



THE HENRY L.  
STIMSON  
C E N T E R

# THE CBW CHRONICLE

Volume III, Issue 2

December 2000

*A periodic newsletter about international and domestic events related to the control and elimination of chemical and biological weapons*

## Bioterrorism Concerns Spark First Smallpox Vaccine Production in 30 Years

The Centers for Disease Control and Prevention (CDC) in Atlanta awarded an estimated \$343 million contract to Massachusetts biotech company OraVax to produce 40 million doses of smallpox vaccine to augment and replace its aging stockpile from over twenty years ago. Changes in the vaccine manufacturing process, however, will delay the vaccine's availability. Meanwhile, through the military's Joint Vaccine Acquisition Program, another US biotechnology firm, BioReliance, was contracted to produce 300,000 doses of the vaccine for the protection of military personnel.

CDC currently maintains approximately 15 million doses of smallpox vaccine, retained from the 1970s. Experts have questioned the viability of the stockpile, however, noting that some flasks show evidence of condensation or other irregularities that could indicate that the vaccine's potency has been compromised. The contract with OraVax will provide fresh vaccine to deal with this concern and will ultimately more than double the number of doses available. The 20-year OraVax contract

also calls for sustained production of the vaccine both to replace outdated supplies and to respond to increased need for the vaccine upon demand.

However, the first doses from OraVax are not due to be delivered until 2004. Since the last production cycle of smallpox vaccine was completed, new regulations on the manufacture of live viral vaccines have come into force. Previously, the vaccine was cultivated by scraping cultures off the purposefully cowpox-infected legs and bellies

*(Continued on page 2)*

### IN THIS ISSUE

Bioterrorism Concerns Spark First Smallpox Vaccine Production in 30 Years.....	1
CWC Industry Inspections Underway at US Facilities.....	2
Chemical Weapons Destruction Completed on Johnston Atoll.....	5
Buzzwords: Michael Osterholm's <i>Living Terrors: What America Needs to Know to Survive the Coming Bioterrorist Catastrophe</i> .....	6
Editor's Note.....	8

(Continued from page 1)

of calves. As a result, the vaccine contained significant levels of bacteria that would not be acceptable under today's rigorous regulatory standards. OraVax will use modern cell-culture methods to manufacture the new stocks of vaccine, but must first develop and license this process. Extensive pre-clinical and clinical testing will be required before full-scale production can go forward.

To further augment the vaccine stockpile, the Saint Louis University School of Medicine Center for Vaccine Development is utilizing a small quantity of the CDC's current smallpox vaccine to research whether it could be diluted and remain effective. Should the results of this study prove positive, it could multiply the number of doses available from the existing vaccine that the CDC has on hand.

The military, meanwhile, is securing an initial 300,000 doses of the smallpox vaccine from BioReliance, tasked as part of a ten-year, \$322 million venture between the Department of Defense and a private contractor, DynPort. The Joint Vaccine Acquisition Program seeks to develop, license, produce, store, and test eighteen new vaccines to protect the armed forces against some of the more likely biowarfare agents. The number of smallpox vaccine doses is likely to increase to more than a million over time, if the initial development effort is successful.

The prospect of intentional smallpox release has raised serious concern because the

majority of the world's population has never been inoculated against the disease. The protection afforded to those immunized years ago has likely diminished over the intervening decades. Smallpox also has the added disadvantage of being a highly communicable, airborne virus that would move rapidly through a vulnerable population.

This virulence propelled the United Nations' World Health Organization (WHO) to open its worldwide campaign against smallpox in 1956 by distributing vaccines and implementing quarantines of infected populations. In 1980, WHO declared victory over smallpox, announcing its eradication. Only two small stocks of the virus were officially retained: one at the CDC in Atlanta, and one at the Soviet State Research Center of Virology and Biotechnology, in present-day Russia.

