CBRN Threats and Incidents Involving Non-state Actors

2023 Annual Report

MAGNUS NORMARK, ANDERS LINDBLAD,
HENRIK RAMEBÄCK, ANNA-KARIN TUNEMALM,
PER WIKSTRÖM

FOI-R--5627--SE
ISSN 1650-1942 Juni 2024

Magnus Normark, Anders Lindblad, Henrik Ramebäck,
Anna-Karin Tunemalm, Per Wikström

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Title	CBRN Threats and Incidents Involving Non-state Actors – 2023 Annual Report
Titel	CBRN-hot från ickestatliga aktörer – Årsrapport 2024
Rapportnr/Report no	FOI-R--5627--SE
Månad/Month	Juni
Utgivningsår/Year	2024
Antal sidor/Pages	33
ISSN	1650-1942
Uppdragsgivare/Client	Försvarsdepartementet
Forskningsområde	CBRN-frågor
FoT-område	Inget FoT-område
Projektnr/Project no	A402124
Godkänd av/Approved by	Åsa Scott
Ansvarig avdelning	CBRN-skydd och säkerhet
Exportkontroll	Innehållet är granskat och omfattar ingen information som är underställd exportkontrollagstiftningen

Bild/Cover: Johan Hallnäs/TT Nyhetsbyrån

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Executive summary

There is no public information on the use of chemical, biological, radiological, or nuclear (CBRN) materials in any terrorist attack causing widespread negative consequences in 2023. Following a few years of relatively few reports and incidents linking terrorism and CBRN materials, the number of reports on propaganda and suspected attack preparations is now increasing again. Particularly in Europe, arrests for suspected attack preparation using chemical materials and/or toxins have occurred in the last two years. In every case, the individuals were arrested before acquiring the necessary resources and knowledge to carry out an attack. The toxic materials involved in these cases have primarily been hydrogen cyanide and ricin. Thus, these cases do not deviate from previous patterns of jihadi interest in building capabilities for this type of attack.

As in previous years, the authors note that toxic materials continue to be used to threaten, intimidate, and harm other people. In most of the cases that have come to the attention of the authors, the perpetrators have targeted individuals closely related to them with threats. Threats that allude to toxic and infectious materials also occur for financially opportunistic purposes, or to manifest discontent against companies, authorities, or other public functions and persons.

Keywords: non-state actors, terrorism, criminality, bioterrorism, poisoning, CBRN, threat assessment, annual report

Innehållsförteckning

Introduction

This report is the twelfth and most recent in an annual series produced within the framework of an FOI research project whose tasks include assessing the threat of non-state actors using chemical, biological, radioactive, or nuclear (CBRN) materials to adversely affect society. The research is financed by a grant from the Swedish Ministry of Defence. We continuously produce oral and written material that highlights this type of threat. The focus of the research is aligned with Sweden's Government Offices, who are also the main recipients of the generated research results. The annual reports are a recurring product that can be disseminated to a wider circle of recipients.[1]

This report is intended to reflect the results of our continuous intelligence-monitoring during 2023 and to provide an overall description of the relevant incidents that have occurred.[2] It also provides information on the likelihood of non-state actors using CBRN materials. The report is based exclusively on open-source information and covers a selection of recent incidents. It does not represent a comprehensive review of all phenomena and information brought to our research team's attention during the year. The primary purpose of the report is to fulfil a strategic function by presenting an overview of relevant incidents assessed on an annual basis. The collected material provides opportunities to identify deviations and trends over time.

[1] The corresponding reports for 2012—2022 can be downloaded from the FOI website, www.foi.se. The 2012—2017 reports are only available in Swedish.

[2] When a date appears in the report without stating a particular year, it refers to an incident that occurred in 2023.

Perspectives on CBRN threats from non-state actors

The events of 2023 have led to an increased and more complex threat picture against Sweden. As a result, the Swedish Security Service raised the terrorist threat level in August 2023 from an elevated threat to a high threat, moving it from level three to four on a five-point scale. The decision to raise the terrorist threat level was based on the assessment by the Swedish Security Service that Sweden had moved from being regarded as a legitimate target among international terrorist organisations to a prioritised target. The changed threat picture is deemed to be of a long-term and strategic nature, i.e., not based on a single concrete attack threat.[3] Other European countries have also assessed the terrorist threat level as elevated. France increased its preparedness for terrorist activities after the attacks in Arras and Limay in October.[4] In December, the Netherlands,[5] Germany, and Austria also took measures to address the heightened threat level.[6] Attacks in Europe have been attributed primarily to lone perpetrators using simple methods against unprotected civilian targets in public places.

This modus operandi is also confirmed by the reporting of the UN Analytical Support and Sanctions Monitoring Team on resolutions targeting Al-Qaida (AQ), the Islamic State of Iraq and the Levant (Daesh), and its affiliates.[7] The UN team describes a persistently problematic picture of the terrorist threat these actors pose in various conflict areas around the world. At the same time, the Daesh leadership continues to face challenges in evading counterterrorism measures by security services. At the end of April, it was reported that Daesh leader Abu al-Husain al-Husaini al-Qurashi was killed by Turkish security forces in the Aleppo

[3] Swedish Security Service, Höjning av terrorhotnivån till högt hot [Raising the terror threat level to high threat], 2023-08-13.

[4] Antoine Albertini, Christophe Ayad, Robin Richardot, Soren Seelow & Florence Traullé, Arras terror attack: France on highest alert as Islamist terrorism strikes schools again, Le Monde, 2023-10-14.

[5] National Coordinator for Counterterrorism and Security, Terrorist Threat Assessment for the Netherlands, December 2023, 2023-12-12.

[6] Associated Press, Countries across Europe heighten security levels amid terror warnings, Euronews, 2023-12-26.

[7] United Nations Security Council, Thirty-third report of the Analytical Support and Sanctions Monitoring Team, S/2024/92, 2024-01-29.

region of Syria.[8] It took more than three months for the organisation to announce the appointment of a successor, Abu Hafs al-Hashimi al-Qurashi, which some believe signals that it is having difficulties with the process of appointing new leaders and being able to uphold their personal security.

