above.

¹³⁰ Human Rights Watch interview, Živinice, July 22, 1996.

¹³¹ Human Rights Watch interview, Voussa, July 23, 1996.

¹³² Human Rights Watch interview, Tuzla, August 3, 1996.

occurring to those around them stated that they themselves had remained free of the experience, even though, they said, they had gone for days without sleep.¹³³

¹³³ This was reported by Kadrija Softić, Nedžib Budović, Mohamed Matkić, Ismet Hasanović, Samir Sokolić, and Dr. Avdo Hasanović. Human Rights Watch interviews, Bosnia and Hercegovina, July-August 1996.

Intriguingly, Bosniaks fleeing the town of Žepa two weeks later did not report any similar phenomena during their respective trek to safety. Žepa was a smaller U.N. enclave in eastern Bosnia and Hercegovina, deep in Bosnian Serb controlled territory. It was attacked in force immediately after the fall of Srebrenica.¹³⁴ When Bosnian Serb forces overran Žepa on July 25, 1995, the town's defenders tried to escape to an area near Kladanj in Bosnian government controlled territory in a multi-day journey. During their march, these men endured conditions similar to those faced by the men from Srebrenica, including constant enemy presence (though not much shelling), and a lack of food, water, and sleep. They did not march in one large column but traveled in smaller groups. None of the eight men from Žepa interviewed by Human Rights Watch reported experiencing hallucinations or seeing people behave strangely on their journey. They were also unaware of any other men from Žepa who had experienced hallucinations or behaved strangely during the trek, they said.¹³⁵

Of course, the behavior of Israeli soldiers in Lebanon or of the survivors of shipwrecks may not at all be comparable to that of the Srebrenica marchers. One expert who reviewed the testimonies collected by Human Rights Watch commented that "I have been involved with many individuals coming from combat and stressful battlefield situations, but have never encountered so many specifically described hallucinations."¹³⁶ A second expert contacted by Human Rights Watch remarked likewise that "the kind of disorientation, bizarre hallucinations (hugging trees etc.), and suicidal behavior recorded in these documents and testimonials are not the kind of symptoms usually associated even with the most severe acute traumatic stress reactions. The high prevalence of disorientation, hallucinations, and suicidal

¹³⁴ Shortly after the fall of Žepa, the *New York Times* reported that a number of soldiers from the former U.N. enclave claimed that they had been attacked with an incapacitating gas during the siege of the enclave in the days prior to its collapse. Chris Hedges, "Bosnia Troops Cite Gassings at Žepa," *New York Times*, July 27, 1995. Subsequent efforts by Human Rights to locate these soldiers were unsuccessful. Many soldiers and civilians from Žepa did give detailed and consistent descriptions of the use, during the siege, of munitions filled with tear gas, presumably CS. Human Rights Watch interviews, Bosnia and Hercegovina, August 1996. See also "U.S. Takes Seriously Reported Serb Poison Gas Use," *Reuter*, July 27, 1995, quoting State Department spokesman Nicholas Burns.

¹³⁵ Human Rights Watch interviews, Bosnia and Hercegovina, August 1996.

¹³⁶ Electronic mail message from Dr. Brian Davey to Human Rights Watch, November 22, 1996.

behavior among the refugees from Srebrenica suggests that PTSD [post-traumatic stress disorder] and other stress reactions (even if present) cannot account for these symptoms.”¹³⁷

A Preliminary Assessment

On the sole basis of the testimonies that Human Rights Watch was able to collect from Srebrenica survivors, the use in Srebrenica of an incapacitating chemical warfare agent, which might cause hallucinations, cannot be ruled out, but conclusive evidence remains elusive.¹³⁸ Although we had hoped to be able to obtain a clear result from the interviews with the refugees, we recognize some of the problems of relying on an interview sample of only thirty-five individuals, while we lack physical samples, for example pieces of clothing taken from the bodies of those who failed to reach safety. Most of the persons interviewed were in the front portion of the column and were therefore not subjected to the intense bombardment of those in the rear. The rear of the column was shelled constantly after the marchers had left Jagličići, and was exposed to particularly heavy shelling on Kamenica Hill, including shelling that yielded “strange smoke” and was followed by “people acting strangely.”

