

Bolstering Saudi Arabia's CBRN Defenses

by [Faris Almaari \(/experts/faris-almaari\)](#)

Jun 14, 2023

ABOUT THE AUTHORS

[Faris Almaari \(/experts/faris-almaari\)](#)

Faris Almaari is a research assistant in The Washington Institute's Rubin Family Arab Politics Program.

 Brief Analysis

The kingdom has substantial gaps in its ability to handle nonconventional attacks or incidents involving the release of hazardous materials, but addressing them now could improve both its readiness at home and its interoperability with foreign forces.

Despite recent moves to [normalize ties with Iran \(https://www.washingtoninstitute.org/policy-analysis/what-beijings-iran-saudi-deal-means-and-what-it-doesnt\)](https://www.washingtoninstitute.org/policy-analysis/what-beijings-iran-saudi-deal-means-and-what-it-doesnt), Saudi Arabia needs to prepare for a potential future in which the Islamic Republic has nuclear arms and other weapons of mass destruction (WMD). Chemical weapons have been used in several regional conflicts over the past few decades, (e.g., the Syrian civil war; the Iran-Iraq War in the 1980s), and Tehran's [ongoing progress \(https://thehill.com/opinion/international/3878385-is-iran-ready-to-build-a-nuclear-bomb-or-not/\)](https://thehill.com/opinion/international/3878385-is-iran-ready-to-build-a-nuclear-bomb-or-not/) on uranium enrichment threatens to spark a nuclear proliferation cascade in the Middle East. Accordingly, Riyadh should develop a robust program for chemical, biological, radiological, and nuclear (CBRN) defense training and readiness, and improve interoperability between its military and civilian CBRN defense components.

Most public discussion of this topic focuses on deterrence and active (e.g., missile) defense, but a more holistic approach would also focus on passive defense and emergency response. These capabilities are essential to dealing with potential CBRN attacks and other incidents that result in the release of hazardous materials, such as an industrial accident or an attack that hits a petrochemical complex (or, in the future, a nuclear power plant). Indeed, petrochemical facilities have already been targeted by [cyberattacks \(https://www.eenews.net/articles/the-inside-story-of-the-worlds-most-dangerous-malware/\)](https://www.eenews.net/articles/the-inside-story-of-the-worlds-most-dangerous-malware/) and Houthi/Iranian [drone strikes \(https://www.csis.org/analysis/iranian-and-houthi-war-against-saudi-arabia\)](https://www.csis.org/analysis/iranian-and-houthi-war-against-saudi-arabia) increasing the urgency of enhanced Saudi preparedness.

The Military's CBRN Defense and Response Capabilities

Few if any militaries are truly proficient at CBRN defense, in part because the obstacles to achieving this goal are formidable. For troops in the field, training in protective gear is onerous and can be fatal in the desert heat. Basic tasks like eating and drinking become almost impossible. Moreover, the cost of purchasing the necessary equipment in sufficient quantities is prohibitive. Most armed forces therefore prefer to deal with the threat via deterrence, while creating baseline CBRN defense capabilities in case deterrence fails.

In Saudi Arabia, at least some troops are issued CBRN protective gear, while the counter-WMD corps within the Royal Saudi Land Forces (RSLF) and relevant personnel in the Royal Saudi Air Force (RSAF) have CBRN detection, reconnaissance, decontamination, and collective-protection equipment of various types. Yet training is insufficient.

For instance, enlisted service members do not receive CBRN defense instruction during basic training, and only those who end up becoming CBRN specialists receive it later. Commissioned officers receive only classroom instruction on the subject unless they are CBRN officers. These gaps are problematic given that initial and regular sustainment training are essential for proficiency in CBRN defense operations.

The kingdom's primary WMD defense school belongs to the RSLF and is located in al-Kharj near Riyadh. Enlisted personnel and officers study there prior to joining the counter-WMD corps. In addition, the Royal Saudi Air Defense Forces (RSADF) have their own chemical warfare and WMD defense school that was [established in 2017 \(https://www.al-madina.com/article/516230/\)](https://www.al-madina.com/article/516230/) [محلطات/قائد-الدفاع-الجوي-يفتح-مينى-الوقاية-من-أسلحة-الدمار-الشامل](https://www.al-madina.com/article/516230/).