General trends highlighted in relation to AQ and Daesh and its affiliated groups are that both organisations have become more cautious and, to a lesser extent, are taking responsibility for attacks they carry out. The trend of increasingly decentralised networks linked to AQ and Daesh continues. The ability of AQ-linked groups to conduct external terrorist operations is assessed as low. However, incidents in European countries during the year indicate that individuals linked to IS Khorasan[9] intend to carry out terrorist attacks against prioritised targets in the region, including Sweden.

In 2023, there were no reports of terrorist attacks involving CBRN materials. However, suspected pre-attack activities involving the planned use of toxic agents such as hydrogen cyanide and ricin led to the arrest of several individuals in Europe, specifically in Germany and the United Kingdom. Police intervened against the suspects in all cases before they achieved any operational capability to carry out attacks.

The UN Investigative Team to Promote Accountability for Crimes Committed by Da'esh/ISIL (UNITAD), led by Special Adviser Christian Ritscher, has in its continuing work presented new information on Daesh's former CB capabilities and activities in Iraq. UNITAD's findings were presented at a UN workshop on June 8, as well as in a report in December outlining the investigative work over the past six months. The report from UNITAD highlights, among other things, that Daesh has developed the ability to use chemical materials such as hydrogen cyanide, chlorine gas, aluminium phosphide, thallium sulphate, nicotine, and mustard gas. In addition, Daesh has produced toxins such as botulinum toxin and ricin. At least three of these agents were used by Daesh in weapons systems, such as artillery shells, rockets, and improvised explosive devices. UNITAD has not found evidence that biological materials have been developed for warfare, but that Daesh has attempted to acquire anthrax spores. Hundreds of Daesh members are reported to have been active in the development of the C-capability, mainly in three locations: Mosul University; al-Qaim, in Anbar Province; and Hawija, in Kirkuk. There are also reports that Daesh tested various toxic agents, such as thallium, ricin, and nicotine, on its prisoners. UNITAD also states that three out of 21 identified individuals in weapons development had a background in the

[8] Aymenn Al-Tamimi, Caliphs of the Shadows: The Islamic State's Leaders Post-Mawla, CTC Sentinel Vol 16 (8), August 2023.

9 IS Khorasan is a regional branch of the Islamic State that is active primarily in Afghanistan and Pakistan.

former Iraqi C-weapons programme. The investigative team had previously made available the majority of the information presented by UNITAD this year . In September, at Iraq's request to the UN, the mandate of UNITAD was extended until September 17, 2024. In cooperation with the Iraqi authorities, UNITAD was to present a plan for the last six months of its activities on March 15, 2024.

On June 28, the OPCW[10] Fact-Finding Mission (FFM), the implementing body of the Chemical Weapons Convention (CWC), published the results of an investigation into two attacks by terrorists using poisonous gas against Syrian army forces in Khirbet Masasneh, Hama district, Syria, on July 7 and August 4, 2017. Details of the attacks were reported to the OPCW on October 26, 2017, by the Syrian government. The FFM identified seven persons in the area who had been admitted for medical treatment on the two dates in question. The symptom descriptions associated with the victims were not specific to any type of agent hazardous to health, and the investigative team did not have access to any environmental or medical samples related to the attacks. In addition, there was no concrete information on the weapons used during the attacks. Overall, the FFM report concludes that it is not possible to establish whether any attack with toxic materials occurred on either of the two occasions.[11]

During the Swedish Presidency of the EU, new Council conclusions for measures to strengthen preparedness against CBRN threats were adopted.[12] The Council conclusions include both measures for national implementation, as well as measures at the central EU level. The measures aim to strengthen early warning capabilities, enhance cooperation and coordination, provide access to relevant equipment, and, in other ways, strengthen the resilience of society to CBRN-related incidents and crises.

In March, the US President "signed National Security Memorandum (NSM) 19 to Counter Weapons of Mass Destruction Terrorism and Advance Nuclear and Radioactive Material Security worldwide."[13] This strategy is primarily a policy document that brings together various existing United States and international initiatives to prevent and counter the use of CBRN materials by non-state actors.

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[10] Organisation for the Prohibition of Chemical Weapons (OPCW), http://www.opcw.org.

[11] OPCW Technical Secretariat, Report Of The OPCW Fact-Finding Mission regarding incidents of alleged use of toxic chemicals as a weapon in Kharbit Massasneh, Syrian Arab Republic on 7 July and 4 August 2017, S/2186/2023, 2023-06-28.

[12] Council of the EU, Council vows better civil protection preparedness against chemical, biological, radiological and nuclear threats, Press Release, 2023-06-08.

[13] The White House Briefing Room, President Biden signs national security memorandum to counter weapons of mass destruction terrorism and advance nuclear and radioactive material security, Fact Sheet, 2023-03-02.

Sweden also launched a new strategy on countering violent terrorism and extremism, which, among other things, highlights the challenges of CBRN materials in this context. The first Swedish national strategy in this area was introduced in August 2015 and states, for example, that Swedish authorities need to continuously develop collaboration on their handling of illegal use of explosives and CBRN materials, in order to prevent future attacks.

A number of international initiatives were carried out during the year, aiming to develop a stronger capacity to deal with CBRN terrorism. In November 2023, within the framework of the OPCW Open-Ended Working Group on Terrorism (OEWG-T), a scenario-based exercise was conducted at the organisation's ChemTech Centre in the Netherlands. The exercise brought together 48 participants from 24 States Parties in all regions. Participants included representatives of national law enforcement and crisis-management authorities, the scientific community, and the defence sector. During the exercise, the participants were tasked with identifying capability limitations and possible actions for preventing a chemical attack, as well as managing and investigating an attack of that kind. The outcome of the exercise will be addressed in 2024, in the framework of the continuation of the OEWG-T.[14]

The EU has funded capacity-building activities related to CBRN incidents to support third countries. One example of this is the strategic scenario-based exercise in Bogor, Indonesia, organised by the United Nations Office of Counter-Terrorism (UNOCT) in October. The three-day exercise brought together 20 participants, with responsibilities in security services, law enforcement, emergency services, and critical infrastructure, with private-sector stakeholders. The focus of the activity was on information-sharing regarding terrorist threats, risk assessments, national strategies, and inter-agency cooperation in the case of a CBRN terrorist attack in public places or on critical infrastructure in Indonesia.[15] Another such example is a similar exercise organised by the United Nations Interregional Crime and Justice Research Institute (UNICRI), in Ghana, in March.[16]

[14] OPCW Executive Council, Note by the Director-General: Status of the OPCW's contribution to global anti-terrorism efforts, EC-105/DG.10, 2024-02-16.

