

Lessons from Iraq on bioweapons

There are strong political pressures to relax the scrutiny of suspected biological weapons activity in Iraq. But the experience of United Nations inspectors in the country points to significant dangers in such a policy.

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The United Nations Special Commission (UNSCOM) was created by the Security Council in 1991 to ensure the destruction or inactivation of all items related to Iraq's biological, chemical and long-range missile weapons capabilities. It was envisaged that Iraq would provide within 15 days a full declaration of all its weapons of mass destruction. Verification of this declaration and disarmament would follow soon after.

But Iraq has fallen well short of this ideal. When UNSCOM's inspectors left Iraq last December in anticipation of military action, the commission's disarmament work was far from complete. Nevertheless, some UN member states are proposing to forgo further disarmament, in favour of establishing a routine mechanism to monitor Iraq's compliance with Security Council resolutions.

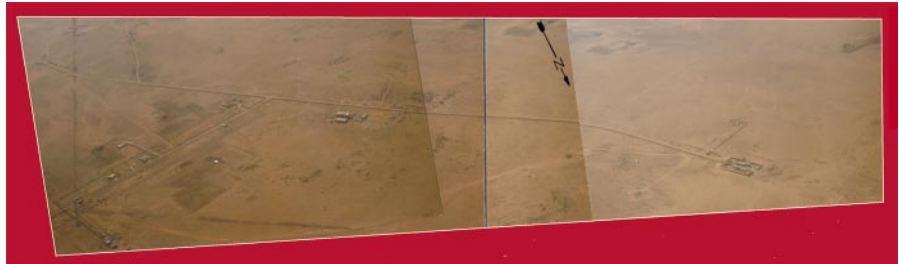
It is part of UNSCOM's mission to develop a plan for future monitoring, but this cannot be effective unless it starts from a baseline of full disclosure of past and present activities. Focusing on Iraq's biological weapons programme, I will argue that UNSCOM's still-fragmentary knowledge makes it essential that the commission be allowed to finish its disarmament work before a monitoring regime can be fully implemented.

Bioweapons factory revealed

In April 1991, in response to its obligations under Security Council resolution 687, Iraq declared that it did not have a biological warfare programme. It also ratified the international convention that prohibits the production of biological weapons. (Iraq would later declare that at that time it had 157 aerial bombs and 25 warheads filled with *Clostridium botulinum* toxin, *Bacillus anthracis* spores and aflatoxin, as well as several thousand litres of biological warfare agents.)

The commission first sent biological warfare experts to Iraq in August 1991. Iraq then declared that it had indeed conducted biological research for military purposes on a limited scale. It claimed these activities had ceased in 1990, that no biological warfare agents were produced in bulk or put in weapons, and that all material had been destroyed.

UNSCOM experts were suspicious that Iraq was not revealing the true scale of its biological warfare programme, but their initial investigations made little progress. The organization had to evolve a more searching mode of operation. Largely because of this approach, and contrary to critics' claims, UNSCOM made significant progress over the



Large-scale preparations for biological warfare: Iraq's main biological weapons site at Al-Hakam (top) housed equipment to produce biological agents (left) that were also placed in aerial bombs.

following years. This led to surprising discoveries about the extent of Iraq's activities.

UNSCOM's knowledge about the programme was still limited to Iraq's initial declaration when the Al-Hakam factory was first inspected in September 1991. The experts were astonished by the factory's size, layout and security measures. It was located in desert 60 kilometres south of Baghdad. The site spread over an area of 3×6 km, secured by a high fence and guard towers. Buildings were widely dispersed across the site.

Iraq claimed that Al-Hakam was a civilian project, producing mainly single-cell protein, based on yeast strains, as animal feed and bio-pesticide (*B. thuringiensis*). But UNSCOM experts had strong suspicions. Their doubts were raised by the isolated location of the factory; the equipment present; the isolation of buildings to create areas of containment; and the dimensions of the animal facility and incinerator. Iraq was also unable to prove the economic viability of the stated projects. UNSCOM concluded that Al-Hakam would have great potential for an offensive biological warfare programme, but there was only circumstantial evidence.