Unsurprisingly, Washington has been Riyadh's closest foreign partner on CBRN defense training. Between [2010 \(https://2009-2017.state.gov/t/pm/rls/rpt/fmrpt/index.htm\)](https://2009-2017.state.gov/t/pm/rls/rpt/fmrpt/index.htm) and [2020 \(https://www.state.gov/foreign-military-training-and-dod-engagement-activities-of-interest/\)](https://www.state.gov/foreign-military-training-and-dod-engagement-activities-of-interest/), seventy-seven Saudi officers were reportedly sent to receive such training in the United States, nearly half of them from the RSLF. Similarly, RSAF personnel have conducted several CBRN training exercises with U.S. forces at Prince Sultan Air Base (in [December 2019 \(https://www.dvidshub.net/video/729818/psab-emergency-management-team-participates-bi-lateral-exercise-with-rsaf\)](https://www.dvidshub.net/video/729818/psab-emergency-management-team-participates-bi-lateral-exercise-with-rsaf), [December 2020 \(https://www.afcent.af.mil/News/Article/2451254/usaf-rsaf-exercise-hazmat-response/\)](https://www.afcent.af.mil/News/Article/2451254/usaf-rsaf-exercise-hazmat-response/), [May 2021 \(https://www.afcent.af.mil/Units/378th-Air-Expeditionary-Wing/News/Article/2639348/psab-and-rsaf-personnel-conduct-cbrn-exercise/\)](https://www.afcent.af.mil/Units/378th-Air-Expeditionary-Wing/News/Article/2639348/psab-and-rsaf-personnel-conduct-cbrn-exercise/), and [September 2022 \(https://www.dvidshub.net/news/430758/together-psab-will-respond\)](https://www.dvidshub.net/news/430758/together-psab-will-respond)). Saudi Arabia has also sent a handful of service members to study at [NATO's Joint CBRN Defense Center of Excellence \(https://www.jcbrncoe.org/index.php/news-newsletter/events-67/main-events-2021/594-cbrn-consequence-management-course-mobile-education-training-team-virtual-support-to-the-state-of-kuwait-and-partners\)](https://www.jcbrncoe.org/index.php/news-newsletter/events-67/main-events-2021/594-cbrn-consequence-management-course-mobile-education-training-team-virtual-support-to-the-state-of-kuwait-and-partners) and the EU's CBRN Centre of Excellence [\(https://cbrn-risk-mitigation.network.europa.eu/projects-pool-page-use-list-page-instead/project-080_en\)](https://cbrn-risk-mitigation.network.europa.eu/projects-pool-page-use-list-page-instead/project-080_en) in Abu Dhabi.

Concentrating so much of the military's CBRN defense capability in the RSLF's counter-WMD corps would place an inordinate burden on these personnel if they were tasked with responding to simultaneous WMD attacks or other major incidents. Although each RSLF base across the country has at least one counter-WMD company, the potential dangers involved in such scenarios should compel the armed forces to improve these capabilities among all branches, including the Saudi Arabian National Guard (SANG).

Military-Civil Interoperability

Another important area of focus is enhancing interoperability among the armed forces and between military and civilian CBRN defense organizations. Between 2017 and 2022, Saudi and American outlets reported that the kingdom's forces participated in nine joint military CBRN exercises. Although it is possible that not every CBRN exercise gets media coverage, these reports nonetheless suggest that interoperability and readiness need to be expanded and improved.

For instance, the RSLF reportedly participated in five exercises during this period, but only two of them involved other Saudi military branches—one with the RSAF, another with the RSADF. The other three RSLF exercises involved Kuwaiti, Jordanian, and U.S. troops. The RSAF likewise participated in five joint exercises, but only one of them involved other Saudi forces (the RSLF and various civilian bodies); the other four were with U.S. troops. Moreover, these exercises were held largely in the central and northern commands, so they likely had limited impact on the interoperability and readiness of forces stationed elsewhere.

Notably, reports indicate that members of SANG—an organization with 130,000 personnel, comprising nearly half of the armed forces—have been involved in just one joint CBRN exercise since 2017, as [observers \(https://www.spa.gov.sa/viewstory.php?lang=ar&newsid=1815628\)](https://www.spa.gov.sa/viewstory.php?lang=ar&newsid=1815628) rather than participants. And published sources do not mention any involvement by the

Royal Saudi Naval Forces or Royal Saudi Strategic Missile Force during this period.

