
CBRN NEWS

Co-ordinated chemical attacks on women and children in Iran

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Abstract

Thousands of women and children in Iran have been poisoned in recent months, in a campaign that appears well planned and highly co-ordinated. The attacks come as authorities struggle to suppress a popular movement led by Iranian women calling for fundamental change to the Islamic Republic.

Keywords

Chemical weapons / political violence / dual use products / Iran

Introduction

In early 2023, reports began to emerge of co-ordinated attacks on women and children in Iran involving unidentified chemical substances. The first incident occurred in the city of Qom on 30 November 2022, when 18 students from the Nour Technical School were hospitalised with signs of acute chemical exposure (1). Similar incidents were soon reported in areas surrounding Qom, and then spread to 28 of Iran's 31 provinces over the subsequent four months (2). Clinical manifestations included nausea, fatigue, burning throats and eyes, headaches and numbness, vomiting, respiratory distress, and anomalous olfactory experiences (3). By early March, the attacks appeared to be reaching a peak, with 110 recorded incidents taking place on 6 March alone (4). The majority of sites targeted were schools and dormitories housing girls between the ages of 12 and 18 (5).

At the time of writing, the causative agent/s have not been identified. On 4 March, the Iranian Ministry of Health stated that their investigators believed nitrogen oxides may be involved, but did not publicize any verifiable evidence (6). Organophosphates have also been raised as a possibility, which are a key component of agricultural products used in Iran and elsewhere (7). Outside toxicologists told media that hydrogen sulfide is another possible agent, as it produces an odour similar to that of rotting eggs, which some of the victims claimed to have smelled at the time of the incidents (8, 9). While some victims said blood samples have been taken from them, it is unclear whether Iranian health authorities have been conducting the comprehensive toxicology screening necessary to detect specific agents (3).

Both nitrogen oxides and organophosphorus compounds are relatively accessible in Iran, and would not require a high level of expertise for their preparation or dispersal. Nitrogen gas (N₂), which is colourless and odourless, can cause asphyxiation via displacement of air. "The martini effect", usually associated with deep-water diving, can cause symptoms similar to alcohol intoxication, sometimes leading to profound CNS depression (10). Nitrogen oxides are formed when nitrogen containing compounds react with oxygen containing species. Nitrogen oxides are well known respiratory and mucous membrane irritants, in addition to causing nausea and shortness of breath (11). Organophosphates, used widely in agriculture as pesticides, inhibit the enzyme acetylcholinesterase, leading to the characteristic cholinergic syndrome (12). Depending on the degree of exposure this can be life threatening. Atropine is indicated to counteract muscarinic overstimulation, in combination with an oxime to reactivate cholinesterase and restore normal function (13). Supportive care to manage convulsions and mechanical respiration may also be required (13).

Organophosphorus chemical warfare agents (also known as nerve agents) were used during the Iran-Iraq war of 1980-1988, which had devastating effects on Iranian personnel and civilian groups such as those targeted in the Kurdish city of Halabja (14, 15). The organophosphate nerve agent sarin was used by the Aum Shinrikyo cult in the 1996 Tokyo subway attacks (16). More exotic forms include the nerve agent VX, which was used in the 2017 assassination of Kim Jong-nam, an estranged member of the ruling Kim dynasty of North Korea (17).

Outside observers have also hypothesised that the causative agent may be chloramine, which is produced by combining bleach with ammonia (3). Chloramine and chlorine are dual-use products, and are most commonly used for the disinfection of water at safe levels (18). Weaponised chlorine was widely deployed as an anti-personnel gas in the First World War, leading to profound physical and psychological injuries among Allied troops (19). More recently, forces loyal to Syrian government of Bashar al-Assad were suspected of using chlorine gas on unarmed civilians during the civil war of 2011-onwards, a conflict in which the Iranian military played an active part (20, 21). The clinical manifestations reported by schoolgirls in Iran, including dyspnoea, coughing, nausea, vomiting and corneal burns, are similar to those seen with toxic level exposure to chlorine (22). CS (tear gas), deployed widely by Iranian security forces in recent suppression of peaceful protests, is known to cause similar symptoms (23).

“Woman, life, freedom”

The socio-political context in which these attacks are unfolding indicate those responsible may have been operating, at least initially, with a degree of state approval. Iran has sophisticated laboratory infrastructure and historical experience that would prove useful in detecting and identifying a co-ordinated campaign involving chemical agents, having seen wide scale chemical weapons attacks on its military personnel during the Iran-Iraq War of 1980 – 1988 (24). Over the course of several months, however, Iranian authorities did not mount a substantial response to protect the population from such attacks, preferring instead to focus on the security of the governing regime amidst increasing opposition to its rule (25). Security scholars noted that such a co-ordinated campaign, unfolding over several months without detection, would require the involvement of a highly mobile team of individuals (or several teams) who were able to evade detection by Iranian security forces, or with their express permission to operate unhindered (26).

