Biological Warfare Program

Iraq has the capability to convert quickly legitimate vaccine and biopesticide plants to biological warfare (BW) production and already may have done so. This capability is particularly troublesome because Iraq has a record of concealing its BW activities and lying about the existence of its offensive BW program.

After four years of claiming that they had conducted only "small-scale, defensive" research, Iraqi officials finally admitted to inspectors in 1995 to production and weaponization of biological agents. The Iraqis admitted this only after being faced with evidence of their procurement of a large volume of growth media and the defection of Husayn Kamil, former director of Iraq's military industries.



Two R-400A bombs in foreground photographed by UNSCOM inspectors at Murasana Airfield near the Al Walld Airbase in late 1991 bear markings indicating they were to be filled with botulinum toxin. Other bombs appear to have markings consistent with binary chemical agent fill. This evidence contradicted Iraq's declarations that it did not deploy BW munitions to operational airbases and that it destroyed all BW bombs in July 1991—declarations that were subsequently retracted in the face of overwhelming evidence to the contrary.

Iraq: Declared BW-Related Sites



Iraqi-Acknowledged Open-Air Testing of Biological Weapons

Location-Date	Agent	Munition
Al Muhammadiyat – Mar 1988	Bacillus subtilis ⁵	250-gauge bomb (cap. 65 liters)
Al Muhammadiyat – Mar 1988	Botulinum toxin	250-gauge bomb (cap. 65 liters)
Al Muhammadiyat – Nov 1989	Bacillus subtilis	122mm rocket (cap. 8 liters)
Al Muhammadiyat – Nov 1989	Botulinum toxin	122mm rocket (cap. 8 liters)
Al Muhammadiyat – Nov 1989	Aflatoxin	122mm rocket (cap. 8 liters)
Khan Bani Saad – Aug 1988	Bacillus subtilis	aerosol generator – Mi-2
-		helicopter with modified agricultural spray equipment
Al Muhammadiyat – Dec 1989	Bacillus subtilis	R-400 bomb (cap. 85 liters)
Al Muhammadiyat – Nov 1989	Botulinum toxin	R-400 bomb (cap. 85 liters)
Al Muhammadiyat – Nov 1989	Aflatoxin	R-400 bomb (cap. 85 liters)
Jurf al-Sakr Firing Range – Sep 1989	Ricin	155mm artillery shell (cap. 3 liters)
Abu Obeydi Airfield – Dec 1990	Water	Modified Mirage F1 drop-tank (cap. 2,200 liters)
Abu Obeydi Airfield – Dec 1990	Water/potassium	Modified Mirage F1 drop-tank
	permanganate	(cap. 2,200 liters)
Abu Obeydi Airfield – Jan 1991	Water/glycerine	Modified Mirage F1 drop-tank (cap. 2,200 liters)
Abu Obeydi Airfield – Jan 1991	Bacillus subtilis/Glycerine	Modified Mirage F1 drop-tank (cap. 2,200 liters)

• Iraq admitted producing thousands of liters of the BW agents anthrax, ⁶ botulinum toxin, (which paralyzes respiratory muscles and can be fatal within 24 to 36 hours), and aflatoxin, (a potent carcinogen that can attack the liver, killing years after ingestion), and preparing BW-filled Scud-variant missile warheads, aerial bombs, and aircraft spray tanks before the Gulf war.

Baghdad did not provide persuasive evidence to support its claims that it unilaterally destroyed its BW agents and munitions. Experts from UNSCOM assessed that Baghdad's declarations vastly understated the production of biological agents and estimated that Iraq actually produced two-to-four times the amount of agent that it acknowledged producing, including *Bacillus anthracis*—the causative agent of anthrax—and botulinum toxin.

The improvement or expansion of a number of nominally "civilian" facilities that were directly associated with biological weapons indicates that key aspects of Iraq's offensive BW program are active and most elements more advanced and larger than before the 1990-1991 Gulf war.