As for civil-military interoperability, Red Crescent and the General Directorate of Civil Defense have reportedly participated in just three joint CBRN exercises with domestic and foreign military forces over the past five years (in [September 2018 \(https://sp.spa.gov.sa/viewfullstory.php?lang=ar&newsid=1815628\)](https://sp.spa.gov.sa/viewfullstory.php?lang=ar&newsid=1815628), [January 2022 \(https://sp.spa.gov.sa/viewfullstory.php?lang=ar&newsid=2321443#2321443\)](https://sp.spa.gov.sa/viewfullstory.php?lang=ar&newsid=2321443#2321443), and [March 2022 \(https://saudigazette.com.sa/article/6181371\)](https://saudigazette.com.sa/article/6181371)), while the Ministry of Health participated in just two. To be sure, Civil Defense and the Health Ministry also conduct separate CBRN training of their own, especially around the Hajj season. Yet more joint training would further enhance their readiness to assist with the domestic response to military attacks and other emergencies. The kingdom also needs more joint exercises simulating a response to incidents involving critical infrastructure, in conjunction with relevant quasi-military and civilian bodies such as Civil Defense, the High Commission for Industrial Security (HCIS), and the Health Ministry.

In its [latest annual report \(https://nrcc.gov.sa/ar/Documents/final%20annual%20report%202021.pdf\)](https://nrcc.gov.sa/ar/Documents/final%20annual%20report%202021.pdf) from 2021, the Saudi Nuclear and Radiological Regulatory Commission (NRRC) laid out several areas for improvement in civil-military cooperation. First, it noted insufficient attendance by first responders and radiological emergency services at NRRC training camps, with just one or two participants from relevant agencies such as SANG, the Ministry of Defense, Red Crescent, HCIS, and Civil Defense.

Second, it expressed concern that government bodies included in the National Response Plan for Nuclear and Radiological Emergencies (NRPNRE) are insufficiently familiar with the plan and lack the training needed to fulfill their responsibilities defined therein. This lack of preparedness was discussed in a recent [preprint study \(https://www.researchsquare.com/article/rs-104590/v1\)](https://www.researchsquare.com/article/rs-104590/v1) regarding ten government hospitals in Riyadh, which characterized CBRN preparedness in these facilities as “less than satisfactory.” The investigators recommended better CBRN emergency training, more CBRN drills and detection equipment, and enhanced antidote stockpile management, among other findings.

That said, the NRRC report also noted several positive developments, such as plans to increase the number of radiation detection stations from 140 to 240 across the kingdom, and efforts to improve the sector’s legal framework to facilitate cooperation with international partners. In addition, the commission recommended the creation of nuclear and radiological emergency response offices in government bodies responsible for implementing the NRPNRE.

Many of these problems are also evident in the kingdom’s preparedness for nonnuclear threats. As a signatory to the Chemical Weapons Convention, Saudi Arabia created the [National Authority for the Implementation of the CWC \(https://ncar.gov.sa/document-details/evJpdii6ImvwUSTiBaHPeOGVXUDFuemhwmHFYc3c9PSIsInZhbHVlIjoiSFfKbXVwMWINRINGbnY1UEhMTG11QT09IiwibWVfJiJoiNDRIYzJkNjRlYjM4MjIwNTBhMGViNDYzMzI\)](https://ncar.gov.sa/document-details/evJpdii6ImvwUSTiBaHPeOGVXUDFuemhwmHFYc3c9PSIsInZhbHVlIjoiSFfKbXVwMWINRINGbnY1UEhMTG11QT09IiwibWVfJiJoiNDRIYzJkNjRlYjM4MjIwNTBhMGViNDYzMzI) in 2011. Yet other than focusing on compliance with the CWC, it remains unclear what the civilian echelons of the Defense Ministry and other bodies think about chemical and biological defense.

