



## Update on Iranian Pharmaceutical Based Agents and the OPCW

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### Background

The Institute recently published a report on Iran's work on pharmaceutical-based agents (PBAs) fentanyl and medetomidine with a potential for offensive use.<sup>1</sup> Based on open-source information, the report demonstrated that the Islamic Revolutionary Guard Corps (IRGC) has been researching both compounds since 2005 in areas of large-scale cost-effective synthesis, a stable mixture suitable for weaponization, and delivery systems in violation of the Chemical Weapons Convention which Iran is a member of.

Not surprisingly, but nonetheless disappointedly, the Iranian regime has been dissembling about its undeclared chemical weapons program. Kazem Gharibabadi, the Islamic Republic of Iran's representative to the Organisation for the Prohibition of Chemical Weapons (OPCW) made a statement on November 5th, 2023, at the 29th Session of the Conference of States Parties addressing the allegation regarding Iran's potential use of pharmaceutical based agents for offensive purposes. He said that those concerns were "unsubstantiated", "baseless", and based on "open-source misinformation." He also mentioned that Iran's relevant chemical and pharmaceutical facilities are under OPCW inspection regime.<sup>2</sup>

Following the Institute's release of the report, the Islamic Republic's mission to the United Nations wrote on X: "The current unfounded reports are merely an outgrowth of psychological warfare propagated by the Zionist regime [...]."<sup>3</sup> According to various state-controlled Iranian media that statement is related to the report published by the Institute.<sup>4</sup>

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<sup>1</sup> Mohammadreza Giveh and the Good ISIS Team, "The Islamic Republic's Work on Pharmaceutical Based Agents," *Institute for Science and International Security*, November 25, 2024, [https://isis-online.org/uploads/isis-reports/documents/Iran\\_Work\\_on\\_PBAs\\_november\\_25\\_2024\\_1.pdf](https://isis-online.org/uploads/isis-reports/documents/Iran_Work_on_PBAs_november_25_2024_1.pdf).

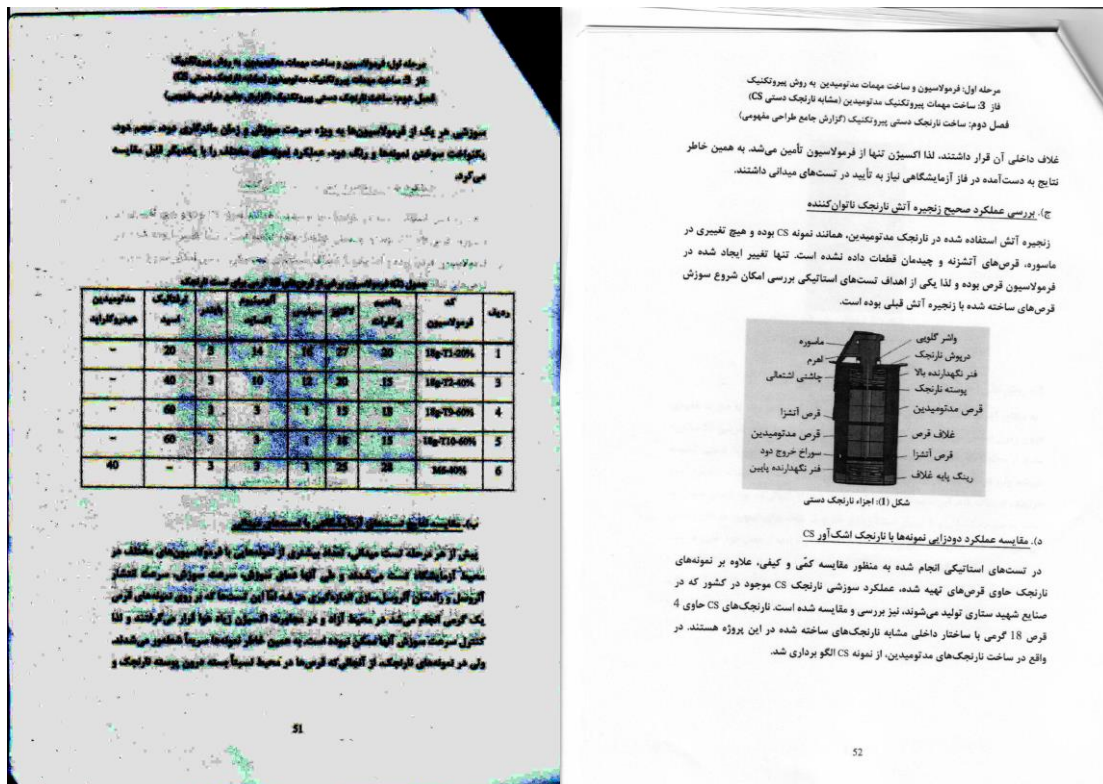
<sup>2</sup> "Islamic Republic of Iran: Statement by H.E. Dr Kazem Gharibabadi Deputy Foreign Minister for Legal and International Affairs of the Islamic Republic of Iran at the Twenty-Ninth Session of the Conference of the State Parties," November 25, 2024, [https://www.opcw.org/sites/default/files/CSP-29\\_NatStatements/Iran%20%28Islamic%20Republic%20of%29\\_CSP-29\\_VIP%20Statement\\_of\\_%28e%29.pdf](https://www.opcw.org/sites/default/files/CSP-29_NatStatements/Iran%20%28Islamic%20Republic%20of%29_CSP-29_VIP%20Statement_of_%28e%29.pdf).

