Abolishing Chemical Weapons: Progress, Challenges, and Opportunities

Paul F. Walker

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From November 29 to December 3, the Organization for the Prohibition of Chemical Weapons (OPCW) will host its 15th annual conference of states-parties in The Hague to review recent progress in the global elimination of chemical weapons. As the international implementing agency for the Chemical Weapons Convention (CWC), the OPCW has overseen the safe and verified demilitarization of more than 43,000 metric tons of deadly chemical agents in almost four million weapons and containers since the convention’s entry into force in April 1997.

As the key institutional elements of the most successful multilateral arms control and disarmament regime to date, the CWC and OPCW serve as models for long-term, verified, and cooperative nonproliferation, threat reduction, and global security regimes.[1]

However, this successful and ongoing elimination of a whole class of weapons of mass destruction has not been without its own challenges and hurdles, including choosing the safest and most environmentally sound destruction technologies; paying the high costs of demilitarizing dangerous liquid agents, propellants, explosives, and other pollutants; meeting legally binding weapons destruction deadlines with little if any relationship to planning, engineering, construction, and operational schedules; bringing all countries under the OPCW inspection regime; encouraging all states-parties to fully implement the convention domestically; shifting the CWC from a demilitarization to a nonproliferation and anti-terrorist regime; and encouraging full cooperation, consensus building, and transparency from all members and stakeholders.

Although more than 60 percent of the world’s declared chemical weapons stockpiles have been successfully eliminated over the past two decades in five of the seven declared chemical weapons possessor states, almost 30,000 metric tons still await destruction, and several suspected possessor states remain outside the CWC regime. Meanwhile, terrorist organizations have reiterated their intention to obtain weapons of mass destruction—nuclear, chemical, and biological—raising the stakes over the past decade to secure and eliminate chemical weapons stockpiles as quickly as possible and strengthen the CWC nonproliferation and inspection regime.

This article will review the history of establishing and implementing a global ban on a whole class of weapons of mass destruction; explain the progress to date in destroying large and dangerous Cold War arsenals of chemical weapons; address current and future challenges to completing this process; and draw conclusions for the abolition regime and other global arms control efforts.

The Chemical Weapons Convention

Article IX of the 1972 Biological Weapons Convention includes a commitment by states-parties to work toward an international ban on chemical weapons.[2] International negotiations on the CWC began in earnest in April 1984, one month after a UN report on Iraqi chemical weapons attacks,
when U.S. Vice President George H.W. Bush introduced a draft chemical weapons treaty at the Conference on Disarmament (CD) in Geneva. This was a decade after the Soviet Union and the United States announced bilateral discussions on reducing chemical weapons stockpiles. By 1989 these U.S.-Soviet negotiations produced a bilateral memorandum of understanding concerning verification and data exchange. In 1990 the two countries’ leaders, Bush and Mikhail Gorbachev, signed an “Agreement…on Destruction and Non-production of Chemical Weapons and on Measures to Facilitate the Multi-lateral Convention on Banning Chemical Weapons.” Finally, on September 3, 1992, after years of negotiations, the CD adopted a final report on an international convention on chemical weapons. The treaty was opened for signature by UN Secretary-General Boutros Boutros-Ghali in Paris on January 13, 1993. It required 65 ratifications for entry into force.

Hungary became the 65th country to deposit its instrument of ratification on October 31, 1996; the CWC entered into force 180 days later, on April 29, 1997. The two largest chemical weapons possessor states, the United States and Russia, ratified the treaty on April 25, 1997, and November 5, 1997, respectively, after protracted ratification debates in both capitals.

The convention, in short, bans the development, production, acquisition, stockpiling, transfer, and use of chemical weapons and requires all possessor states to destroy their stockpiles safely. The CWC’s preamble explains that states-parties are “determined for the sake of all mankind, to exclude completely the possibility of the use of chemical weapons, through the implementation of the provisions of this Convention, thereby complementing the obligations assumed under the Geneva Protocol of 1925.” Article IV obligates each country to declare “all chemical weapons owned or possessed by a State Party, or that are located in any place under its jurisdiction or control” and to “destroy all chemical weapons…. Such destruction shall begin not later than two years after this Convention enters into force for it and shall finish not later than 10 years after entry into force of this Convention,” that is, by April 29, 2007.[3] The treaty allows a deadline extension of up to five years from that date. The convention also requires round-the-clock, on-site inspection of all chemical weapons destruction operations and allows for challenge inspections of suspect activities.[4]

The OPCW is the implementing agency for the CWC. Located in The Hague, the OPCW opened its doors in 1997 after more than four years and 16 formal sessions of its preparatory commission.[5] Now in its 14th year of operations, the OPCW has undertaken more than 4,000 inspections of 195 chemical weapons-related sites (stockpiles, former production facilities, and laboratories) and more than 1,100 chemical industry sites in 81 countries. Its record of successfully inspecting and verifying the destruction of chemical agents and munitions, noted above, is very impressive for a new, multilateral organization that has faced and resolved many challenges over its short history.