For example, the Civil Defense Directorate’s [executive regulations \(https://ncar.gov.sa/document-details/evJpdii6IkRZQStONTRwVDRKTnArTy8rakNhb1E9PSIsInZhbHVlIjoiNWd4bVNPslJBE81TmxkajVlQUFpZz09IiwibWVfJiJoiZTEwMDgxNjZmOWM2N2U4YzY5NWRjZDhkYWU\)](https://ncar.gov.sa/document-details/evJpdii6IkRZQStONTRwVDRKTnArTy8rakNhb1E9PSIsInZhbHVlIjoiNWd4bVNPslJBE81TmxkajVlQUFpZz09IiwibWVfJiJoiZTEwMDgxNjZmOWM2N2U4YzY5NWRjZDhkYWU) for evacuation and sheltering operations have not been updated since they were drafted in 2001. Instead, the Civil Defense Council (CDC), previously responsible for coordinating emergency response, issued a [series of updates \(https://998.gov.sa/Ar/CivilDefenseLists/Pages/The_ministries.aspx\)](https://998.gov.sa/Ar/CivilDefenseLists/Pages/The_ministries.aspx) spelling out each government body’s responsibilities under such circumstances. Saudi media [criticized \(https://www.alwatan.com.sa/article/19013\)](https://www.alwatan.com.sa/article/19013) the CDC for the slow and disjointed government response during heavy floods in 2013 that caused fatalities and damage across the kingdom, and the agency has since been replaced (see below). In contrast, Saudi Aramco’s highly competent [response \(https://www.aramco.com/-/media/publications/arabian-sun/2019/2019-40.pdf\)](https://www.aramco.com/-/media/publications/arabian-sun/2019/2019-40.pdf) to Iranian and Houthi attacks on oil facilities in [Abqaiq \(https://www.arabnews.com/node/1562206/saudi-arabia\)](https://www.arabnews.com/node/1562206/saudi-arabia), [Khurais \(https://www.reuters.com/article/us-saudi-aramco-processing/aramcos-abqaiq-plants-have-restored-2-million-bpd-capacity-company-source-idINKBN1W2273\)](https://www.reuters.com/article/us-saudi-aramco-processing/aramcos-abqaiq-plants-have-restored-2-million-bpd-capacity-company-source-idINKBN1W2273), [Jizan \(https://www.reuters.com/world/middle-east/saudi-led-coalition-says-four-houthi-attacks-hit-targets-kingdom-no-casualties-2022-03-19/\)](https://www.reuters.com/world/middle-east/saudi-led-coalition-says-four-houthi-attacks-hit-targets-kingdom-no-casualties-2022-03-19/), and [Jeddah \(https://www.aljazeera.com/news/2020/11/24/saudi-aramco-says-customers-unaffected-by-houthi-attack-on-jeddah\)](https://www.aljazeera.com/news/2020/11/24/saudi-aramco-says-customers-unaffected-by-houthi-attack-on-jeddah) offered a model that will hopefully be adopted by other private-sector and governmental organizations.

In the event of a CBRN attack, the kingdom may not be able to protect more than a fraction of its population due to a lack of shelters—though it should be mentioned that this shortcoming exists in nearly every other country worldwide. The Ministry of Economy and Planning attempted to develop a [national strategy \(https://archive.aawsat.com/details.asp?section=43&article=633827&issue=11935#ZEBpGS-B0pE\)](https://archive.aawsat.com/details.asp?section=43&article=633827&issue=11935#ZEBpGS-B0pE) for shelters in 2011, but it was never published. And while the Civil Defense Directorate’s bylaws mandate shelters for some public buildings, [media reports \(https://www.okaz.com.sa/article/898799\)](https://www.okaz.com.sa/article/898799) have questioned whether these rules are enforced. Private residential properties generally lack shelters as well, according to informal canvassing of real estate agents in Jeddah, Riyadh, and Dammam. The [Civil Defense Law \(https://laws.boe.gov.sa/BoeLaws/Laws/LawDetails/f09eda85-7150-4803-b87a-a9a700f189f3/1\)](https://laws.boe.gov.sa/BoeLaws/Laws/LawDetails/f09eda85-7150-4803-b87a-a9a700f189f3/1) mandates that the Civil Defense Directorate is responsible for issuing shelter regulations; the agency should begin by making shelter requirements and guidelines more accessible.