[15] United Nations Office of Counter-Terrorism, Indonesia: UNOCT enhances the capacities to counter CBRN terrorist threats against vulnerable targets, 2023-10-26.

[16] Ghana Atomic Energy Commission, Ghana Atomic Energy Commission (GAEC) partners EU, IAEA, and The United Nations Interregional Crime and Justice Research Institute to fight organised criminal activities, 2023-03-31.

Threats, rhetoric, and information dissemination

Radical environments regularly disseminate information to inspire attacks using poisonous and infectious materials. Examples of discussions and propaganda with references to CBRN materials in recent years can be found in all extremist circles and are an indication of their continuing interest in pursuing attacks of this type.

After a number of years with less dissemination of CBRN-related information linked to terrorism and extremism, this phenomenon is again increasing, although not reaching the levels we have seen in the past.

On October 21, information was published that the Israeli Defence Forces had found a USB flash drive with instructions for making a dispersal device for the poisonous gas hydrogen cyanide on the body of a Hamas operative who was involved in the terrorist attack on Israel on 7 October.[17] The information was also published in an official statement by Israel's representative to the OPCW[18] in The Hague on November 29. The instructions found in the hands of Hamas describe a dispersal device known as Mubtakar, originally found in 2003 on a computer belonging to an AQ member from Bahrain. Over the years, this description has been repeatedly published in AQ-linked publications and messaging channels without any change in design. In 2023, the same information was published through pro-Palestinian telegram channels.

A renewed wave of manuals for the production of poisonous chemicals, toxins, and infectious biological materials for poisoning and terrorist attacks has been circulating in jihadist circles since May 2022. More or less detailed instructions are channelled through encrypted channels on platforms such as Telegram, TamTam, Threema, and discussion forums such as Rocket.Chat, where expressions of strong sympathies with terrorist organisations such as Daesh and AQ are common.

In light of the recurring monitoring FOI has conducted in this area, we can conclude that there are no new innovative elements in the information disseminated during 2022 and 2023. Instructions circulated during the period refer to agents such as anthrax spores, botulinum toxin, ricin, nicotine, and hydrogen cyanide. In most cases, the instructions are limited to the preparation of

[17] Barak Ravid, Scoop: Israel says it found Hamas files with instructions for making cyanide-based weapon, Axios, 2023-10-21.

[18] Israel is not a State Party to the Chemical Weapons Convention. It has signed, but not ratified, the Treaty.

the agent itself, without giving instructions on how an attack or poisoning could be carried out in an operational mode.

Incidents with nuclear and other radioactive materials

This chapter highlights incidents involving nuclear and other radioactive materials that are considered to be linked to cases of smuggling, threats, theft, and terrorism. Therefore, incidents that involve material lost through negligence or other non-criminal causes are not included.[19] The incidents that occurred in 2023 do not deviate significantly from previous years. Furthermore, the assessment indicates that no incidents in 2023 constituted a threat to international security.[20]

The information reported here originates from open sources (mainly news articles) and, to some extent, from the IAE's Incident and Trafficking Database (ITDB).[21] The number of incidents reported to the ITDB in 2023 was 167; 97 of these were reported by European states.[22] There is no significant deviation in the number of reports from previous years.

Thefts

In May, a radiation source belonging to a Chinese company was stolen in Kagezi, Uganda.[23] Three people working as laboratory technicians for the company were later arrested. They allegedly tried to sell the source to a buyer who offered them UGX (Ugandan Shillings) 50 million, equivalent to approximately EUR 12,000 Euros.[24] The type of radiation source is not known, but given that road construction, among other things, is one of its reported uses, it is reasonable to suspect it was a Troxler measuring device (or an equivalent from another brand).[25]

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[19] For example, a widely reported case that does not fall into one of the four categories occurred in Australia in January 2023, when a radiation source fell off a lorry during a long road transport.

[20] Incidents during Russia's war against Ukraine are not included in this summary.

[21] IAEA, International Atomic Energy Agency, www.iaea.org.

[22] The European tally includes incidents in the Republic of Georgia.

[23] Wilfred Kamusiime, Counter terrorism experts recover stolen radioactive source and arrest 3 factory lab technicians, Uganda Police Force, 2023-06-05.

[24] Priscilla Maloba, Police arrest three over stealing radioactive substances, Monitor (Uganda edition), 2023-06-05.

[25] See troxlerlabs.com/field-equipment/, for examples of instruments used in the field.

In March, four containers containing iridium-192 radioactive sources were stolen in Salamanca, Mexico.[26] The theft also involved other materials and a vehicle. The Mexican authorities were able to recover the radioactive material within hours.

In June, the theft of Cesium-137 sources was reported in the Brazilian state of Minas Gerais.[27] The radioactive material belonged to a mining company, which reported it missing on June 29, 2023. The missing sources were recovered a few days later, according to the same news service.[28]

Reports surfaced in September about workers selling radioactively contaminated scrap metal from Fukushima. The news report stated that the scrap was contaminated construction material that had not been exposed to high neutron fluxes, so it should have had low activity levels. The material was sold for the equivalent of about EUR 5300 to companies specialising in scrap metal.[29]

In October, a source of iridium-192 was stolen in Tabasco, Mexico; armed men broke into a house and stole, among other things, a container holding industrial radiography equipment belonging to an engineering company.[30]

In November, another piece of radiography equipment containing iridium-192 was stolen from a vehicle in Gqeberha, South Africa.[31] The radioactive material was recovered at a metal-recycling centre a couple of days later, after police had appealed for public vigilance.[32]

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[26] Carlos Robles, Alert in central Mexico after theft of radioactive material, BNO News, 2023-03-23.