**Chemical Weapons Demilitarization**

Of the 188 states-parties to the convention today, seven have declared chemical weapons stockpiles: Albania, India, Iraq, Libya, Russia, South Korea, and the United States. Russia declared the largest stockpile with 40,000 metric tons at seven arsenals in six regions—oblasts and republics—of Russia. The United States declared 28,577 metric tons at nine stockpiles in eight states and on Johnston Atoll west of Hawaii. Albania and Libya declared the smallest stockpiles, 16 and 23 metric tons, respectively. India and South Korea declared stockpiles in the 2,000-metric-ton range, maintaining a high degree of secrecy around the size, location, and composition of their weapons. Iraq, which joined the CWC in 2009, has declared two large bunkers with chemical weapons debris and related equipment. The United States bombed these bunkers during the 1991 Persian Gulf War; their contents remain somewhat unknown although UN inspection documents, not yet available to the public, reportedly describe much of the contents when UN inspectors sealed them in the 1990s.

*The United States and Russia.* As noted earlier, Russia and the United States had agreed in 1989, eight years before the CWC’s entry into force, to eliminate their chemical weapons stockpiles. The United States in fact had begun construction of its first prototype incinerator on Johnston Atoll in the 1980s. In 1990, it began burning 1,842 metric tons of chemical weapons, which had been secretly shipped from forward deployment in Germany and Okinawa many years earlier. When the CWC entered into force in 1997, the United States was already operating its first two incinerators on Johnston Atoll and in Tooele, Utah, which was the largest U.S. chemical weapons stockpile with 12,353 metric tons. The Program Manager for Chemical Demilitarization, the U.S. Army branch
overseeing the chemical weapons stockpiles, emergency preparedness, and destruction operations, was able to burn 1,436 metric tons, about 5 percent of the total chemical stockpile, at the two sites before the April 1997 entry into force.[6]

The U.S. Army initially planned to construct three centralized incinerators to destroy the U.S. chemical weapons stockpile, and early schedules optimistically showed the United States completing operations in 1994. Congress subsequently banned transportation of chemical munitions on safety and security grounds, necessitating the current plan for a destruction facility at each of the nine U.S. sites at which chemical weapons are stored. This major change had serious schedule and cost implications for the program. The other early challenge for the program was the controversy over incineration among environmental and public health officials, regulators, and activists. At least four states—Colorado, Indiana, Kentucky, and Maryland—were opposing Army incineration plans and threatened to delay the program with legal and permitting issues.

When the U.S. Senate finally approved the CWC, on April 25, 1997, after a long and contentious debate, the articles of ratification specified, among many other conditions, that the president place the highest priority on protection of public health and the environment and that the Army undertake the development and demonstration of nonincineration technologies for chemical weapons destruction. Congress also mandated that a new program, the Assembled Chemical Weapons Assessment program (renamed the Assembled Chemical Weapons Alternatives program in 2003), be established to evaluate nonincineration technologies. The program established a “national dialogue” of stakeholders—federal, state, and local officials; environmentalists; public health experts; and military officials—to determine what criteria might be used to choose alternative, nonincineration demilitarization technologies.

Today the United States has constructed and operated five large incinerators: on Johnston Atoll and in Tooele, Utah, as previously noted; in Umatilla, Oregon; in Anniston, Alabama; and in Pine Bluff, Arkansas. The Johnston Atoll incinerator finished operations in 2000; the other four continue to operate. In addition, neutralization facilities were built in Newport, Indiana, and Edgewood, Maryland; they chemically treated and destroyed bulk VX nerve agent and mustard agent. The remaining two chemical weapons stockpiles in Pueblo, Colorado, and Blue Grass, Kentucky, will each be destroyed by chemical neutralization. Facilities to perform that task are under construction.

As of October 20, 2010, the United States had destroyed 81 percent of the chemical weapons stockpile it had declared as the CWC entered into force: 21,984 metric tons in more than 2.1 million munitions and bulk containers of the 1997 stockpile total of 27,141 metric tons. Equally impressive is that the destruction to date represents, according to the U.S. Army Chemical Materials Agency, about a 99 percent reduction of stockpile risk at the seven sites where destruction has taken place because it has encompassed the most dangerous agents and munitions.[7]

This 20-year history of U.S. chemical weapons destruction, with almost 22,000 metric tons of deadly agents safely eliminated, illustrates well the deep commitment of the United States to abolish its Cold War arsenal. Although the United States no doubt will face criticism from some CWC states-parties in The Hague for missing the final convention deadline of April 29, 2012, no one should underestimate the determination of the United States to complete its chemical weapons destruction in the foreseeable future. The U.S. Congress has set 2017 as the date for 100 percent destruction while the U.S. Army projects 2021 as the new likely end point. Whatever the final schedule turns out to be, it remains clear that the primary goals are protection of public health, the environment, and worker safety; schedule deadlines are secondary. The United States will be chemical weapons free in the near future, a milestone that will have taken more than three decades and some $40 billion to reach. This is a record that can be well defended at the OPCW.