It has to be remembered that probably more than two-thirds of those who set out on the march are still missing. In all likelihood, these individuals met their deaths during the journey or after their capture by Bosnian Serb forces. These were people in the rear of the column, and those subjected to the heaviest shelling. It is reasonable to assume that those most afflicted with aberrant behavior at this time would have been the least likely to have been able to continue on their journey unaided, and are therefore the most likely to have been killed or captured—and then executed—by their pursuers. Whether those who did not survive the march were more likely to have been victims of the use of chemical agents cannot be known with certainty from the testimonies of the survivors.

For a more truly representative cross-section of the marchers, we would have had to interview more of those who were in the second half of the column. Tragically, there are very few of these people alive and thus available for interview. If this had not been the case, there might have been clearer evidence of the types of munitions used and the type of hallucinations experienced during the earlier part of the march.

Other avenues of investigation, which Human Rights Watch did not have the resources to undertake, may provide clues to throw further light on the situation. Additional information obtained by Human Rights Watch—apart from the testimonies—and by other parties is suggestive that a chemical agent may have been used in Srebrenica, warranting a further investigation.

¹³⁷ Letter from Dr. Matthew J. Friedman, professor of psychiatry and pharmacology at Dartmouth Medical School and executive director of the National Center for PTSD, to Human Rights Watch, March 3, 1997.

¹³⁸ According to Dr. Jan Willems, “the picture drawn from the interviews, characterised by the occurrence of strange behaviour and hallucinations, cannot be used as firm proof, before a court, that a chemical warfare agent, *in casu* BZ, has been used.” Dr. Willems continued, however: “It can never be excluded that some individuals have indeed been exposed to BZ and, because of the major psychiatric effects, forgot the minor physical disturbances.” Letter from Dr. Jan Willems, professor of toxicology at the University of Ghent, Belgium, to Human Rights Watch, October 14, 1996.

The United States government became aware of the allegations of BZ use at least as early as August 1995, when the assistant secretary of state for democracy, human rights, and labor, John Shattuck, reported on a visit to Bosnia and Hercegovina that “there were many credible accounts of the shelling of large columns of civilians attempting to flee, and four separate accounts of the possible use of chemical weapons that severely disoriented fleeing people, causing several to commit suicide.”¹³⁹ Human Rights Watch subsequently met with a number of officials in various parts of the U.S. government, none of whom agreed to speak for attribution, but who told Human Rights Watch that we were “on the right track,” and who were able to provide additional information. From these sources, as well as from documents obtained under the U.S. Freedom of Information Act, we know that:

- A small team of U.S. military personnel interviewed a number of Srebrenica survivors in the summer of 1996, concluding that their accounts supported the contention that a chemical incapacitant had been used. This conclusion, which was sent up the chain of command at the Department of Defense, was deemed “highly significant.”
- The U.S. undertook a larger investigation that included physical sampling in late 1996 or early 1997. (Human Rights Watch does not know the results of this investigation, nor can confirm that it actually took place.)
- In late 1996 or early 1997, the U.S. intelligence community had information suggesting that chemical weapons might have been used in Srebrenica in July 1995. (Human Rights Watch was unable to confirm this information.)
- The U.S. was aware that the JNA had been involved in modifying BZ and investigating the effects of other incapacitating agents.
- The U.S. was aware that the pre-breakup Yugoslavia had a sizable chemical weapons program. This program was detailed, for example, in a 484-page intelligence document of April 1994, which includes a list of the persons suspected of being involved in the program.¹⁴⁰ Most of this program (facilities, equipment, and experts) is now understood to be in the Republic of Yugoslavia.

There may be other types of evidence available in the former Yugoslavia. One of the marchers, Maj. Šemsudin Mumilović, the chief of the intelligence service attached to the Bosnian army's 28th division in Živinice, told Human Rights Watch that

¹³⁹ This report is contained in a cable, no. 194772 160138Z, by Mr. Shattuck to the U.S. Department of State on August 16, 1995, obtained by Human Rights Watch under the Freedom of Information Act. Mr. Shattuck's findings were also reported in the U.S. media, for example: “U.S. Rights Official in Bosnia Is Told of Mass Killings,” *Baltimore Sun*, August 2, 1995.