[27] Anonymous, Polícia investiga furto de fontes radioativas de Césio-137 de mineradora em Nazareno, em MG [Police investigate theft of Cesium-137 radioactive sources from mining company in Nazareno, MG], g1 & EPTV Sul de Minas, 2023-07-05.

[28] Lucas Soares, Fontes radioativas de césio-137 furtadas de mineradora no interior de MGsao encontradas, diz Polícia Civil [Radioactive sources of cesium-137 stolen from mining company in the interior of Minas Gerais state found, say civil police], g1 & EPTV Sul de Minas, 2023-07-10.

[29] Lucy Craft, Thieves may have stolen radioactive metal from Japan's tsunami-battered Fukushima nuclear power plant, CBS News, 2023-09-21.

[30] News desk, Radioactive source stolen in Tabasco; There is an alert in 4 states, Nation World, 2023-10-19.

[31] Gugulethu Mtumane, Police warn public on stolen radioactive material in Gqeberha, News24, 2023-11-13.

[32] Brandon Nel, Stolen radioactive canister recovered at North End scrapyard, Herald Live, 2023-11-14.

Smuggling incidents

Three Croats were arrested in March on the Serbian side of the Croatian-Serbian border, when portal monitors detected that a lightning rod in the boot of their car was radioactive.[33]

In June, Russian media claimed that Russia's Federal Security Service (FSB) had prevented the smuggling of radioactive material into Ukraine.[34] According to the news article, five people were arrested for attempting to smuggle one kilogram of cesium-137. CCTV footage showed the alleged perpetrators carrying a safe. The incident was also reported by Radio Free Europe/Radio Liberty on the same day.[35] However, it is extremely unlikely that a radiation source of that kind was in the safe. One kilogram of cesium-137 corresponds to an activity of more than 3000 TBq (87,000 Ci). The IAEA's Tecdoc 1344 classifies a radiation source with this activity as Category 1, the most powerful level of radiation. Being close to such a powerful radiation source, even if it is in a traditional strongbox for safekeeping, would result in a lethal radiation dose within a very short time.

Other incidents

In Georgia, one person was arrested in May near the port city of Poti for attempting to sell a small amount of uranium. According to the State Security Service of Georgia, he planned to sell the material for about USD 2 million. Under Georgian law, illegal handling of radioactive materials is punishable by five to ten years in prison.[36]

In February, Uzbek police arrested three people for trying to sell US$ 1 million claimed worth of homemade devices containing mercury and weapons-grade radioactive material.[37] According to local police, the individuals had previously been involved in trying to sell radioactive and poisonous material. The news source stated that such incidents are not unique in Uzbekistan. In 2022, two people were arrested for trying to sell what they claimed was half a million dollars worth of radioactive material (a glass container labelled Radium-226).

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[33] Paulin Kola, Serbia-Croatia border arrests over radioactive material found in car, BBC News, 2023-03-07.

[34] Anonymous, Russia says foiled attempted smuggling of radioactive material, The Moscow Times, 2023-06-23.

[35] RFE/RL's Russian Service, Russia detains five it claims tried to buy nuclear material to discredit Moscow, Radio Free Europe/Radio Liberty, 2023-06-23.

[36] Anonymous, One arrested for attempted uranium sale, civil.ge, 2023-05-01.

[37] Anonymous, Uzbekistan: Trio arrested for trying to sell mercury, radioactive materials for $1 M, Eurasianet, 2023-02-18.

IAEA inspectors reported 2.5 tonnes of natural uranium missing in Libya in March after they failed to find it stored where it should have been. Later, they found the material near the indicated storage site.[38] It is likely that the incident, although serious, was not related to criminal activity, but more a case of failure in nuclear safeguards culture.

In August, Australian border police found radioactive material when they searched an apartment in Arncliff, south of Sydney.[39] As a result of the raid, the area around the flat was cordoned off, and local residents were evacuated.[40] Police seized more than 50 vials of dangerous materials. The apartment belonged to an Australian Border Force employee, but the person's involvement in the incident is unclear.[41] The Australian Border Force stated that the reason a search warrant was issued was that illegal material had been detected in cargo arriving at Sydney Airport.

In several of our previous annual reports, we reported drone sightings over Swedish nuclear facilities.[42] In 2023, we found a report describing five drone sightings between January and August at UK nuclear facilities and 25 for the period August 2021–August 2023. The five incidents in 2023 were all described as routine sightings followed by unsuccessful area searches.[43]

On August 18, cyberattacks were reported against the Japanese websites of the Japan Atomic Energy Agency, the Japan Atomic Power Co., and the Atomic Energy Society of Japan.[44] The hacker group, Anonymous, claimed responsibility for the attacks in protest against Japan's planned release into the sea of treated radioactive water from the damaged Fukushima nuclear power plant.

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[38] Guardian Staff, Reuters & Agence France-Presse, Libyan general says 2.5 tonnes of missing uranium found near storage base, The Guardian, 2023-03-16.

[39] Max Melzer, Nuclear material found by Australian Border Force during raid at Arncliffe flat in southern Sydney, Sky News Australia, 2023-08-17.

[40] Anonymous, Residents evacuated after radioactive isotopes found at Sydney home, SBS News, 2023-08-17.

[41] Duncan Murray, Airport worker questioned over radioactive isotopes, Australian Associated Press, 2023-08-18.

[42] Magnus Normark, Anna-Karin Tunemalm, Anders Lindblad, Per Wikström & Henrik Ramebäck, Page 16 in CBRN threats and incidents involving non-state actors – 2022 annual report, FOI-R--5471—SE, 2023-06-13.

[43] George Allison, Drone threat concerns as 25 spotted over nuclear facilities, UK Defence Journal, 2023-12-15.

[44] Anonymous, Hacker group attacks Japan nuclear websites over Fukushima water plan, Kyodo News, 2023-08-18.

Assessments of nuclear security in India and Pakistan

Our previous annual reports have repeatedly described incidents involving nuclear material in India, while the prevalence of Pakistani rhetoric against India for deficiencies in nuclear security has been palpable.[45] The rhetoric from Pakistan continued in 2023, with *Pakistan Today* reporting on March 11, 2023, that recurring incidents in India pose a global threat.[46] In an article that appeared in October but that was later withdrawn, the Kashmir Media Service accused India of being "a centre of theft, smuggling, and free trade in uranium."