Russia, in spite of the 1989 bilateral agreement with the United States, has been much slower in its chemical weapons destruction program. To its credit, Russia has been fully committed to complete elimination of its stockpile, but the breakup of the Soviet Union and subsequent difficult socioeconomic transition in the 1990s prevented it from focusing on chemical weapons demilitarization. The visit of an official U.S. delegation in July 1994 (see box) to one of Russia’s seven declared chemical weapons stockpiles and a follow-on joint study of Russian chemical weapons destruction technologies helped the Russian program move forward. However, Russian officials
made it clear in 1993 and in 1997, when they signed and ratified the CWC, that they would need technical and financial support from other CWC members to meet treaty deadlines. During the 1994 U.S. visit to Russia, Russian military officials and the chairman of the Duma defense committee rejected a U.S. offer made by the assistant to the secretary of defense for nuclear, chemical, and biological defense programs to construct an incinerator at the Shchuch’ye chemical weapons stockpile. Russian officials wanted to determine their own technologies for demilitarization and were very wary of incineration as too complex, too expensive, too dangerous, and too politically contentious.

The first Russian chemical weapons demilitarization facility, built and funded as a prototype facility by Germany for neutralizing lewisite, an older, arsenic-based chemical agent, opened in 2002 at Gorny in the Saratov Oblast. Since then, Russia has been able to open four more chemical weapons destruction facilities: in Kambarka in the Udmurt Republic in 2005; in Maradikovsky in the Kirov Oblast in 2006; in Leonidovka in the Penza Oblast in 2008; and in Shchuch’ye in the Kurgan Oblast in 2009. The last two stockpile sites, Pochep in the Bryansk Oblast and Kizner in the Udmurt Republic, will likely open in 2011 and 2012, respectively. Most of these facilities have been supported financially by the Global Partnership Against the Spread of Weapons and Materials of Mass Destruction, founded by the Group of Eight at its summit meeting in Kananaskis, Canada, in 2002. The United States through the Cooperative Threat Reduction (CTR or Nunn-Lugar) program has committed more than $1 billion since the mid-1990s to the planning and construction of the neutralization facility at Shchuch’ye, while Germany has committed $475 million (340 million euros) to construction at Gorny, Kambarka, and Pochep. Canada and the United Kingdom have contributed some $82 million and $39 million, respectively, while at least another 10 additional countries have contributed some $25 million.

After eight years of chemical weapons demilitarization, Russia has destroyed almost 50 percent of its declared stockpile, about 20,000 metric tons. It has already closed two facilities, at Gorny and Kambarka, that housed 7,500 metric tons of lewisite in bulk containers. Three facilities are currently operating, and as noted above, the final two are expected to open within the next two years.

Neither Russia nor the United States, as noted earlier, will be able to meet the CWC’s final destruction deadline of April 29, 2012, and the Blue Grass, Kentucky, site will miss the congressional deadline of 2017. The United States now predicts that the last chemical weapons stockpile at Blue Grass will not finish operations until 2021, while the Pueblo, Colorado, stockpile will likely be eliminated by 2017. Russia has projected its operations will finish by the end of 2015, although some observers believe they may extend to 2016 or beyond. This situation will present challenges at the OPCW for Russia, just as for the United States, but both countries clearly are fully committed to full abolition of their chemical weapons stockpiles and will no doubt undertake confidence-building measures to reassure the 186 other CWC states-parties of their commitment to fulfill their obligations.[8] Russia, having been reliant on somewhat unpredictable Global Partnership funding over the past decade and not having begun chemical weapons destruction operations until 2002, has accomplished an enormous amount in just eight years and has no reason to apologize for its delays.