Although Iraq continued to deny that it had ever had an offensive biological warfare programme, the concerns raised by this and other inspections motivated UNSCOM to continue its investigations. Through intrusive inspections, more was learned about Iraq's biological capabilities, and preliminary baselines for future compliance monitoring were set. But these baselines lacked the most important ingredient: a full understanding of the strategy and current status of Iraq's biological warfare programme.

In 1995, the commission became aware that Iraq had imported more than 40 tonnes of bacterial growth media in the late 1980s. That volume was far more than could possibly be justified by industrial activities: Iraq was unable to account credibly for about 17 tonnes. Following continued pressure from UNSCOM, Iraq finally admitted in July 1995 that it had had an offensive biological warfare programme, and had used the missing growth media to produce biological warfare agents. It also admitted that Al-Hakam was a biological warfare factory. But, incredibly, Iraq denied having put biological agents into weapons.

Iraq threatened to cease cooperation with UNSCOM unless there was progress towards the lifting of sanctions. Then, in August 1995, following the departure of the head of Iraq's programmes for weapons of mass destruction, Iraq admitted to a significant biological warfare programme, including research into a range of agents, some of which had been placed in weapons.

After many interviews and site inspections, and a series of "full, final and complete disclosures" by Iraq between 1992 and 1997, UNSCOM gained a better understanding of the programme. In the early 1970s, a biological warfare institute had been established near Baghdad. Although this attempt is alleged to have failed, Iraq says a second biological warfare programme started in 1985, initially under the umbrella of the chemical weapons programme. Shortly afterwards, the group moved to a peninsula southeast of Baghdad, where it operated inside the forensic department of an organization related to Iraq's security apparatus. Small-scale production of agents and toxicity tests with ani-

mals were performed. Research focused on agents including *B. anthracis*, *C. botulinum*, *C. perfringens*, aflatoxins, *Tilletia* spp., trichothecenes, ricin, enteroviruses, rotaviruses and camelpox virus. In addition, as simulants for *B. anthracis*, *B. subtilis* was used in weapon field trials and *B. thuringiensis* was produced for studying spray drying of agents.

In 1988–89 the group moved to the top-secret Al-Hakam factory. In 1990, shortly before the Gulf War, the programme was on the verge of further significant expansion. Research into viruses and genetic engineering began. *C. botulinum*, *B. anthracis* and aflatoxin were produced in quantity and placed in bombs and long-range missile warheads. Devices for large-scale aerosol dissemination of agents were being field-tested in 1991, five months after Iraq had invaded Kuwait.

Destroying the evidence

UNSCOM is the first organization to have demonstrated, through systematic technical work, the existence of a covert biological warfare programme. In 1991, Iraq decided to hide all evidence of its programme, and claims that this was achieved by destruction of all weapons, agents and documents. It continues to argue that all disarmament is therefore finished. But the claimed destruction has not been supported with credible evidence.

The only direct evidence for the programme has been found through UNSCOM inspections. Intact aerial bombs and remnants of missile warheads have recently been unearthed at declared destruction sites. DNA analysis revealed a biological agent. The data only partly fit Iraq's account.

Other evidence was found at the Al-Hakam factory, which was destroyed under UNSCOM supervision in 1996. Iraq later admitted that it had cleaned all the equipment to prevent detection of agents. UNSCOM's sampling of the equipment demonstrated the success of these concealment attempts: no live agent could be isolated. Nevertheless, highly sensitive and specific DNA-based detection methods found traces of agent in some samples, including a pH probe, whose contents escaped decontamination. If done imaginatively and thoroughly, biological sampling is an important tool for inspection teams.

UNSCOM has established that Iraq has the capability to sustain or rejuvenate a significant biological warfare programme. Considering the lengths to which Iraq has gone to limit investigations, it is prudent to assume it still has the intention of acquiring such weapons. So, Iraq is not complying with the technical criteria UNSCOM has set in accordance with Security Council resolutions. The assessment of non-compliance was reached unanimously by experts provided to UNSCOM by many UN member states.