The Nuclear Threat Initiative (NTI) describes itself as a nonprofit global security organisation focused on reducing nuclear and biological threats. In July, NTI issued the latest edition of its NTI Nuclear Security Index, the sixth edition since its inauguration in 2012.[47] This NTI publication ranks nuclear security all over the world, with a focus on the states that have nuclear facilities, particularly those with stockpiles of weapons-usable nuclear material. As both India and Pakistan fall into that category, it would be interesting to see how a fair and independent actor views their nuclear security.

One of NTI's categories ranks how materials are secured from theft. Here, Pakistan has a score of 49 and India 40 out of a possible 100, with a clear improvement for Pakistan since 2012, when it scored 31 compared to India's 33. Protecting facilities against sabotage is another category. Pakistan again ranks higher with 61 compared to India's 52 and once again showing a larger improvement over time. These figures seem to give Pakistan the edge over India when it comes to bragging rights, but compared to, for example, Japan's score of 80 and 85, both states have major room for improvement.

The announcement of the results of the NTI ranking did not go unnoticed in Pakistan, and the following day the *Islamabad Post* reported on Pakistan's improvement in nuclear security, while pointing out that India, among others, had not made any improvement at all.[48]

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[45] Magnus Normark, Anna-Karin Tunemalm, Anders Lindblad, Per Wikström & Henrik Ramebäck, Page 13 in CBRN threats and incidents involving non-state actors – 2022 annual report, FOI-R--5471—SE, 2023-06-13.

[46] Staff, Recurrent incidents of uranium thefts in India pose threat to world, Pakistan Today, 2023-03-11.

[47] Nuclear Threat Initiative, NTI Nuclear Security Index: Falling short in a dangerous world, 2023-07-18.

[48] Dunya News, Pakistan strengthens ranking in nuclear security index 2023, Islamabad Post, 2023-07-19.

When it comes to the improvement of nuclear security in the two states, India gets the last word for 2023. In October, an Indian press report stated that India was in the process of installing portal monitors at seven border crossings with Pakistan, Myanmar, and Bangladesh and that these would be the first of their kind on India's lengthy border.[49] The purpose of installing portal monitors at border crossings is to detect radioactive material before it can enter the country.[50]

[49] Harpreet Bajwa, Hawk eye on N-smuggling: Attari to have radioactive detection equipment, The New Indian Express, 2023-10-18.

[50] It should be noted that portal monitors are more effective at detecting radioactive sources than weapons-usable nuclear material.

Incidents with chemical materials

The most common hazardous material involved in CBRN incidents is chemicals, whether the incidents are antagonistic, self-inflicted, or accidental in nature. This applies to both domestic and international incidents and has remained true throughout the more than ten years that these annual reports have been produced.

In 2023, there were no reports of serious incidents or attacks involving toxic chemical materials linked to non-state actors. However, as in previous years, there were several other incidents and phenomena involving poisonous chemicals that are considered important to include in this chapter. Some of the incidents reported here occurred in years prior to 2023; however, in these cases, there were either court decisions made in 2023 or reports with additional details were published.

Sweden

In March 2024, the Lund District Court unanimously pronounced its decision in a high-profile case of a six-year-old girl who had ingested acetic acid in December 2022.[51] The girl's parents were sentenced to eight-years in prison on charges including "particularly serious assault." The girl's corrosive injuries necessitated the removal of her stomach. According to the court decision, it is not possible to determine exactly how the girl ingested acetic acid, but the district court considered it disproved that the girl, as the parents claimed, voluntarily drank it. The court concluded that the most reasonable explanation is that she ingested acetic acid provided by her parents. The girl also had a number of other physical injuries.

In Kristianstad, several women were suspected of having their drinks spiked on various occasions at bars, pubs, or nightclubs. In August, the local police called for vigilance after seven people in a state of reduced consciousness were taken to the hospital.[52] In September, several women reported to the police that they had been intoxicated in pubs, and at least two of them were taken to the hospital.[53] In all cases, the women suspected that they had been drugged, and several reports to the police were made.

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[51] Lund District Court, Judgment in case B 6683-22, delivered on 7 March 2024.

[52] Olivia Birgander, Sju personer drogades på krogen - polisen: "Väldigt svårt att utreda" [Seven people drugged in pub - Police: 'Very difficult to investigate'], Kristianstadsbladet, 2023-08-01.

[53] Mikael Hallqvist, Flera kvinnor misstänks ha drogats [Several women are suspected of being drugged], Norra Skåne, 2023-09-19.

Two men are suspected of having murdered a woman in January by poisoning her in Borås. The men, both in their 30s, were found in an apartment together with a deceased woman in her 40s. Suspicions of a criminal offence arose when the autopsy revealed that the woman's death resulted from ingesting a narcotic substance followed by an assault. One of the men was released at the detention hearing, while the other was arrested.[54]

Europe

A 27-year-old male student who specialised in mechanical and chemical engineering at Birmingham University, in the United Kingdom, was sentenced to life imprisonment in December for preparing terrorist offences.[55] In January, the student was arrested at the home he shared with his parents. A confiscated mobile phone revealed the man's sympathies for Daesh and his plans to join the terrorist group in West Africa. The man, a PhD student in laser drilling, had registered a Turkish food import business in the United Kingdom, but the prosecution claimed it was a cover to facilitate travel. At the residence, police also found a 3D printer and a homemade drone with fixed wings. The drone was equipped with a digital camera and landing gear. The prosecution claimed that the drone was technically capable of carrying chemical-warfare agents, or some other type of cargo, such as explosives. The man claimed that he designed the drone for his own scientific purposes. The prosecution presented evidence that the suspect had sought information on the nerve agent sarin, the toxin ricin, and mustard gas, and that he had information on an electronic device with references to mechanical detonators, fuses, and primers.[56]

During the year, the UK suffered a number of attacks involving corrosive chemical materials, as in several previous years. The use of corrosives in burglaries and robberies has not been widely reported previously. Northwest London reported at least five residential burglaries in the spring of 2023.[57] Masked perpetrators threatened homeowners with both knives and corrosive substances and used threats to take jewellery and other items. Three women were hospitalised for injuries, which were assessed as not life-threatening, in relation to the burglaries.