Other possessor states. Albania was the first possessor state to destroy its stockpile. Although it joined the CWC in 1994, it did not acknowledge its possession of 16 metric tons of mustard agent (as well as small quantities of lewisite and other chemicals) until 2003. A small, nondescript building in the mountains outside Tirana apparently went without notice until the government that took power in Albania earlier that year began a survey of its military sites and facilities. With the help of the United States, Germany, and Switzerland, Albania immediately secured the small site and incinerated the bulk agent in the first half of 2007. Although it planned to meet the April 29, 2007, CWC deadline for full destruction, a technical error caused a two-month delay. Neither the OPCW nor any of the states-parties made a major issue of the missed deadline, and the OPCW declared Albania’s destruction complete in early July 2007. Its mustard agent stockpile had reportedly been received in the 1970s from China.[9]

Libya joined the CWC in 2004 and, in its submittal at the time, declared 23 metric tons of mustard agent in bulk containers. In addition, it declared one inactivated chemical weapons production facility, two chemical weapons storage sites, 1,300 metric tons of precursor chemicals, and 3,563 unfilled aerial bombs. It first planned on eliminating its chemical agent stockpile by the 2007
Deadline. However, after aborted attempts at U.S. and Italian partnerships in its demilitarization program, it asked for several OPCW deadline extensions, the latest of which is until 2011.[10]

India and South Korea joined the CWC in 1996 and 1997, respectively, and both declared chemical weapons stockpiles. Little is known publicly about either stockpile, but both countries successfully completed their destruction programs according to schedules extended beyond 2007 and approved by the OPCW—South Korea in 2008 and India in 2009. South Korea has refused to acknowledge its stockpile in any public presentations, including the annual speeches by its ambassador to the OPCW, and has claimed full confidentiality (“highly protected information”) under the Confidentiality Annex of the CWC; all OPCW delegations and staff therefore refer to it as “A State Party” in reference to possessor states.[11] India, on the other hand, acknowledges its stockpile publicly, but has invoked confidentiality for the stockpile’s size, location, destruction technology, and agent types. India’s stockpile is generally thought to have consisted of mustard agent and to have been incinerated. South Korea’s stockpile reportedly included new binary nerve agent weapons, very similar to the newest U.S. weapons.

The last CWC state-party to declare a chemical weapons stockpile is Iraq. Iraq joined the CWC in early 2009 and declared two large, two-story, sealed bunkers with chemical weapons and related equipment and debris from the 1991 Persian Gulf War. Because at least one of these bunkers had been hit by aerial bombs in the war, there is no final inventory of weapons and agents, nor a thorough evaluation of the possible risks of open agents or unexploded ordnance in the bunkers. No decision has been made concerning the final disposition of these bunkers, but there is ongoing discussion at the OPCW with Iraqi officials about methods to evaluate the bunkers, possible costs of destruction, and options for further sealing the bunkers and improving local security.

Thus, of the seven countries that declared chemical weapons stockpiles, three—Albania, India, and South Korea—have completed their demilitarization programs in the last three years; the two largest possessor states—Russia and the United States—will continue to demilitarize their enormous arsenals for another five to 10 years or more; and the final two countries—Iraq and Libya—will likely destroy their remaining agents still sooner, perhaps in the next two to five years. This is an enormous success story for the OPCW and all states-parties.

As of September 2010, the OPCW has declared that 43,131 metric tons of chemical agents have been destroyed since the CWC entered into force in 1997. This represents 61 percent of the world’s declared chemical weapons stockpiles of 71,194 metric tons (at entry into force). This 13-year, multilateral demilitarization effort has also included the elimination of 3.95 million munitions and containers, 46 percent of the 8.67 million weapons inventoried by OPCW inspectors in the possessor states. This concerted effort by many countries, especially the United States and Russia, to abolish their Cold War chemical weapons arsenals, represents a historic step forward in multilateral arms control and disarmament. Yet, this long process has had its ups and downs, especially financially and politically. The next section describes some of these.

**Challenges and Conclusions**

*Old and abandoned chemical weapons.* The CWC requires states-parties to identify and safely destroy nonstockpile chemical weapons that may have been buried, dumped, or abandoned on foreign territories, once they are excavated and retrieved.[12] At the end of 2009, the OPCW stated that 13 states-parties had declared old chemical weapons and that some 87,000 of these had been recovered and were still awaiting destruction. Most of Europe is littered with buried weapons, including chemical weapons, from the two world wars. Belgium, France, Germany, and the United Kingdom, among others, continue to be actively engaged in locating and destroying old weapons and unexploded ordnance.

The United States reported in 1993 that it suspected some 224 burial sites of old chemical weapons and agents in 38 states, the District of Columbia, and the U.S. Virgin Islands.[13] Perhaps the best known and surveyed site is in northwestern Washington, D.C., known as Spring Valley, where the U.S. Army Corps of Engineers has uncovered dozens of buried chemical munitions, related toxic materials, and unexploded ordnance over the last 17 years, all dumped after World War I in 1918 when the Army chemical weapons laboratory closed at American University. Costing more than $250
million to date, this program remains very controversial because of the heavily populated area and the unknown environmental and public health impacts. [14] Beyond Spring Valley, the U.S. Army needs to be more proactive in surveying and remediating old burial sites.