¹⁴⁰ U.S. Army Intelligence and Security Command, Foreign Science and Technology Center, *Guide: Former Yugoslav Chemical Warfare Program (U)*. Most of the text was deleted from the copy obtained by Human Rights Watch under the Freedom of Information Act. See also, Human Rights Watch Arms Project, “Clouds of War.”

we followed everything that happened during those days [of the march] with our surveillance equipment....Most of the data we got was from listening to Serb communications.... We found out from their communications that in Konjeviće Polje, Nova Kasaba, Udrč, and Kamenica they used tear gas and psychochemicals during ambushes. According to the information we received, the aim of the Serbs was to break up the column into smaller groups.¹⁴¹

According to Major Mumilović, the tapes were transcribed and then re-used. He thought the transcripts would still be available, but an extensive search and specific requests to the Bosnian government by Human Rights Watch yielded no results. None of the information provided by Major Mumilović concerning the content of Serb radio transmissions could therefore be confirmed.

Experts have also stressed that definitive proof of the use of a chemical agent will only come from sample evidence, for example pieces of clothing or footwear—worn by those who perished in the area—that are found to contain traces of BZ or BZ degradation products.¹⁴² Some research of this sort has already been carried out, but on a small scale, using an unrepresentative sample. In July 1997, the United Nations Centre for Human Rights reported the results of the work of a forensic expert team from Finland. The team, which was charged by the U.N. High Commissioner for Human Rights in 1996 with the task of locating, identifying, and studying the remains of ostensible war victims from the Srebrenica area, with the aim of establishing the cause of death, additionally agreed to collect a few samples of clothing, especially leather, from some of the bodies it had exhumed after Human Rights Watch had alerted it to the possible use of a chemical agent. These samples were analyzed for the presence of BZ by the Finnish Institute for Verification of the Chemical Weapons Convention at the University of Helsinki in 1996-97. The U.N. report concluded that “traces or degradation products of BZ (3-quinuclidinyl benzinat) were not detected.”¹⁴³

This conclusion was based on a very small sample of materials taken from two limited sets of skeletal remains: thirty recovered by the Finnish team in the Kamenica Hill area in July 1996, and 250 recovered by Bosnian authorities in the fall of 1996. Moreover, the institute at the University of Helsinki was able only to test for BZ, not for BZ-like compounds. The possibility that a compound similar to BZ, rather than BZ itself, was used in Srebrenica should not be overlooked.

In light of the above, a more systematic investigation of skeletal remains, especially of those found in the Kamenica Hill area where the alleged chemical attacks occurred, ought therefore to be considered. Useful information could also be obtained from soil samples from the sites in question. Moreover, in the analysis of clothing or soil samples, tests should be performed not only for BZ but also for other known BZ-like compounds.

¹⁴¹ Human Rights Watch interview, Živinice, July 19, 1996.

¹⁴² For example, Dr. Brian Davey in an electronic mail message to Human Rights Watch, November 22, 1996; and Dr. Jan Willems, professor of toxicology at the University of Ghent, Belgium, in a letter to Human Rights Watch, October 14, 1996.

¹⁴³ U.N. High Commissioner for Human Rights, “Report of the Finnish Forensic Expert Team,” G/SO 214 (77-5)/BMA/cmc (July 8, 1997), p. 6.

As far as Human Rights Watch is aware, the Finnish team's investigation is one of the very few that have been carried out, and the only one whose findings have been made public. In our view, the international community has been remiss in its responsibility, as the protector of the Dayton Accords and therefore of the fragile peace in the former Yugoslavia, to investigate the serious allegations about the possible use of chemical weapons that have been made, or, in those cases in which an investigation was carried out, to make the results of the investigation public. United Nations personnel in Bosnia and Hercegovina were well aware of the reports of chemical weapons use by the survivors from Srebrenica, but Human Rights Watch has received no indication that a U.N. investigation was ever carried out.¹⁴⁴ Allegations of chemical weapons possession and use in other areas of the former Yugoslavia were apparently investigated by UNPROFOR units during the war, but no information has been released to the public about these investigations.¹⁴⁵ Human Rights Watch also knows that the International Criminal Tribunal for the former Yugoslavia (ICTY), while aware of the allegations of chemical weapons use on marchers from Srebrenica, did not consider these to be a priority, and no investigation was therefore carried out. The ICTY has been seriously understaffed since its creation.