Because this assessment is purely technical and not political, it is not negotiable. It cannot be made to go away by changing the



Desert storm: the Al-Hakam biological weapons factory was destroyed by UNSCOM in 1996.

composition of UNSCOM or by turning it into a new organization — as was proposed in January by several governments, to resolve the stalemate between Iraq and the UN. Iraq's position is that it will not cooperate further with UNSCOM's disarmament work. It demands the lifting of sanctions, claiming that disarmament is finished.

The proposals to change UNSCOM lack technical detail, but are mainly based on the assumption that the preventative benefits of biological monitoring would justify leaving the disarmament work unfinished. On 30 January, the president of the Security Council stated that a new panel would assess all available information on the state of disarmament in Iraq. Recommendations for how to re-establish an effective regime of disarmament and/or monitoring and verification are expected from the panel by 15 April.

Political risk

If we get it wrong in Iraq, what is at stake? Despite strenuous efforts, the commission does not have any credible evidence that Iraq has abandoned its biological warfare programme, destroyed all stocks of agent and weapons, or given up its intention of acquiring weapons of mass destruction. It is unclear whether Iraq's destruction of biological warfare items in 1991 was aimed at obliterating its programme, as claimed, or simply an attempt to conceal the evidence. If the purpose was to deceive the commission, destruction may well have been incomplete. Iraq's intentions are defined by the extent to which it is willing to resolve the 'disarmament' part of the commission's work. Full disclosure, verified by UNSCOM inspectors, is the only credible way for Iraq to prove it has given up its intention of acquiring weapons of mass destruction. In this way, the obliteration of the biological warfare programme can be established and compliance with Security Council resolutions can be demonstrated.

Routine monitoring must be considered primarily as a means of verifying continuing compliance. Because Iraq is violating its obligations under Security Council resolutions, the commission cannot be expected to prove compliance through its biological monitoring, but only to demonstrate the continuation of non-compliance. In the past year alone, inspectors have found 800 signif-

icant pieces of dual-use biological equipment that had not been declared by Iraq.

Several countries have proposed that the commission's unfinished disarmament work (the resolution of which is linked to the lifting of the oil embargo) could be replaced by a comprehensive monitoring system. The implication is that biological monitoring could validate the absence of non-compliance, even though a country is assumed to be violating treaty obligations. Such a concept is not based on any evidence and ignores the relationship between monitoring and compliance. If there is compliance, the absence of non-compliance can be verified with some confidence. If there is no basic compliance, this cannot be done because it is impossible to monitor a whole country continuously.

Biological agent containers and dissemination devices are small and hard to recognize. Equipment used for biological warfare purposes is the same as that used for legitimate academic and industrial activities. Frequent monitoring may be a deterrent, but this is true only for the inspected facility itself.

If the commission's disarmament work is left unfinished this will militate against the establishment of an effective monitoring regime. If Iraq is not forced to make a full disclosure of its past programme, why should it be open about current and future activities? Monitoring against a wall of concealment would constantly trigger alarms indicating potential violations. Keeping the threshold for alarms at a reasonably sensitive level would prevent the building of confidence in the effectiveness of the monitoring system. The next serious crisis between Iraq and the international community is already programmed into such a concept.

Bearing in mind the limitations of monitoring and the necessity to establish compliance, a mature monitoring system can be set up that is not based on unrealistic expectations. It would be based on verification by UNSCOM of a full declaration by Iraq, allowing for a reasonable baseline for future monitoring to be set. Such a system might even be capable of gathering enough evidence to raise the alarm in the case of a violation, although it would probably not stop a country from building a clandestine programme.

If the political will existed to establish a capable monitoring system, it would send a strong message that the international community considers biological weapons to be no part of the arsenal of civilized countries. It would reflect the uncompromising stance that no one will be allowed to get away with acquiring biological weapons. Much more is at stake than just the case of Iraq. □

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