The most serious case of abandoned chemical weapons involves Japan, which left hundreds of thousands of chemical weapons buried on Chinese territory in the last century. Negotiations between Japan and China have been ongoing for more than a decade, with most burial sites in remote and mountainous regions of northern China. The OPCW announced in September 2010 that the first mobile destruction facility for excavated Japanese abandoned chemical weapons had become operational in Nanjing, China. [15] This costly process will likely continue for another decade or more.

**Chemical industry inspections.** The CWC obligates all states-parties to declare and destroy or convert their former chemical weapons production facilities (CWPFs). By the end of 2009, 43 of 70 declared CWPFs had been destroyed, and another 19 had been converted for purposes allowed under the convention. Of the remaining eight, located in Iraq, Libya, and Russia, four are due to be destroyed and four converted.

The convention also obligates all states-parties to declare other chemical production facilities (OCPFs) capable of producing banned or dual-use chemicals and to permit occasional OPCW inspections to verify that these facilities are not producing banned chemical agents. Once existing chemical weapons stockpiles are fully eliminated over the next decade or less, this will be the main occupation of the OPCW—inspections of commercial chemical industry facilities in order to verify and enforce the convention’s ban on deadly chemicals and the proper use and trade in dual-use chemicals. To date, the OPCW has carried out 4,166 inspections at 195 chemical weapons-related sites and 1,103 industrial sites in 81 countries. The organization has declared that 4,918 industrial facilities are currently subject to inspection, so this important task will continue for the long-term future.

**CWC universality.** The CWC attracted 151 signers in its first year, 1993, and had 88 full members by its entry into force in 1997. Today it includes 188 countries representing 98 percent of the world’s population. Although the treaty’s coverage is very close to universal, seven countries remain outside the abolition regime. Two of these—Israel and Myanmar (Burma)—signed the convention in 1993 and have participated as observers at annual OPCW meetings. The other five—Angola, Egypt, North Korea, Somalia, and Syria—have neither signed nor ratified. All of these countries, some of which are suspected of hiding chemical weapons stockpiles, must be brought under the CWC umbrella in the near future. Also, Taiwan, which has a large chemical industry, must somehow be included although China claims Taiwan under its “one China” policy. Until the whole world is open to inspectors, one can never be certain that all chemical weapons have been fully destroyed and that no banned chemicals are being secretly produced and traded.

OPCW Director-General Ahmet Üzümcü emphasized universality and its importance to nonproliferation and the Middle East before the United Nations in October: “Universality is indispensable to the success of the Convention. Only thus can there be an assurance that all countries of the world have legally accepted the prohibition on chemical weapons.... Given the inhumane nature of chemical weapons, and the fact that they are no longer regarded of much military value, the CWC should be accepted by all nations as a moral imperative.” [16]

**Transparency and stakeholder involvement.** All weapons of mass destruction were highly secret during the Cold War. Due to this legacy, terrorist threats, and political sensitivity around potential public health and environmental impacts, the demilitarization of chemical weapons has taken more than two decades to become more public. Even now, limits in public diplomacy and transparency persist to varying degrees in all the possessor states. India and South Korea still refuse to discuss their demilitarization programs publicly; Russia very closely manages its public relations and has threatened activists and nongovernmental organizations (NGOs) that are critical of federal operations; and the United States, although the most transparent of all possessor states, has stopped most on-site visits of stakeholders since the September 11 terrorist attacks and still is reluctant to have visiting OPCW officials meet with local officials and activists.

The OPCW itself has sought to promote greater involvement of NGOs, industry, and other...
international organizations; it organized an “academic forum” and an “industry forum” at its last five-
year review conference in 2008. It also supported the establishment of an alliance of NGOs, known
as the CWC Coalition, at last year’s annual conference in The Hague and has been more
committed to posting OPCW documents on its Web site in a timely way. Because the OPCW
represents 188 states, however, it sometimes can be frustrated by overly sensitive demands for
secrecy from individual or small numbers of countries.

All state-parties, including chemical weapons possessor states, must realize that, for the CWC to
become truly universal and enforceable, there must be active participation by all stakeholders,
including interested NGOs, industry, and other state and local government officials committed to a
world free of chemical weapons.

**OPCW staffing and budget.** The OPCW employs an international staff of some 525 diplomats and
experts, including an international inspectorate of about 175 experts trained to inspect both
chemical weapons stockpiles and chemical industry facilities. The annual budget of the OPCW is
about $103.5 million (74.5 million euros). One-half of this amount covers verification and inspections,
and the remainder covers management, external relations, and support for cooperation and
assistance to states-parties.