Moreover, U.S. officials have told Human Rights Watch that the information which the U.S. government says it has in support of the claim that a chemical agent was used is classified and cannot be released. One official told Human Rights Watch in December 1996: "We do not see an advantage in declassifying those documents related to chemical weapons use in Bosnia.... We have spoken with people and received assurances that other channels are being pursued that we believe would be more effective and achieve a more favorable outcome rather than simply publicizing them."¹⁴⁶

Given the role of the United States, and of U.S. forces, in the former Yugoslavia, and given also the continuing instability in the region and the outbreak of war in Kosovo, it is incumbent on the U.S. government to make public any information it may have about the possible use of chemical weapons during the war in Bosnia and Hercegovina, including in Srebrenica in July 1995. After all they have suffered, the people of the states comprising the former Yugoslavia deserve to be informed about, and protected from, these most horrible of weapons.

¹⁴⁴ Human Rights Watch interviews with U.N. personnel and international reporters in the United States and the former Yugoslavia, 1996 and 1997.

¹⁴⁵ "Chemical Weapons Claim Probed," *Jane's Defence Weekly*, August 21, 1993, p. 5, and Human Rights Watch interviews with former UNPROFOR personnel in the former Yugoslavia, 1996 and 1997.

¹⁴⁶ Human Rights Watch telephone interview, Washington, D.C., December 1996.

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Mr. Hogendoorn also carried out a preliminary investigation for this project in the former Yugoslavia in the spring of 1996, and returned to the region for supplemental research in the spring of 1997. Mr. Hogendoorn is the author of an earlier report stemming from Human Rights Watch's investigation into the production and use of chemical weapons in the Balkans, "Clouds of War: Chemical Weapons in the Former Yugoslavia" (March 1997), available from Human Rights Watch.

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APPENDIX A: CHARACTERISTICS OF RELEVANT CHEMICAL AGENTS

Described below are the characteristics of a number of chemical warfare agents that are known to cause hallucinations. All these agents are prohibited under the Chemical Weapons Convention, which came into force in April 1997, well after the end of the war in Bosnia and Hercegovina.

Characteristics of BZ

The best known of such agents is the anticholinergic chemical 3-quinuclidinyl benzilate, known as BZ.¹⁴⁷ This benzilate compound is related chemically and pharmacologically to atropine and other widely used anticholinergic drugs. As a result of its properties, it has effects on both the peripheral autonomic and central nervous systems. The effects of BZ have been exhaustively described in a 1963 study by Maj. James S. Ketchum, from which the information in this section is drawn.¹⁴⁸

In what is described as “the therapeutic or threshold range,” Ketchum reports the autonomic effects of BZ to consist of the following: “dryness of the mouth, decreased gastric motility, inhibition of sweating, peripheral vasodilation, a slightly increased heart beat and blood pressure, and a mild elevation in body temperature.” Effects on the central nervous system at low doses are limited to “moderate sedation, pupillary dilatation, diminished alertness and mental slowing, dulling of affect, decreased spontaneity, and lowered interest in work and recreational activity.”

As doses are increased, all of these symptoms are intensified and there are, in addition, marked disturbances in the function of the central nervous system. There is a pronounced effect on motor coordination. Affected individuals become less attentive, and the control and direction of thought processes become increasingly difficult. Individuals also encounter a difficulty in retaining new information, and speech and behavior become much more random in nature.

¹⁴⁷ Most of the literature on the effects of BZ on humans is either classified in U.S. military archives, or available in some recent declassified reviews. These reviews discuss BZ's disturbing behavioral effect on animals and its ability to accumulate in tissues such as the heart, lung, and brain for many hours following administration of the chemical to rodents. See W. F. Uliu, et al., “Effects of 3-Quinuclidinyl Benzilate on Fixed-Ratio Responding and Open Field Behavior in the Rat,” *Psychopharmacology*, vol. 80 (1983), pp. 10-13; and J. Ishizaki, et al., “A Physiologically Based Pharmacokinetics Model for (-)-Quinuclidinyl Benzylate Using Non-Linear Irreversible Tissue Binding Parameters in Rats,” *Drug Metabolism and Disposition*, vol. 20 (1992), pp. 485-89. Requests by Human Rights Watch to the U.S. Army for the release under the Freedom of Information Act of two documents on the effects of BZ under field conditions were denied. These documents were: “The Human Effect of BZ Disseminated under Field Conditions” (November 1967), and “Final Estimates of ICt50 for Agent BZ under Field Conditions as Simulated during Project DORK” (June 1965). Letter from Patrick R. Sheldon, Chief Counsel, U.S. Army Chemical and Biological Defense Command, Department of the Army, to Human Rights Watch, June 17, 1997.