The specter of smallpox resurfaced in the mid-1990s when Dr. Ken Alibek, a senior Soviet bioweapons official, defected to the United States and reported that Soviet scientists had not only weaponized the disease, but also moved samples from the Koltsovo facility to other laboratories around Russia. A June 1999 intelligence report suggested that Iraq and North Korea might have obtained smallpox stocks of their own. Reflecting these concerns about a possible smallpox re-emergence, WHO opted to postpone last year's scheduled destruction of the known samples of the virus. □

---

## CWC Industry Inspections Underway at US Facilities

**T**he Chemical Weapons Convention (CWC) international inspectorate conducted its first inspections of US industry facilities in May 2000, three years after the treaty's entry into force. By year's end, experts anticipated that the Organization

for the Prohibition of Chemical Weapons inspection teams would complete approximately 18 on-site visits at US industry sites. In 2001, the pace will accelerate with as many as 36 inspections unfolding at US

(Continued on page 3)

**Table 1: Reporting and Inspection Thresholds for Scheduled Chemicals Under the CWC**

Type of Facility	Type of Activity to be Reported	Annual Production Threshold for Reporting	Threshold for Inspections
Schedule 1	Production, processing, consumption, acquisition, import and export data	100 grams	100 grams
Schedule 2	Production, processing, consumption, import and export data	\$ 1kg benzilate \$ 100kg (Amiton, PFIB) \$ 1 metric ton for other Schedule 2 chemicals	\$ 10 kg benzilate \$ 1 metric ton (Amiton, PFIB) \$ 10 metric tons for other Schedule 2 chemicals
Schedule 3	Production, import and export data	30 metric tons	200 metric tons
Other chemical production facilities	Production data for previous calendar year only	30 metric tons for discrete organic chemicals containing phosphorus, sulfur, or fluorine	200 metric tons

(Continued from page 2)

company facilities.

Under the CWC, treaty members were required to submit initial declarations of activity involving scheduled chemicals 30 days after the treaty’s entry into force. The US government delayed issuing regulations outlining US industry responsibilities under the CWC until December 1999, nearly three years behind schedule. Chemical companies then had to submit declarations to the US national authority for subsequent transmission to the Hague-based inspection agency. Of the more than 3,000 declarations received by the Commerce Department at the end of March 2000, 81 sites that produce, process, or consume scheduled chemicals met the CWC thresholds for inspection, which are outlined in table 1.

At September 2000 hearings before the House Committee on Government Reform, Roger Majak, Assistant Secretary of Commerce for Export Administration, testified that the CWC inspections at US firms had gone smoothly thus far, although at the

time of the hearings only ten industry inspections had occurred. As Majak noted, “[A]t least preliminarily . . . the inspections to date demonstrate that it is possible to meet the requirements of a relatively rigorous international inspection regime at reasonable costs to both government and industry, and to manage the risks of revealing valuable company confidential business information.” In accordance with the treaty’s “managed access” rules of the road, US companies subject to CWC inspections guarded confidential business information by removing unrelated materials from inspected areas, masking sections of pipes affiliated with certain chemical production processes, and covering any sensitive company documents.

According to the General Accounting Office (GAO), reported inspection costs varied markedly among the host companies, ranging from \$6,000 to \$107,000, largely because the Commerce Department did not offer companies reporting guidelines. GAO

(Continued on page 4)

(Continued from page 3)

attributed the discrepancies to differing accounting methods, whereby some companies included a broader spectrum of expenses in their tabulations. For instance, the GAO study notes, one company incorporated all financial burdens accumulated from adherence to the Commerce Department's CWC regulations. These calculations therefore included costs of working up declarations and briefing company personnel at headquarters on the inspection process and outcome. In contrast, other firms reported a narrower price tag based on only those costs accrued during the preparation for and conduct of the inspection itself. In addition, some industry sites limited their tallies to labor and travel costs, while others included expenses associated with the use of company facilities and equipment.

However, estimates from the Commerce Department on CWC industry inspection costs suggest that outlays range from \$15,000 to \$63,000, depending on the size of the facility and the number of staff each site dedicates to

the inspection. A November 1999 Commerce Department study forecasted an average inspection cost for each company of just over \$54,000, including preparation, the actual on-site visit, and the ensuing inspection report. The projection is based on average costs arising from mock visits to Schedule 1 and 2 facilities. Annual inspection expenses are expected to drop as facilities become increasingly familiar with the ins and outs of the process. According to Majak, expenses shouldered by the government during the first batch of industry inspections ran about \$50,000 per on-site visit, due in large part to labor costs associated with fielding sizeable escort teams.