<sup>3</sup> I.R.IRAN Mission to UN, NY, X.com, November 28, 2024, [https://x.com/Iran\\_UN/status/1862219751797531001](https://x.com/Iran_UN/status/1862219751797531001).

<sup>4</sup> "Iran dismisses 'unfounded' allegation of violating Chemical Weapons Convention," PressTV, November 26, 2024, <https://www.presstv.ir/Detail/2024/11/29/738134/Iran-repudiates-allegation-of-violating-Chemical-Weapons-Convention>.

## Evidence and Inspections

The Institute’s report compiles evidence based on publicly available relevant academic work conducted by IRGC-affiliated personnel and a secret document drafted by the IRGC’s Imam Hussain University (IHU) Department of Chemistry, leaked by an opposition hacker group. The authenticity of the leaked document can be verified through cross-reference content, technical and contextual markers, and corroborating evidence. The image forensic analysis of the leaked pictures show consistent patterns of noise across different images, indication that all images have been produced by one device, and artifacts that accrue from digital scanning of a physical document (Figure 1).



**Figure 1.** Here you can see the reflection of the image on page 52 (right) on a level sweep analysis of page 51 (left). This indicates that both images have been produced by scanning a physical document with an improperly calibrated device.

The leaked document contains detailed descriptions of ammunition in possession of and produced by the Islamic Republic security apparatus and images of those ammunition during the tests. This is supported by numerous photos of regime security forces with Penn Arms’ L1 and PL-8 launchers and 38mm cartridge shells from social media.

The information about different mixtures tested and the reported results of those tests, especially regarding medetomidine, is complex and highly specific. The language used in the document is formal and concise with a consistent terminology and pattern. This indicates that

the author or authors of the document have had a deep knowledge and experience in chemistry and munition engineering, fitting well the profile of IRGC chemistry engineers.

Finally, IHU's previous work on weaponizing medetomidine described in the Institute's report presents robust circumstantial evidence for the authenticity of the document.

There is compelling evidence suggesting that the OPCW's oversight of Iran's chemical weapons program requires significant reinforcement. According to the Chemical Weapons Convention (CWC) all locations where chemical weapons are stored or destroyed and all chemical weapons facilities are subject to inspection. However, according to the United States, Iran has previously failed to declare its possession, transfer, and facilities related to chemical weapons in violation of its CWC commitments, directly undermining the inspection efforts of the OPCW.<sup>5</sup> Additionally, Iran has a proven record of evading detection of WMD related work by moving it out of inspected facilities to military complexes.

### **Violations and Recommendations**

The Islamic Republic has violated the Chemical Weapons Convention which the OPCW is tasked with enforcing its provisions. Article I of the CWC prohibits each State Party to "develop, produce, otherwise acquire, stockpile or retain chemical weapons, or transfer, directly or indirectly, chemical weapons to anyone." According to the CWC's Article III, each State Party should "declare whether it owns or possesses any chemical weapons, or whether there are any chemical weapons located in any place under its jurisdiction or control."<sup>6</sup>

The convention allows use of toxic chemicals for "law enforcement including domestic riot control purposes" but both fentanyl and medetomidine fail the CWC defined condition of riot control agents that the irritation or disabling physical effects should "disappear within a short time following termination of exposure."<sup>7</sup> Further, the Twenty-Sixth Session of the Conference of the States Parties to the CWC in November 2021 adopted a decision clarifying that "the aerosolized use of central nervous system acting chemicals is understood to be inconsistent with law enforcement purposes as a 'purpose not prohibited' under the Convention."<sup>8</sup>

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<sup>5</sup> "2023 Condition (10)(C) Annual Report on Compliance with the Chemical Weapons Convention (CWC)," U.S. Department of State, April 18, 2023. "Technology Assessment: Chemical Weapons," The U.S. Government Accountability Office, September 2023, <https://www.state.gov/2023-condition-10c-annual-report-on-compliance-with-the-chemical-weapons-convention-cwc>.

<sup>6</sup> "Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction," June 7, 2020, [https://www.opcw.org/sites/default/files/documents/CWC/CWC\\_en.pdf](https://www.opcw.org/sites/default/files/documents/CWC/CWC_en.pdf).

<sup>7</sup> "Convention on the Prohibition of the Development, Production, Stockpiling and Use of Chemical Weapons and on their Destruction."

<sup>8</sup> "Decision on aerosolised use of Central Nervous System-acting chemicals adopted by OPCW Conference of States Parties," December 1, 2021, <https://www.opcw.org/media-centre/news/2021/12/decision-aerosolised-use-central-nervous-system-acting-chemicals-adopted>.

Hence, fentanyl- and medetomidine-based ammunition qualify as chemical weapons according to the CWC and Iran's activities are an example of development and production of chemical weapons, violating the general obligations of the CWC. Given that Iran has not declared its stockpile and facilities related to production of medetomidine and potentially fentanyl-based ammunition, Member States should ask for this issue to be added to the agenda of the next OPCW Executive Council in March 2025. The OPCW Executive Council should require the Iranian delegation to provide a comprehensive declaration of any stockpiles, production facilities, or research activities related to Central Nervous System (CNS)-acting chemicals. This should include, but not be limited to, medetomidine and fentanyl-based compounds.

The United States, United Kingdom, and other allies should request from the Director-General the initiation of a Fact-Finding Mission looking into Iran's work on PBAs based on the credible evidence publicly available and potential classified intelligence on this matter. Furthermore, given the novelty of using sedative compounds as incapacitation and lethal agents, the Executive Council should consider developing better guidelines for this type of substances within the CWC framework.