¹⁴⁸ Maj. James S. Ketchum, “The Human Assessment of BZ: CRDL Technical Memorandum 20-29” (Edgewood Arsenal, Maryland: U.S. Army Chemical Research and Development Laboratories, 1963).

Individuals become confused, apprehensive and restless. Eventually, the grasp on reality is lost, and those affected fail to interact with their immediate environment and become stuporous.

According to Ketchum, some of the more detailed effects of BZ are as follows: a rapid heart rate, but one rarely exceeding 150 beats per minute, can occur some three to four hours after exposure. Additional increases in heart rate can be brought about by exercise, but such increases do not exceed the anticipated increase from exercise alone. Both systolic and diastolic blood pressure may be elevated moderately, with peak values reached between five and six hours after exposure to BZ. This increase in blood pressure is largely a secondary consequence of the increased cardiac output associated with a more rapid heart rate.

Flushing of the face and of other areas of the skin is a consistent occurrence, caused probably by a decrease in capillary tone and an increase in blood pressure. A further factor is a reflex which is a compensatory heat-loss mechanism brought about by the rise in temperature caused by inhibition of sweating. A frequent complaint of individuals exposed to BZ is that they feel a sense of weakness, which particularly affects the legs. Tests of muscle strength in these circumstances, however, have demonstrated that the strength itself is only minimally affected.

BZ inhibits secretory activity in the glandular cells concerned with digestion. This results in thick, tenacious and scanty saliva, drying of the mucous membranes of the mouth and throat, and marked pharyngeal discomfort. Swallowing can be painful and speech reduced to a whisper. Tongue and lips can be coated, and breath has a characteristic foul odor. Appetite is reduced, and subjects may refuse all food and fluids for twenty-four hours or more.

Urination may be difficult or impossible for a period of up to sixteen hours following exposure. This is particularly the case where exposure to higher doses has taken place. This occurrence may result in frequent futile attempts to urinate.

Following an incapacitating dose of BZ, Ketchum noted the following effects, occurring in phases: The first phase lasts for a period of between one and four hours and is characterized by feelings of discomfort and apprehension. There is extreme restlessness, with involuntary spasms of the extremities and bird-like flapping of the arms. Errors of speech and scattered moments of confusion may occur. There is a peak period where the affected individual is restless and unable to walk properly (ataxia).

The effects described above can be followed by a second phase, which can last for a period of between four to twelve hours. During this phase, individuals are sedated and can be stuporous and even semi-conscious. The individual may sleep, or appear to sleep, and respond only to direct, and sometimes only to forceful, stimulation. Spontaneous groping or crawling may alternate with lying quietly.

The more extreme of the symptoms associated with exposure to BZ occur in a third phase. These take place approximately twelve hours following exposure. During this phase, hallucinations dominate an individual's awareness, and real objects and persons are generally ignored or ludicrously misinterpreted.

Complex panoramic hallucinations tend to be most common between approximately twenty-four to forty-eight hours following exposure to doses of the compound above that which has been shown to be effective in some 50 percent of the population tested. Hallucinations may be benign, entertaining, or terrifying. Individuals exposed to BZ are frequently disoriented and unaware of their surroundings. Individuals in the vicinity of those who are affected or exposed may be recognized, or may be mistakenly identified. Vertically-shaped objects may be mistaken for individuals and, in extreme states of confusion, the affected individual may have a conversation with someone who is not physically present but who is perceived to be there through hallucination.

According to Ketchum, recovery from the effects of BZ is gradual. The simpler abilities return initially, while functions which require more complex integration (such as those involving judgment, social awareness, or creative ideas) are the last to be regained.

According to a review of the effects of BZ on 300 subjects, in a research test conducted by the U.S. Chemical Research and Development Laboratories, although subjects can vary in their response to BZ, in general it would appear, according to Ketchum, that there is "little difference how intelligent, adventurous, self-confident or competitive the individual might be; the agent apparently disables the strong and weak impartially and without prejudice."