The kingdom did take one major step forward in 2018, when the cabinet established the [National Risk Council \(https://ncar.gov.sa/document-details/evJpdii6InBKN2RjYmFhc1ZFejE0NIBNskt0SUE9PSIsInZhbHVlIjoiU1RCVXBHbmc0OVQ2ZzVSNmFyMmIXQT09IiwibWVfJiJoiNDI1NmI0ZDA2YjVhM2VhNWU3YjY4NThhZGV\)](https://ncar.gov.sa/document-details/evJpdii6InBKN2RjYmFhc1ZFejE0NIBNskt0SUE9PSIsInZhbHVlIjoiU1RCVXBHbmc0OVQ2ZzVSNmFyMmIXQT09IiwibWVfJiJoiNDI1NmI0ZDA2YjVhM2VhNWU3YjY4NThhZGV) to coordinate strategic planning for emergencies and ensure continuity of governance. The NRC replaced the CDC, which [failed to fulfill \(http://www.soutalomma.com/Article/838880\)](http://www.soutalomma.com/Article/838880) its designated function (though its regulations remain on the books). Moreover, while the CDC was chaired by the interior minister, Crown Prince Muhammad bin Salman heads the NRC, indicating that Riyadh has assigned greater importance to addressing various kinds of risks, including those posed by CBRN. The ministers of defense and SANG are not included on the NRC, but the council can still play a vital role in increasing Saudi Arabia’s CBRN resilience by enhancing [crisis management awareness \(https://uqn.gov.sa/?p=12316\)](https://uqn.gov.sa/?p=12316) and serving as a centralized emergency policy and coordination body led by the crown prince and other top officials.

Conclusion

Although Saudi Arabia has been placing more emphasis on these issues of late, the evolving threat environment could eventually outstrip its ability to effectively respond to CBRN attacks or other incidents involving the release of hazardous materials. To keep pace with these challenges, all relevant military and civilian agencies need a CBRN defense and incident planning and response capability.

Intra-governmental CBRN policy coordination is a challenge as well. To address it, the NRC should conduct periodic CBRN defense policy reviews to assess readiness on this front. Likewise, the [national plan for biological and chemical emergencies \(https://998.gov.sa/Ar/CivilDefenseLists/Documents/sund1701.pdf\)](https://998.gov.sa/Ar/CivilDefenseLists/Documents/sund1701.pdf), issued by the defunct CDC, should be periodically reviewed and updated as necessary, just like the NRPNRE is reviewed every two years. Within the military, oversight of joint CBRN planning and readiness should be the responsibility of the Defense Ministry’s civilian component, the Executive Affairs Directorate—that is, the Strategic Affairs Directorate, the Excellence Services Directorate (tasked with administrative and technical support), and the Procurement and Armament Directorate.

Finally, enhancing the kingdom’s domestic CBRN defense capabilities would make cooperation and interoperability with its U.S. security partners easier and more effective. Expanding cooperation with other foreign partners would also be useful. Toward this end, the kingdom could offer to host an EU CBRN Centre of Excellence, since only two such offices have been established in the region so far (in Jordan and the United Arab Emirates).

Faris Almaari is a research assistant in The Washington Institute’s Rubin Family Arab Politics Program. ❖



BRIEF ANALYSIS

[The Muslim Brotherhood: Organizational Crisis and Declining Capabilities](#)

Jun 14, 2023

•
Dr. Khairy Omar

[\(/policy-analysis/muslim-brotherhood-organizational-crisis-and-declining-capabilities\)](/policy-analysis/muslim-brotherhood-organizational-crisis-and-declining-capabilities)



BRIEF ANALYSIS

[Regional Geopolitics and the Second Negev Summit](#)

Jun 13, 2023

•
Nashat Shawamreh

[\(/policy-analysis/regional-geopolitics-and-second-negev-summit\)](/policy-analysis/regional-geopolitics-and-second-negev-summit)



BRIEF ANALYSIS

[Khamenei's Nuclear Balancing Act](#)

Jun 13, 2023

•
Omer Carmi

[\(/policy-analysis/khameneis-nuclear-balancing-act\)](/policy-analysis/khameneis-nuclear-balancing-act)

TOPICS

[Gulf & Energy Policy \(/policy-analysis/gulf-energy-policy\)](/policy-analysis/gulf-energy-policy)

[Military & Security \(/policy-analysis/military-security\)](/policy-analysis/military-security)

[Proliferation \(/policy-analysis/proliferation\)](/policy-analysis/proliferation)

REGIONS & COUNTRIES

[Gulf States \(/policy-analysis/gulf-states\)](/policy-analysis/gulf-states)