The United States is one of 44 CWC members to have hosted inspections since operations got off the ground in May 1997. Although nearly 60 percent of these inspections have taken place at chemical weapons destruction, production, or storage facilities, inspectors have also visited more than 260 industry sites worldwide, as shown in table 2. □

**Table 2: Inspections Under the Chemical Weapons Convention (through 17 November 2000)**

Type of Facility	Number of Inspections	Number of Sites
Chemical weapons destruction facilities	192	16
Chemical weapons production facilities	195	64
Chemical weapons storage facilities	117	34
Abandoned chemical weapons sites	14	11
Old chemical weapons facilities	34	22
Schedule 1 facilities	76	32
Schedule 2 facilities	142	139
Schedule 3 facilities	64	64
Discrete Organic Chemicals	34	34

Source: Technical Secretariat of the Organization for the Prohibition of Chemical Weapons

## Chemical Weapons Destruction Completed on Johnston Atoll

Efforts to destroy US chemical weapons reached a milestone on 30 November 2000, when the Army reported the destruction of the last of 400,000 weapons stockpiled on Johnston Atoll. This announcement was a welcome event for the Army's chemical demilitarization program, which has come under constant scrutiny, most recently at House Armed Services Committee hearings in September. A sarin gas leak that occurred at the Tooele, Utah destruction facility in May prompted the hearings.



*MC-1 bombs containing sarin nerve gas were one of the types of munitions that were destroyed at JACADS.*

Photo courtesy of the US Army, Program Manager for Chemical Demilitarization website.

While it was designated a national wildlife refuge in 1940, Johnston Atoll has played a prominent role in the US military presence in the Pacific, serving as a refueling and supply station in World War II and as a site for atmospheric nuclear testing in the 1960s. In 1971, it became the Army's major storage site for chemical weapons removed from Okinawa, Japan. After the 1985 decision to destroy the US stockpile, the Army created

the Johnston Atoll Chemical Armament Destruction System (JACADS).

JACADS went online in 1990, becoming the world's first full-scale facility for chemical weapons destruction, operating at a cost of \$120 million annually. Using incineration to dispose of rockets, mortars and mines containing nerve and blister agents, the facility destroyed approximately 6 percent of the nation's total chemical weapons stockpile. Now that JACADS' mission is complete, the Army has pledged to work with the Environmental Protection Agency to decontaminate and ultimately destroy the facility. Closure is expected to take approximately three years. Management of the atoll will then return to the US Fish and Wildlife Service.

Chemical weapons stockpiles remain at eight sites in the continental United States. The only destruction facility currently operating is at Tooele, which has been functioning since 1996. Table 3 shows the current status of destruction activities at the Utah facility and the overall US stockpile destruction program. Three other incineration sites—at Pine Bluff, Arkansas; Anniston, Alabama; and Umatilla, Oregon—are under construction and should be finished within three years. Sites at Newport, Indiana and Aberdeen, Maryland will use neutralization techniques to dispose of their respective bulk stocks of VX and mustard. Finally, two remaining sites at Pueblo, Colorado and Blue Grass, Kentucky, are still in the planning stages as the Assembled Chemical Weapons Assessment program weighs which, if any, alternative technologies should be employed to dispose of the weaponized agent stockpiles at those locations.

*(Continued on page 6)*

**Table 3: Status of US Chemical Weapons Destruction (through 10 December 2000)**

<b>Destruction Facility</b>	<b>Tonnage Destroyed</b>	<b>Percent of Original Tonnage Destroyed</b>	<b>Total Munitions and Bulk Containers Destroyed</b>	<b>Percent of Original Munitions Destroyed</b>
Johnston Atoll	2,031	100.0%	412,732	100.0%
Tooele, Utah	4,865	35.7%	681,469	59.8%
<b>TOTAL</b>	<b>6,986</b>	<b>21.8%</b>	<b>1,094,201</b>	<b>31.7%</b>

Source: US Army Program Manager for Chemical Demilitarization

(Continued from page 5)

The Tooele site is no stranger to controversy. Several former employees have alleged lax safety measures and poor management at the plant. In May 2000, a leak occurred from one of the plant's stacks, an incident that prompted the House Armed Services Committee to hold hearings in September inquiring into the cause and handling of the emission. Officials involved with Tooele operations, including Chemical Demilitarization Program Manager James Bacon, testified that the sarin release was the result of a combination of human error and equipment malfunction. No one was harmed by the release. Shut down immediately after the incident, the facility reopened after both the personnel and equipment matters were addressed to the satisfaction of Utah regulatory officials.