If BZ were to be used in a military context, it is highly likely that, if an effective dose of BZ is delivered to the majority of a mixed population, a number of individuals will be exposed to high concentrations. As a result of this, there would be some fatalities. The number of fatalities would rise where individuals had other medical conditions, if the area was cold, if these individuals were dehydrated or starved, or if they had been injured in some sort of accident.

According to a U.N. report on an incident in Mozambique in January 1992, soldiers may have been exposed to an agent following an explosion in the air above their troop formation. The symptoms and signs exhibited by the casualties were said to be similar to those which could be caused by exposure to an atropine-like agent, although some of the symptoms may have been due to heat stress as a result of dehydration.¹⁴⁹

The symptoms experienced by most of the soldiers exposed in Mozambique are similar to those being documented as being caused by BZ. In the Mozambique incident, some early deaths within one to two hours were reported, with profound muscular weakness occurring within an hour after the attack in some individuals, although there was a delay in onset for several hours in others. Confusion, disorientation, emotional lability (unstable), and irrational behavior were reported to have occurred early in some of the casualties. Some were reported to be confused for a period of several days.¹⁵⁰

Characteristics of BZ-Like Compounds

Quinuclidine compounds other than BZ have been studied extensively for their pharmacological properties, and the effects of various chemical substituents on the basic quinuclidine structure have been investigated.¹⁵¹ In the United States a series of compounds with structures like BZ (glycolates) were identified and classified according to differences in speed of onset and relative duration of incapacitation.¹⁵²

BZ is also classified as a glycolate, with reference to the chemically substituted glycol component of the molecule. Many structural modifications of glycolates have been made, and the structural changes have been correlated with the biological activity of the molecule. Substituents have been examined which will affect the potency of the chemicals (including their ability to sedate) or the nature of the effects, or speed up the onset of the effects without altering the incapacitating properties they possess.¹⁵³

Glycolates cause incapacitation through interference with muscarinic functions in the nervous system. Such functions include the activation of smooth muscles and salivary glands. Glycolates will also interrupt the central

¹⁴⁹ United Nations, "Report of the Investigations into the Allegations of the Use of Chemical Warfare in Mozambique," S/24065 (New York: United Nations, January 1993).

¹⁵⁰ Ibid.

¹⁵¹ M. D. Mashkovsky and L. N. Yakhontov, "Relationships Between the Chemical Structure and Pharmacological Activity in a Series of Synthetic Quinuclidine Derivatives," *Progress in Drug Research*, vol. 13 (1969), pp. 293-339.

¹⁵² Herbert S. Aaron, *Chemical Warfare Agents: A Historical Update from an American Perspective* (Aberdeen Proving Ground, MD: U.S. Army Chemical and Biological Defense Agency, 1993), p. 18, citing National Research Council, *Possible Long Term Health Effects of Short Term Exposure to Chemical Agents*, vol. I (Washington, DC: National Academy Press, 1982), p. 72.

¹⁵³ Ibid.

nervous system's functions mediated by acetylcholine. It is due to these factors that symptoms seen with a range of glycolates are the same as those described in volunteers dosed with BZ.¹⁵⁴

¹⁵⁴ Department of the Army, *Handbook of the Medical Aspects of NBC Defensive Operations, FM8-9* (Washington, D.C., February 1996), available at <http://www.nbc-med.org/FMs/amedp6/>.

Alteration of the chemical structure can affect the onset of symptoms from minutes to hours, as well as the duration of the effects from hours to days. Effects are reversible by treatment with carbamates (such as physostigmine) which are inhibitors of the enzyme acetylcholinesterase.¹⁵⁵

Characteristics of LSD 25

Lysergic acid diethylamide (LSD 25) is a widely researched hallucinogen.¹⁵⁶ It has also been studied for its military potential.¹⁵⁷ It can induce psychosis in people in extremely small amounts. In general, as little as fifty micrograms is an effective dose.¹⁵⁸

Initial effects appear within a few minutes following inhalation and within thirty to sixty minutes following ingestion. Maximum effects are reached within two to three hours and gradually subside over the next four to eight hours.¹⁵⁹

¹⁵⁵ Departments of the Army, the Navy, and the Air Force, *NATO Handbook*, part III, p. 6-3.