⁵ Bacillus subtilis is commonly used as a simulant for *B. anthracis*.

⁶ An infectious dose of anthrax is about 8,000 spores, or less than one-millionth of a gram in a non immuno-compromised person. Inhalation anthrax historically has been 100 percent fatal within five to seven days, although in recent cases aggressive medical treatment has reduced the fatality rate.

- The al-Dawrah Foot-and-Mouth Disease (FMD) Vaccine Facility is one of two known Biocontainment Level-3—facilities in Iraq with an extensive air handling and filtering system. Iraq admitted that before the Gulf war Al-Dawrah had been a BW agent production facility. UNSCOM attempted to render it useless for BW agent production in 1996 but left some production equipment in place because UNSCOM could not prove it was connected to previous BW work. In 2001, Iraq announced it would begin renovating the plant without UN approval, ostensibly to produce a vaccine to combat an FMD outbreak. In fact, Iraq easily can import all the foot-and-mouth vaccine it needs through the UN.
- The Amiriyah Serum and Vaccine Institute is an ideal cover location for BW research, testing, production, and storage. UN inspectors discovered documents related to BW research at this facility, some showing that BW cultures, agents, and equipment were stored there during the Gulf war. Of particular concern is the plant's new storage capacity, which greatly exceeds Iraq's needs for legitimate medical storage.
- The Fallujah III Castor Oil Production Plant is situated on a large complex with an historical connection to Iraq's CW program. Of immediate BW concern is the



potential production of ricin toxin.⁷ Castor bean pulp, left over from castor oil production, can be used to extract ricin toxin. Iraq admitted to UNSCOM that it manufactured ricin and field-tested it in artillery shells before the Gulf war. Iraq operated this plant for legitimate purposes under UNSCOM scrutiny before 1998 when UN inspectors left the country. Since 1999, Iraq has rebuilt major structures destroyed during Operation Desert Fox. Iraqi officials claim they are making castor oil for brake fluid, but verifying such claims without UN inspections is impossible.

In addition to questions about activity at known facilities, **there are compelling reasons to be concerned about BW activity at other sites and in mobile production units and laboratories.** Baghdad has pursued a mobile BW research and production capability to better conceal its program.

- UNSCOM uncovered a document on Iraqi Military Industrial Commission letterhead indicating that Iraq was interested in developing mobile fermentation units, and an Iraqi scientist admitted to UN inspectors that Iraq was trying to move in the direction of mobile BW production.
- Iraq has now established large-scale, redundant, and concealed BW agent production capabilities based on mobile BW facilities.

Ballistic Missile Program

Iraq has developed a ballistic missile capability that exceeds the 150km range limitation established under UNSCR 687. During the 1980s, Iraq purchased 819 Scud B missiles from the USSR. Hundreds of these 300km range missiles were used to attack Iranian cities during the Iran-Iraq War. Beginning in 1987, Iraq converted many of these Soviet Scuds into extended-range variants, some of which were fired at Tehran; some were launched during the Gulf war, and others remained in Iraq's inventory at war's end. Iraq admitted filling at least 75 of its Scud warheads with chemical or biological agents and deployed these weapons for use against Coalition forces and regional opponents, including Israel in 1991.

Most of the approximately 90 Scud-type missiles Saddam fired at Israel, Saudi Arabia, and Bahrain during the Gulf war were al-Husayn variants that the Iraqis modified by lengthening the airframe and increasing fuel capacity, extending the range to 650 km.

Baghdad was developing other longer-range missiles based on Scud technology, including the 900km al-Abbas. Iraq was designing follow-on multi-stage and clustered medium-range ballistic missile (MRBM) concepts with intended ranges up to 3,000 km. Iraq also had a program to develop a two-stage missile, called the Badr-2000, using solid-propellants with an estimated range of 750 to 1,000 km.

⁷ Ricin can cause multiple organ failure within one or two days after inhalation.