The US chemical demilitarization program has been under development for over a decade. The fiscal year 1986 Defense Authorization Act called for the destruction of 98 percent of the US stockpile. Originally, the Army approximated that work could be completed by 1994 at a cost of \$1.7 billion. Tallies have since risen dramatically, with the Army now estimating a \$14.9 billion tab. Other private studies have indicated figures as high as \$15.6 billion.

Although 90 percent elimination is feasible, complete destruction of US chemical weapons is unlikely to occur by the 2007 deadline called for in the Chemical Weapons Convention for

three reasons. First, the delay in getting the Pueblo and Blue Grass sites up and running decreases the likelihood of eliminating their stockpiles in time. Together, the two sites comprise approximately 10 percent of the total US stockpile. Second, questions linger as to whether the other sites currently under construction will be able to finish their activities before 2007. Finally, even if the eight remaining stockpile sites were to complete their work, quantities of nonstockpile chemical warfare materiel—including binary chemical weapons, former production facilities, miscellaneous chemical warfare material, recovered chemical weapons, and buried chemical warfare material—remain at additional sites around the country. □

**BUZZWORDS: Michael Osterholm's *Living Terrors: What America Needs to Know to Survive the Coming Bioterrorist Catastrophe***

**A**lthough a number of recent books have examined the unconventional terrorism phenomenon, few have separated biological terrorism from its nuclear and chemical cousins and examined the unique implications such an attack would bring with it. Breaking with this trend, however, Dr. Michael



## Editor's Note

The marathon election of 2000 has finally drawn to a close, bringing with it the bureaucratic turnover that traditionally accompanies presidential baton passing. In addition to widespread personnel shifts, the early months of President-elect George W. Bush's administration will bring prime opportunities for breaking the gridlock that has nagged at chemical and biological weapons nonproliferation efforts in recent memory. At the top of the next president's set of chemical-biological priorities should be axing the exemptions to the Chemical Weapons Convention (CWC) inserted into the US implementing legislation. These killer conditions, which allow refusals of challenge inspections at US facilities and bar the removal of inspection samples from US soil, undermine several of the treaty's key provisions and set terrible examples that other treaty members appear only too eager to follow. Bush could fulfill his father's chemical nonproliferation legacy by setting out to close these damaging loopholes.

A second notch on Bush's chem-bio "to

do" list should be swift adherence to the National Security and Corporate Fairness Under the Biological Weapons Convention Act, passed by Congress over a year ago. Specifically, the legislation obliges the federal government to conduct a series of trial investigations of monitoring techniques under consideration for a Biological and Toxin Weapons Convention (BWC) compliance protocol. The trials are required at both government and industry sites—including biodefense installations, academic institutions, vaccine production facilities, and pharmaceutical and biotechnology firms—to ensure that monitoring measures contemplated by negotiators in Geneva can be effective without compromising confidential business or national security information. Little movement toward carrying out the trials has occurred to date, particularly those elements applicable to the US pharmaceutical and biotechnology industries. Unless Bush moves a serious examination of US negotiating positions onto his administration's radar screen sooner rather than later, the US will run the risk of allowing the rest of the world to shape a verification protocol without crucial input from key US constituencies. ☐

### About the Newsletter, the Stimson Center, and its CBW Programming

*The CBW Chronicle*, a product of the Chemical and Biological Weapons Nonproliferation Project, was prepared by Claudine McCarthy and Leslie-Anne Levy. Directed by Amy E. Smithson, the CBW Nonproliferation Project is funded by the Carnegie Corporation of New York, the John D. and Catherine T. MacArthur Foundation, the Ploughshares Fund, and Mrs. Margaret Spanel. The project, which was launched in January 1993, serves as a problem-solver and an information clearinghouse on issues associated with the control and elimination of chemical and biological weapons.

The Henry L. Stimson Center was founded in 1989 as a non-profit, nonpartisan institution devoted to public policy research. The Stimson Center concentrates on particularly difficult national and international security issues where policy, technology, and politics intersect. Information on the project, extensive reference materials, and publications are available at: [www.stimson.org](http://www.stimson.org).

11 Dupont Circle, NW Ninth Floor Washington, DC 20036  
phone: 202.223.5956 fax: 202.238.9604