The OPCW budget has remained steady, essentially a no-growth budget with some recent
reductions, since 2005. This has strained the organization in the last several years, but may be
helped by sizable reductions in the inspectorate as more stockpiles are destroyed in the next four to
five years. However, the OPCW must maintain an expert inspectorate and Technical Secretariat in
order to continue its global monitoring of commercial industry, support for nonproliferation and
national implementation, and promotion of the peaceful uses of chemistry, all mandated in the
convention. It also must maintain a robust capability for “challenge inspections,” as allowed under
Part X of the CWC Verification Annex. To accomplish this, its annual budget must inevitably rise in
real terms; and its most senior staff, including inspectors, must be exempted from the current and
controversial seven-year ceiling on OPCW employment. Also, states-parties must pay their annual
assessments on time. For the first time in many years, the United States this year paid its annual
calendar-year assessment by April. In previous years, Washington had delayed its payment by six to
nine months or more, placing the OPCW in a difficult cash-flow position.

**OPCW leadership.** The OPCW has just undergone its second change of leadership since 1997. Last
December, the states-parties chose Üzümcü, the former Turkish ambassador to the CD, to replace
Rogelio Pfirter from Argentina as director-general. The first OPCW director-general, who served from
1997 until 2002, was Ambassador José Bustani from Brazil; he was ousted by the United States and
others in 2002 over strong disagreements over his management style and the future of the
organization. Pfirter had a very successful eight years in leading and expanding the organization,
and Üzümcü, supported by states-parties over six other candidates last year, will be the first senior
Turkish diplomat to lead such a large and important international organization.

Pfirter and Üzümcü have supported broader efforts at public diplomacy, more transparency, and
wider and more sustained involvement of all stakeholders in order to strengthen the organization
and fully implement its guiding principles. Üzümcü, now only three months on the job, has already
begun to meet with staff, states-parties, NGOs, and industry to discuss the organization’s future and
will no doubt begin to imprint his own style on the organization over the coming year.

In comparison with nuclear and biological weapons, chemical weapons often get overlooked in
current arms control and disarmament discussions. Yet, they remain the most numerous, with some
five million munitions still awaiting destruction and two to four additional suspected stockpiles in
nonmember states undeclared. Chemical weapons have been used in warfare and terrorist attacks a
dozens of times or more in the last three decades, causing horrific human suffering. Al Qaeda, Osama
bin Laden, Aum Shinrikyo, Iraqi and Afghan insurgents, and others continue efforts to steal or
produce deadly chemical agents for indiscriminate terrorist attacks. These current threats underline
the central importance for global security of ridding the world of chemical weapons.

The chemical weapons abolition regime, led by the OPCW, seems the best example to date of a
multilateral verification organization, effectively managed and run by consensus, to oversee the total
elimination of a whole class of weapons. It would behoove both the nuclear and biological arms control and disarmament regimes to learn from the CWC’s successes and challenges and to move forward with truly comprehensive abolition regimes themselves. A world free of all weapons of mass destruction will be a much more secure, safe, and peaceful world.

### Table 1: Stockpiles of Declared Chemical Weapons Possessor States

<table>
<thead>
<tr>
<th>Country</th>
<th>Original Size of Stockpile (Metric Tons)</th>
<th>Amount Destroyed (Metric Tons, as of October 2010)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Russia</td>
<td>40,000</td>
<td>19,500 (est.)</td>
</tr>
<tr>
<td>United States</td>
<td>28,577</td>
<td>23,147 (est.)</td>
</tr>
<tr>
<td>South Korea</td>
<td>2,000 (est.)</td>
<td>2,000 (est.)</td>
</tr>
<tr>
<td>India</td>
<td>2,000 (est.)</td>
<td>2,000 (est.)</td>
</tr>
<tr>
<td>Libya</td>
<td>23</td>
<td>0</td>
</tr>
<tr>
<td>Albania</td>
<td>16</td>
<td>16</td>
</tr>
<tr>
<td>Iraq</td>
<td>n/a</td>
<td>0</td>
</tr>
<tr>
<td>TOTAL</td>
<td>72,616</td>
<td>46,663</td>
</tr>
</tbody>
</table>

Note: The numbers above may vary depending on assumptions. The OPCW states that 43,131 metric tons (61 percent) have been destroyed out of a 1997 total of 71,194 metric tons as of the CWC’s entry into force. The exact sizes of South Korea’s and India’s stockpiles are not known publicly.