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[54] Arvid Adrell, Man från Mark misstänks för giftmord - släpps på fri fot [Mark man suspected of poisoning - released], Mark-Posten, 2023-12-23.

[55] Caroline Gall & PA News Agency, Coventry student guilty of making IS chemical weapon drone, BBC News, 2023-09-28.

[56] Tim Page & PA Media, Mohamed Al Bared: Student jailed for life for building IS drone, BBC News, 2023-12-22.

[57] Andy Gregory, Masked gang break into homes and spray victims with chemicals in string of attacks, The Independent, 2023-04-02.

In April, three men forced their way into a home in Birmingham, where three siblings aged between 10 and 21 were present. They were threatened and assaulted, and the two older youngsters were sprayed in the eyes with an alkaline cleaner that the perpetrators found in the home. In this case, the perpetrators were also after jewellery and other valuables. Not counting any possible effects of the mental trauma the attack caused, the three siblings do not appear to have suffered permanent injuries.[58]

In late 2022, a 60-year-old German man allegedly tried to poison his mother and two colleagues with rat poison.[59] The man, a prominent violinist in the German Schleswig-Holstein Symphony Orchestra, was sentenced in October to six and a half years in prison. In 2019, the musician had ordered a rat poison from China via the internet; it contained the active ingredient brodifacoum, which causes internal bleeding. The man allegedly mixed the poison in his 93-year-old mother's food and offered his colleagues garlic dip laced with it.[60] Based on the available information, it is unclear whether the mother ingested the poison or not. Both colleagues fell ill with serious symptoms, but all three survived. The motive is said to have been to get rid of one of his fellow musicians, but only for a few weeks. The man had built up a hatred for a Russian colleague who caused him to lose his position as first violinist. He sought revenge for the end of his 30-year career as the star of the orchestra.

French Senator Joël Guerriau, a member of the centrist Horizons party, was arrested in November on charges of drugging a female member of France's parliament, Sandrine Josso, with the aim of sexually assaulting her. According to the prosecutor in charge, the senator had prepared a glass of champagne with ecstasy. The offender has been suspended from his duties. According to the prosecutor, if convicted, he could face up to five years in prison.[61]

North America

In August, a doctor at the Mayo Clinic, who had previously worked for six years at the Poison Control Center at the University of Kansas Health System, was

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[58] Stephanie Balloo, Burglary gang sprays Cillit Bang in kids' eyes and threatens to 'take youngest child' in horrific break-in, BirminghamLive, 2023-04-09.

[59] Anonymous, Schleswig-Holstein violinist jailed for attempted murder of mother and colleagues, The Violin Channel, 2023-10-24.

[60] Mirko Voltmer, Wollte er seine Mutter und zwei Musiker töten? Star-Geiger: Darum besorgte ich das Rattengift [Did he want to kill his mother and two musicians? Star violinist: That's why I got the rat poison], Bild, 2023-07-25.

[61] Nicolas Camut, Centrist French senator detained on suspicion he drugged a female MP, Politico, 2023-11-17.

arrested on suspicion of poisoning his wife, a pharmacist at the Mayo Clinic.[62] According to the court report, suspicions were raised against the husband partly because it appeared that he had tried to prevent the autopsy of his wife, and partly because he had sought information on the internet about an identified drug found in lethal concentrations in the woman's blood and urine. The medical drug was colchicine, an anti-inflammatory drug that has been deregistered in Sweden since 2018 and of which a 20 mg dose is supposed to be lethal for an adult. One hypothesis suggests that she ingested a drink her husband had prepared, which contained dissolved colchicine. A news article claims that he obtained the drug from an online pharmacy called truepill.com.[63] The poisoned wife arrived at the hospital with gastrointestinal symptoms and dehydration. Her condition deteriorated rapidly, and she died four days later. Her husband claimed that she died from the rare disease, haemophagocytic lymphohistiocytosis, (HLH), but doctors at the clinic suspected that her condition had other causes. What was initially diagnosed as food poisoning was followed by symptoms such as heart problems, fluid in the lungs, and then organ failure. The husband is charged with first-degree murder.[64]

In May, a 33-year-old Utah woman was charged with poisoning her husband. Tests showed that her husband, who died suddenly in 2022, had five times the lethal dose of fentanyl in his body, and it was assumed that he had ingested the drug orally.[65] The hypothesis was that his wife had mixed the drug in a cocktail called Moscow Mule, which she had served to her husband at home and from which he subsequently died. The husband had previously told an acquaintance that he suspected his wife was trying to poison him.

A 40-year-old man in San Jose, California, was charged with mixing fentanyl in a glass of oat milk intended for his 72-year-old mother. He later allegedly did the same with a glass of wine, causing the woman's death. The son, who was abusing drugs, also allegedly beat his father with a metal pipe.[66] A dispute over a house the family had inherited and stolen social security benefits is believed to have been the motive. Fentanyl is difficult to detect in blood samples, and, at

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[62] Amanda Holpuch, Poison specialist accused in wife's death, authorities say, New York Times, 2023-10-23.

[63] Charles Kelly, Tracking the timeline in Betty Bowman's death, KTTC News, 2023-12-12.

[64] Olivia Prondzinski, Connor Bowman appears in court Monday, seeks grand jury transcripts, KTTC News, 2024-02-12.

[65] Remy Tumin, She wrote of grief after her husband died, now she's charged in his murder, New York Times, 2023-05-09.

[66] Robert Handa, San Jose man accused of killing his mother by lacing her drink with fentanyl, NBC Bay Area, 2023-09-28.

time of writing, it had not been established whether chemical analyses could confirm that the mother had lethal levels of fentanyl in her blood.