¹⁵⁶ See H. B. Linton and R. J. Langs, "Subjective Reactions to Lysergic Acid Diethyl Amide (LSD-25)," *Archives of General Psychiatry*, vol. 6 (1962), pp. 36-52; J. O. Cole and M. M. Katz, "The Psychotomemtic Drugs," *Journal of the American Medical Association*, vol. 187 (1964), pp. 758-61; N. A. Bercel, et al., "Model Psychoses Induced by LSD-25 in Normals," *American Medical Association Archives of Neurology and Psychiatry*, vol. 75 (1956), pp. 612-18; and T. Greiner, et al., "Psychopathology and Psychophysiology of Minimal LSD-25 Dosage," *American Medical Association Archives of Neurology and Psychiatry*, vol. 79 (1958), pp. 208-10.

¹⁵⁷ See Siegfried Frank, *Manual of Military Chemistry, Volume 1: Chemistry of Chemical Warfare Agents* (East Berlin: National People's Army of the German Democratic Republic, 1967), pp. 301-03 (translated from German by the U.S. Foreign Broadcast Information Service); and Departments of the Army, the Navy, and the Air Force, *NATO Handbook*, part III, pp. 6-5 to 6-6.

¹⁵⁸ Departments of the Army, the Navy, and the Air Force, *NATO Handbook*, p. 6-5.

¹⁵⁹ *Ibid.*

Signs and symptoms of LSD intoxication include rapid heart rates, sweating palms, pupillary enlargement, nervousness, trembling and spasms, anxiety, euphoria, and inability to relax or sleep. Persons will experience feelings of tension, heightened awareness, exhilaration, kaleidoscopic imagery, emotions of every type, hilarity, and exaltation. Paranoid ideas and more profound states of terror and ecstasy may also occur, especially in highly suggestible individuals. True hallucinations are rare, as is homicidal or suicidal behavior.¹⁶⁰

Former JNA chemical warfare officers, both Bosniak and Croatian, have indicated that the JNA had weaponized LSD-25 before the breakup of Yugoslavia in 1991. According to one officer, LSD-25 could be distributed as an aerosol or as a water contaminant.¹⁶¹ Other lysergic acid derivatives have reportedly also been explored for chemical weapons use.¹⁶²

Other Chemicals

¹⁶⁰ Ibid.

¹⁶¹ Human Rights Watch interviews with two former JNA chemical weapons officers, Croatia and Bosnia and Hercegovina, February-March 1996. See also Human Rights Watch Arms Project, "Clouds of War."

¹⁶² Frank, *Manual of Military Chemistry*, p. 301.

A number of other drugs are considered to be potential military incapacitating agents. These include tryptophane, tryptamine, serotonin, piperidine, tetrahydrocannabinols, psilocybin, and mescaline (and their numerous analogs).¹⁶³ Alcohol, amphetamines and opiates can also cause hallucinations.¹⁶⁴

¹⁶³ Ibid., pp. 298-311, and Departments of the Army, the Navy, and the Air Force, *NATO Handbook*, p. 6-5.

¹⁶⁴ See E. Bruera, "Organic Hallucinosis in Patients Receiving High Doses of Opiates for Cancer Pain," *Pain*, vol. 48 (1992), pp. 397-99.

APPENDIX B: INTERVIEW QUESTIONNAIRE

Interview Procedure for investigation of an alleged chemical warfare incident

Ensure interviewee is comfortable. Sit next to rather than opposite interviewee. Conduct interview in a quiet place. One person (with interviewer asking questions). Interview subject on their own (if possible). Record presence of others.

A. Interview, incident, relationship to the incident, identity of the person.

1. Place and time of the interview. Interviewer. Interpreter
2. Place and time of the incident (alleged usage)
3. Relationship to the incident: victim, primary witness, secondary source
4. Name
5. Sex. Age at time of interview
6. Current place of residence
7. Nationality
8. Marital status, children
9. Education
10. Occupation/rank at time of interview
11. Current place of work
12. How did interviewee reach interview location?
13. Any acute or chronic illness?
14. Is interviewee taking any medication (taking it at the time, or unable to?)

B. Description of incident in interviewee's own words (without intervention)

(It can be expected that details will be mentioned regarding date, site, circumstances, weapons, description of the behaviour of others, description of own signs and symptoms, and evolution since the incident. Most probably all of these items will be mixed up, but should be recorded as such).