### Table 2: U.S. and Russian Declared Chemical Stockpiles, by Site

#### United States

<table>
<thead>
<tr>
<th>Stockpile Site</th>
<th>Original Size (Metric Tons)</th>
<th>Amount Destroyed as of Oct. 20, 2010 (Metric Tons)</th>
<th>Percentage Destroyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Anniston, Ala.</td>
<td>2,045</td>
<td>1,718</td>
<td>84</td>
</tr>
<tr>
<td>Blue Grass, Ky.</td>
<td>475</td>
<td>5</td>
<td>1</td>
</tr>
<tr>
<td>Edgewood, Md.</td>
<td>1,471</td>
<td>1,471</td>
<td>100</td>
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<tr>
<td>Johnston, Atoll</td>
<td>1,842</td>
<td>1,842</td>
<td>100</td>
</tr>
<tr>
<td>Newport, Ind.</td>
<td>1,152</td>
<td>1,152</td>
<td>100</td>
</tr>
<tr>
<td>Pine Bluff, Ark.</td>
<td>3,494</td>
<td>3,424</td>
<td>98</td>
</tr>
<tr>
<td>Pueblo, Colo.</td>
<td>2,367</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Tooele, Utah</td>
<td>12,353</td>
<td>11,612</td>
<td>94</td>
</tr>
<tr>
<td>Umatilla, Ore.</td>
<td>3,374</td>
<td>1,991</td>
<td>59</td>
</tr>
<tr>
<td>TOTAL</td>
<td>28,577</td>
<td>23,147</td>
<td>81</td>
</tr>
</tbody>
</table>

#### Russia

<table>
<thead>
<tr>
<th>Stockpile Site</th>
<th>Original Size (Metric Tons)</th>
<th>Amount Destroyed as of Sept. 2010 (Metric Tons)</th>
<th>Percentage Destroyed</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gorny, Saratov Oblast</td>
<td>1,143</td>
<td>1,143</td>
<td>100</td>
</tr>
</tbody>
</table>
### Table

| Location              | Chemical Weapons Stockpiles | Destruction
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Kambarka, Udmurt</td>
<td>6,349</td>
<td>6,349</td>
</tr>
<tr>
<td>Kizner, Udmurt</td>
<td>5,745</td>
<td>0</td>
</tr>
<tr>
<td>Leonidovka, Penza</td>
<td>6,885</td>
<td>5,500</td>
</tr>
<tr>
<td>Maradikovsky, Kirov</td>
<td>6,890</td>
<td>5,000</td>
</tr>
<tr>
<td>Pochev, Bryansk</td>
<td>7,498</td>
<td>0</td>
</tr>
<tr>
<td>Shchuch’ye, Kurgan</td>
<td>5,456</td>
<td>1,500</td>
</tr>
<tr>
<td>TOTAL</td>
<td>40,000</td>
<td>19,500</td>
</tr>
</tbody>
</table>

Note: Numbers may not add to totals due to rounding. Destruction figures are estimates.

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### ENDNOTES

1. For information on the CWC and OPCW, see www.opcw.org. The official title of the CWC is the Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on Their Destruction.

2. Article IX of the Biological Weapons Convention states, “Each State Party to this Convention affirms the recognized objective of effective prohibition of chemical weapons and, to this end, undertakes to continue negotiations in good faith with a view to reaching early agreement on effective measures for the prohibition of their development, production and stockpiling and for their destruction, and on appropriate measures concerning equipment and means of delivery specifically designed for the production or use of chemical agents for weapons purposes.” See www.state.gov/www/global/arms/treaties/bwc1.html.

3. See www.opcw.org/chemical-weapons-convention/.

4. For the full text of the CWC, see www.opcw.org/chemical-weapons-convention/.


6. The Program Manager for Chemical Demilitarization was subsequently renamed the Chemical Materials Agency (CMA). See www.cma.army.mil/.


8. U.S. Secretary of Defense Donald Rumsfeld acknowledged in a letter to the U.S. Congress in 2006 that the United States would not meet the legally binding 2012 CWC deadline. Russia acknowledged its schedule slippage beyond 2012 to the OPCW in June 2010. OPCW Director-General Rogelio Pfirter, in his opening statement to the June 2010 Executive Council, said, “The members of the Council are aware, as informed by the Russian delegation yesterday during the informal consultations, that the Russian Federation now estimates that it will complete the destruction of its chemical weapons stockpiles by 2015. Thus the two major possessorStates, the United States of America and the
Russian Federation, have now confirmed that they will not be able to meet the 29 April 2012 deadline.” OPCW Executive Council, “Opening Statement by the Director-General to the Executive Council at its 61st Session,” EC-61/DG.17, June 29, 2010, p. 2.


11. An example of this repeated usage of “A State Party” to represent South Korea as a chemical weapons possessor state is Ambassador Rogelio Pfirter’s statement before the OPCW Executive Council in 2009: “As of 30 September 2009, the aggregate amount of Category I chemical weapons destroyed by A State Party, Albania, India, the Russian Federation, and the United States of America was approximately 35,892 metric tonnes (MTs), or approximately 51.70% of the declared quantity of this category of chemical weapons. A State Party, Albania, and India had completed the destruction of all their Category I chemical weapons, while the Libyan Arab Jamahiriya has yet to commence destroying the Category I chemical weapons it had declared.” OPCW, “Note by the Director General,” EC-58/DG.11, October 7, 2009, p. 2.