Another case of killing by poisoned drink can be linked to a dentist in Colorado, who in March 2023 prepared his wife's protein drink with arsenic. He later admitted that his motive was to get rid of his wife after he had started an extramarital affair.[67] The wife was hospitalised on three separate occasions for headaches and dizziness. On the third occasion, the symptoms worsened with seizures. Her condition deteriorated and she was later pronounced brain dead, although the cause of her symptoms could not be determined. Upon placing the woman on life support, a colleague of the dentist informed a nurse that the dentist had ordered potassium cyanide for the clinic, even though it was not needed. The dentist had also previously sought information on the detectability of arsenic in biomedical samples. After the woman died, her husband was arrested on suspicion of murder. The hypothesis is that he tried to poison his wife with arsenic, but when she survived, he also gave her cyanide salt. He also allegedly tried to obtain the medical drug oleandrin,[68] which was traced by the police after suspicions had been raised against him. The husband denies any wrongdoing.[69]

A 47-year-old woman in North Dakota was accused of poisoning her partner of 10 years with antifreeze (ethylene glycol).[70] The motive was allegedly to obtain USD 30 million that her partner was set to inherit, as the woman realised that he intended to leave her. The man died in the hospital. Friends of the couple, who testified, claimed that the woman had hinted at her intention to poison him both before and after his death. The woman is believed to have prepared her partner's sweetened tea with glycol. Containers of glycol were also found in the home.

In November, a 39-year-old woman was convicted of murder for deliberately poisoning a 62-year-old care recipient with eye drops in 2018.[71] The deceased victim was found in her home with crushed drug tablets around her body. The perpetrator, who was on the scene at the time, called the police to report a suicide, presumably staged by the caller herself. An analysis of biomedical samples revealed that the victim had the substance tetryzoline in her body. This

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[67] Colleen Slevin & Associated Press, Police: Dentist killed wife by lacing shakes with poison, Live5 News, 2023-03-20.

[68] Oleandrin is an extract from the plant, *Nerium oleander*, that is considered toxic.

[69] Raja Razek & Andi Babineau, Colorado dentist accused of poisoning his wife with arsenic pleads not guilty, CNN, 2023-10-10.

[70] Orlando Mayorquin, Woman is accused of fatally poisoning boyfriend with antifreeze for inheritance, New York Times, 2023-10-31.

[71] Meredith Deliso, Wisconsin woman found guilty of killing friend with eye drops, ABC News, 2023-11-14.

substance is the active ingredient in Visine, an over-the-counter American eye drop product for red eyes.[72] Tetryzoline, which is also available in nasal spray, is a vasoconstrictor;[73] an overdose can affect the circulatory system and, at high doses, can cause symptoms such as drowsiness, seizures, decreased pulse rate, and respiratory depression.[74] The half-life of tetryzoline after intake is six hours, and it can therefore be detected in blood and relatively undamaged in urine some time after exposure.[75] In her confession, the perpetrator revealed that she had given her care recipient a water bottle filled with six 15 ml containers of Visine.[76] In addition to the poisoning case described here, commercial products containing tetryzoline have been used on several occasions over the past six years to poison individuals.[77, 78, 79, 80]

A jealous man in Toronto, Canada, has admitted that he caused the death of a three-year-old girl in March 2021.[81] The innocent girl had stayed the night at a neighbour's house and eaten cereal that the perpetrator had poisoned with sodium nitrite. The offender allegedly obtained the chemical through his work at a food processing plant and mixed it with breakfast cereal in the neighbour's home. He had been informed at his workplace that sodium nitrite can be highly toxic if ingested. The prepared cereal was actually targeted for the woman he was

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[72] Tetryzoline (tetryzoline hydrochloride), also known as tetrahydrozoline or THZ is an active substance in eye drops. Tetryzoline was deregistered in Sweden in 2011, less than half a year after it had been registered.

[73] A vasoconstrictor causes narrowing of blood vessels.

[74] Sherri Kacinko & Michael Lamb, Tetrahydrozoline: Death by eyedrops, *Toxicologie Analytique et Clinique,* 34 (3S), S63-S64, September 2022.

[75] Mary E Carr, Kristin M Engebretsen, Benjamin Ho, Christopher P Anderson, Tetrahydrozoline (Visine®) concentrations in serum and urine during therapeutic ocular dosing: a necessary first step in determining an overdose, *Clinical Toxicology*, 49 (9): 810-814, November 2011.

[76] Colin Kalmbacher, 'Nobody has her on voice recording': Convicted 'eye drops killer' allegedly concocted elaborate plot to forge suicide audio message from victim, now her lawyers want out, Law & Crime, 2023-12-05.

[77] Peter Van Sant, S.C. nurse who fatally poisoned husband with eye drops: "I just wanted him to suffer", CBS News, 2023-07-29.

[78] Kara Fohner, Man accused of killing wife with eye drops wants to re-test blood, Gaston Gazette, 2023-03-10.

[79] Bruce Y Lee, How Visine eye drops in the mouth can kill, here are two cases, Forbes, 2020-01-18.

[80] Matthew E Stillwell & Joseph J Saady, Use of tetrahydrozoline for chemical submission, *Forensic Science International*, 221 (1-3) e12-e16, September 2012.

[81] Katherine McDonald, 'He's so evil': Mother of Toronto toddler killed after eating poisoned cereal speaks out, Global News, 2023-11-03.

in love with — the mother of the victim's friend — who did not reciprocate his feelings. Instead, both the little girl and the friend she was visiting, the woman's daughter, ingested the poisoned cereal. After doing so, both girls quickly fell ill. The woman's daughter survived, while the girl who died suffered seizures and two cardiac arrests before succumbing. The postmortem analysis revealed that the death was caused by methaemoglobinaemia (lack of oxygen in the cells) induced by nitrite poisoning.

In November, a man in Saskatoon, Canada, admitted to poisoning his wife in February 2020 by preparing a sports drink powder with strychnine and giving his wife the premixed drink.[82] The woman suffered convulsions at home and died in the hospital a few days later. The hospital staff alerted the police, as the woman's death raised suspicions of poisoning. The husband told police that the wife had probably died by suicide. A year later, he was arrested on suspicion of his wife's murder, but he maintained his innocence. In connection with the husband's confession in 2023, it emerged that, as a farmer, he had access to strychnine, since it was used for pest control on the farm.