15. Any previous combat experience
16. Sketch map of the area, indicating important features. If possible, transfer to a standard map
17. What did interviewee see, hear or smell?
- condition of the terrain, and weather (rain, sunshine, cloud cover [0/8 → 8/8])

- when and how did the incident start?
- aircraft, guns, ammunition, cloud/smoke, colour?
- did you see the opposition, what did he look like? (any protective clothing or equipment?)
- what was your location with regard to the point of impact, downwind area?
- were you directly exposed to the cloud/smoke/aerosol?
- what happened around you? Were others affected? Were animals affected?
- was this the first time you had been affected/exposed in such a way?
- did this experience remind you of anything else?
- did the cloud/smoke/aerosol move? Vertically/horizontally?

D. For a victim: detailed questioning concerning signs and symptoms, and their evolution

18. For each of the following questions, indicate when a condition began after exposure, and for how long it persisted

19. What did you feel after being exposed to the cloud?

20. Were the eyes affected? If so, in what way?

21. Was the nose affected? If so, in what way?

22. Was the mouth and/or throat affected? If so, in what way?

23. Were the ears affected? If so, in what way?

24. Was the neck affected? If so, in what way?

25. Was the chest or breathing affected? If so, in what way?

26. Was the skin affected? Is so, in what way?

27. Were there stomach/abdominal pains, other problems?

28. Was there loss of appetite?

29. Was there fever present?

30. Was there sweating?

31. Was there dizziness?

32. Were there headaches?

33. Was there unconsciousness?

34. Was there behaviour as if drunk? Difficulty walking?

35. Was there disorientation?

36. Were there any convulsions?

37. Was there drowsiness?

38. Was there insomnia?

39. Were there any other symptoms?

40. Did you receive any medical help? If yes, when, of what kind, and for how long? At which hospital did you receive treatment? From which doctor?

41. Did you ever experience similar symptoms? If yes, in what circumstances? (After taking alcohol, drugs, etc...)

42. Did you have enough food/water on the journey?

43. Did you have sufficient sleep, or did you go without sleep? (How long did you sleep at night?)

E. For primary witness: detailed questioning concerning signs, symptoms and evolution of the victims

See questions in section D, but limit them to objective observations:

Be especially aware of, but do not question directly, for reports of the following:

- restlessness
- confusion
- erratic behaviour
- failure to obey orders
- stumbling
- staggering
- vomiting
- delusions
- hallucination

Describe the evolution in time

F. For a secondary witness: some general questioning, in the nature of cross-questioning, to contrast with answers given in sections D and E

See questions under D, but limit to objective observations; what did the victims or witness tell the interviewee regarding signs and symptoms?

G. Other contacts

44. Do you know of anyone else who was affected during the incident?

45. Have you talked to them about the incident?

46. Have they been interviewed?

47. Will you be available for interviews in the future?

48. Thank you for your help

H. Overall assessment of the interview and of the credibility of the respondent

49. How confident are you of the reliability of the testimony of the respondent; and on what grounds?

50. How certain or uncertain would you say the respondent was in providing the different parts of the testimony?
51. What are the questions that were irrelevant in this and previous interviews; and what are the questions that, on the basis of what has been reported spontaneously, should be added?
52. What items of significance emerged which should be confirmed (where possible) in later interviews?

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Human Rights Watch is dedicated to protecting the human rights of people around the world.

We stand with victims and activists to bring offenders to justice, to prevent discrimination, to uphold political freedom and to protect people from inhumane conduct in wartime.

We investigate and expose human rights violations and hold abusers accountable.

We challenge governments and those holding power to end abusive practices and respect international human rights law.

We enlist the public and the international community to support the cause of human rights for all.

The staff includes Kenneth Roth, executive director; Michele Alexander, development director; Reed Brody, advocacy director; Carroll Bogert, communications director; Cynthia Brown, program director; Barbara Guglielmo, finance and administration director; Jeri Laber, special advisor; Lotte Leicht, Brussels office director; Patrick Minges, publications director; Susan Osnos, associate director; Jemera Rone, counsel; Wilder Tayler, general counsel; and Joanna Weschler, United Nations representative. Jonathan Fanton is the chair of the board. Robert L. Bernstein is the founding chair.

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