The attacks have focused on a key demographic – women and school-aged girls – who have been instrumental in an anti-government protest movement that has taken place since September 2022 (4, 5). These protests were initially provoked by the death in custody of 22-year-old Masha Amini, following her arrest by religious police on 16 September for allegedly violating the government-mandated Islamic dress code imposed on women (27). Over late 2022 and early 2023, the demonstrations coalesced into a broad-based opposition movement that represented the biggest internal challenge to the Islamic Republic since its founding in 1979 (28). By January 2023, over 500 protestors had been killed in violent clashes with security forces (29, 30). A campaign of mass arrests was subsequently launched

by Iranian authorities, leading to the detention of at least 22,000 people, among them an unknown number of children (31). Several detainees, mostly men in their 20s, were later executed for offences including “waging war against God” and engaging in “corruption on Earth” (32).

The slogan of the movement, “woman, life, freedom”, invoked a direct challenge to policies enforced since 1979 that have deprived Iranian women and girls of basic human rights (33). The core demands of the protest movement – the right to personal independence, democratic freedoms, and an end to the mandatory Islamic dress code – brought demonstrators into conflict with both state institutions and hard-line Shiite ideologues in the religious establishment (34, 35). Dissidents have accused Tehran of allowing religious extremists who share an ideological affinity with the governing regime to attack women and children with impunity in recent months (36). Restrictions placed on news media have obstructed independent observers attempting to obtain information on both the chemical attacks and related civil unrest.

Initial comments by Iranian officials appeared to downplay the chemical incidents, with officials from the Ministry of Education dismissing clinical signs as manifestations of “hysteria” (37). In early March, however, the posture of authorities appeared to change, with Supreme Leader Ayatollah Ali Khamenei describing the attacks as a “major unforgivable crime” (38). On 8 March, officials announced the arrest of 110 people and confiscated thousands of “stink bomb toys”, although it remained unclear as to whether those detained were responsible for the campaign (39). Simultaneously, authorities arrested several journalists who had criticised the government response, as well as members of the opposition (40). Iranian officials denied any state involvement in the attacks, insisting that 90% of the reported cases should be attributed to “stress” (41).

Historical chemical stockpiles

As mentioned above, Iran is well-positioned to detect and interdict such a campaign of attacks. Iran is one of the few countries that has direct experience of battlefield chemical warfare on its territory outside the context of the First World War, and remains strongly invested in institutional memory of such incidents (14). The 1980-1988 conflict with Iraq left a legacy of professional expertise in dealing with chemical weapons attacks, including a robust laboratory infrastructure and reliable detection techniques (24). Despite having ratified the Chemical Weapons Convention, however, Western intelligence agencies assessed that Iran maintained an active chemical weapons stockpile in the late 1990s and early 2000s as an ongoing deterrent (42). This programme was apparently either discontinued or substantially downsized following the invasion of neighbouring Iraq

by a US-led coalition in 2003, which was predicated on concerns over chemical and other weapons of mass destruction (43).

The current international stand-off with Iran regarding its ostensibly civilian nuclear programme, which was previously concealed by Iranian authorities, has led some analysts to revisit the possibility of Iran maintaining a chemical warfare capability as a reserve deterrent (44). Iran's nuclear programme was temporarily restrained by the Joint Comprehensive Plan of Action (JCPOA), negotiated between Tehran and the five permanent members of the United Nations Security Council, as well as the European Union, in 2015 (45). However, the JCPOA was severely undermined when the United States withdrew from the accord at the direction of former President Donald Trump in 2018 (46). In the years since, Iran has resumed the enrichment of uranium to levels approaching those needed for construction of a viable nuclear weapon (47). Israeli officials have stated

publicly that military options are being considered to eliminate Iran's burgeoning nuclear capability (48). Some analysts have speculated Iran may retain a chemical weapons capability as a reserve deterrent in the event its nuclear programme is destroyed (44).

The Iranian military's involvement in the Syrian civil war, in which government forces deployed a range of chemical warfare agents, raises further questions (21). The recent campaign of attacks on women and children in Iran, however, may not involve the use of any state stockpile. As noted above, the causative agents are most likely dual-use products that could easily be acquired via commercial or civilian channels. Determining what exactly has transpired in Iran since September 2022 will require unfettered access to the country for independent technical experts. Tehran has given no indication of allowing international observers into the country, however, and has accused "hostile foreign forces" of co-ordinating the attacks (49).

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