12. See CWC, art. III.1.b; CWC Verification Annex, pts. IV(B).B and C.


17. Global Green USA is the coordinator of the new CWC Coalition.


19. OPCW Director-General Rogelio Pfirter alluded to past delays in annual assessments in his last report to the Executive Council: “As at 28 June 2010, 91.9% of the annual contributions for 2010 had been collected, as compared to only 64.1% by the same date last year. This is, of course, a very significant improvement. Nevertheless, I wish once again to encourage States Parties that have not yet done so, to do their utmost to pay their dues at the earliest and in full. The lack of payment on time by some Member States is indeed the subject of some reflections by the External Auditor, to which I fully subscribe.” OPCW Executive Council, “Opening Statement by the Director-General to the Executive Council at its Sixty-First Session,” EC-61/DG.17, June 29, 2010, p. 10, www.opcw.org/index.php?elID=dam_frontend_push&docID=13851.
The use of harmful chemicals in warfare, personal attacks, and assassinations dates back centuries, but the rise of industrial production of chemicals in the late 19th century opened the door to more massive use of chemical agents in combat. The first major use of chemicals on the battlefield was in World War I when Germany released chlorine gas from pressurized cylinders in April 1915 at Ypres, in Belgium. Ironically, this attack did not technically violate the 1899 Hague Peace Conference Declaration, the first international attempt to limit chemical agents in warfare, which banned only “the use of projectiles the sole object of which is the diffusion of asphyxiating or deleterious gases.” Historians estimate that, with the introduction of mustard gases in 1917, chemical weapons and agents injured some one million soldiers and killed 100,000 during the 1914-1918 war.

The 1925 Geneva Protocol sought to ban the use of biological and chemical weapons, but many of its signers joined with major reservations. China, France, the Soviet Union, and the United Kingdom all joined in the 1920s, but Japan did not join until 1970 and the United States until 1975. Between the two world wars, there were a number of reports of use of chemical weapons in regional conflicts: Morocco in 1923-1926, Tripolitania (Libya) in 1930, Sinkiang (China) in 1934, Abyssinia (Ethiopia) in 1935-1940, and Manchuria (China) in 1937-1942. World War II saw no major use of chemical weapons, with the exception of the Sino-Japanese conflict, and both President Franklin Roosevelt and German leader Adolf Hitler had stated publicly that they were personally against the first use of chemical weapons.

Most of the major powers in World War II developed, produced, and stockpiled large amounts of chemical weapons during the war. Since the end of the war in 1945, there have been only sporadic reports of limited use of chemical weapons, including in the Yemen war of 1963-1967 when Egypt bombed Yemeni villages, killing some 1,500 people. The United States heavily used herbicides such as Agent Orange and tear gas in the Vietnam War in the 1960s; although such chemicals are not covered under the Chemical Weapons Convention (CWC), some observers saw this as chemical warfare. The first major uses of chemical weapons were by Iraq in the 1980-1988 Iran-Iraq war and in Saddam Hussein’s bombing of the Kurds in Halabja in 1988. These two cases provoked widespread public opposition to the horrors and indiscriminate nature of deadly chemical agents and certainly helped to propel CWC negotiations, which had begun in the early 1980s, forward to their conclusion in 1992.

The use of the nerve agent sarin by the Japanese terrorist group Aum Shinrikyo in June 1994 in Matsumoto, Japan, and again on March 20, 1995, in the Tokyo subway system, killing 19 people and injuring some 5,000, suddenly brought to light the potential threat of nonstate actors intent on using weapons of mass destruction. The first official on-site inspection by the United States of a Russian chemical weapons stockpile in the Kurgan Oblast along the border of Kazakhstan in July 1994 well illustrated to U.S. officials that Russian chemical weapons arsenals left much to be desired regarding security against theft, diversion, and terrorism.

Iraqi insurgents in recent years have combined tanks of chlorine gas with improvised explosive devices, but with little success. There have been more recent reports of the possible limited use of chemical agents by Taliban insurgents in Afghanistan and by Turkish troops against Kurdish rebels in eastern Turkey, but these allegations remain unproven. In public statements, Osama bin Laden and al Qaeda have repeatedly threatened to use nuclear, chemical, biological, and radiological weapons.

ENDNOTES


2. “Protocol for the Prohibition of the Use in War of Asphyxiating, Poisonous or Other Gases, and of Bacteriological Methods of Warfare,” opened for signature on June 17, 1925, and entered into force on February 8, 1928.


5. This author participated in this U.S. inspection of the 5,400-metric-ton nerve agent stockpile in Shchuch’ye, in the Kurgan Oblast of Russia, in July 1994.

6. For the Turkish case, see “Gift gegen Kurden?” [Poison against the Kurds?], Der Spiegel, No. 30 (July 26, 2010).

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