In April, several persons were accused of carrying out two robbery-murders at gay clubs in the Hell's Kitchen neighbourhood of New York.[83] When the incident became known in the media, several people came forward to describe how they had been similarly drugged and then robbed at various clubs. The method used by the robbers was to first drug people at a club and then use facial recognition to open their phones and transfer money to their own accounts. In the case of the two killings, a similarly powerful mixture of cocaine, fentanyl, and other drugs was found in their bodies. Speculation suggests that the so-called date-rape drug, GHB, could have been used in this and similar cases.[84] However, the drug metabolises relatively quickly in the body, making it difficult to detect. The phenomenon does not seem to be exclusively linked to gay clubs, but rather to clubs visited by relatively wealthy persons.

[82] Kendall Latimer, Sask. man who insisted his wife died by suicide pleads guilty to murdering her with poison, CBC News, 2023-11-20.

[83] Liam Stack & Chelsia Rose Marcius, Several face charges in killings of gay men who were drugged and robbed, New York Times, 2023-03-29.

[84] GHB, gamma hydroxybutyrate or gamma hydroxybutyric acid, was originally an anaesthetic with sedative properties, but is now classified as a narcotic. Together with Rohypnol and GBL, it is often referred to as a "date rape drug."

South Africa

In January, the CEO of South Africa's state energy company, Eskom, announced that he had been poisoned with cyanide at his office in December 2022.[85] Reportedly, after drinking a cup of coffee in his office, the man became weak and confused, shaking and vomiting uncontrollably before finally collapsing. He survived the murder attempt, and analyses apparently showed high levels of cyanide in his body. On February 22, he resigned as Head of Eskom with immediate effect. In subsequent interviews and a book, he has claimed that Eskom is subject to large-scale corruption and money laundering by people linked to criminal networks and the ruling African National Congress (ANC).

Middle East

A number of alleged poisonings occurred among schoolgirls in Iran in 2022–2023. Symptoms reported included nausea, vomiting, diarrhoea, shortness of breath, and headaches.[86] Those involved claimed they smelled odours ranging from chlorine, chloramine, rotten tangerine, strong perfume, detergents, to rotten fish and rotten eggs. The incidents are believed to be linked to the widespread protests that followed the death of the young woman, Mahsa Amini.[87]

The number of alleged poisoning cases in Iran escalated in early 2023, peaking in early March and spreading to hundreds of schools across the country.[88] Up to 7000 schoolgirls, but also a number of boys, are said to have been affected, with several seeking hospitalisation. During the autumn, there have been sporadic reports of other poisoning cases in girls' schools.[89] The regime in Tehran has claimed that foreign powers are behind the poisonings.[90] Others have suggested that the poisonings may be the result of mass hysteria, which may have been fuelled by rapid social media dissemination and distrust of the regime.

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[85] Chris Yelland, Attempted murder of De Ruyter reported to the South African Police Service, EE Business Intelligence, 2023-01-07.

[86] Michele Catanzaro, Suspected Iran schoolgirl poisonings: what scientists know, Nature News Explainer, 615(7953) 574, March 2023.

[87] Fiona Nimoni, Mahsa Amini: Protesters mark one year since death of Iranian student, BBC News, 2023-09-16.

[88] Schools' Poison Tracker, https://sites.google.com/view/poison-tracker/english

[89] Anonymous, A new wave of gas poisoning of school girls resumes in Iran, NCRI Women's News, 2023-11-05.

[90] Anonymous, Iran president blames foreign enemies for schoolgirl poisonings, AlJazeera, 2023-03-03.

As previously described in the chapter on threats, rhetoric, and information dissemination, the Israeli military reported finding detailed instructions for making a cyanide bomb on the body of an operative from the Hamas terrorist group. The instructions were found on a USB flash drive, along with information on how to use toxic industrial chemicals as chemical weapons.[91] There exists no information as to whether any critical chemicals or other materials for manufacturing a so-called Mubtakar were also found in the area, or whether, at the time, there were any links between Hamas or AQ regarding this type of dispersal device for disseminating the poisonous chemical gas, hydrogen cyanide.

Australia and Oceania

A 49-year-old woman in Australia has been charged with murder and attempted murder for deliberately poisoning her former in-laws and two other elderly people in July. The woman allegedly served a meal of beef Wellington and scrambled eggs with mushrooms, to which the extremely poisonous death cap (*Amanita phalloides*) had been added.[92] Four and five days later, all but one of the lunch guests died in the hospital. The survivor had to undergo a liver transplant. The woman denies intent and claims she unknowingly bought the dried mushrooms in an Asian grocery store. The case is still awaiting the final verdict.

A 37-year-old man from Kyoto, Japan, was arrested in March on suspicion of murdering a 21-year-old female student from Ritsumeikan University in the same city when he visited her at her home in October 2022.[93] According to the man, the student became suddenly ill while they were drinking alcohol together. The student died of acute respiratory distress syndrome (ARDS) after three days in the hospital. A urine sample taken when the student was hospitalised was found to contain the toxic chemical element thallium.[94]

The police investigation also revealed that the man's aunt had been in a coma since 2020 and the analysis of her blood and urine revealed the presence of

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[91] Alistar Bunkall, Hamas fighters were carrying instructions on how to make chemical weapons, Israeli president claims, Sky News, 2023-10-23.

[92] Alasdair Pal, Mushroom murders: Australian Erin Patterson charged after lunch killed three, Reuters, 2023-11-03.

[93] Anonymous, Kyoto man accused of killing female student with thallium, The Asahi Shimbun, 2023-03-08.

[94] Thallium is a toxic metallic element that does not occur in free form. Salts containing thallium are toxic and usually easily soluble in water. One example of thallium salts is thallium sulphate, which has been used as rat poison. Due to its high toxicity, thallium is currently banned as rat poison in most countries.

thallium. After his aunt was incapacitated, the suspect took over her role in the property business she owned.[95] It is not clear how the man managed to obtain thallium, which is subject to trade restrictions in Japan.

A 39-year-old Chinese female kindergarten teacher was executed in 2023 after being convicted in 2019 of lacing porridge with sodium nitrite, which she had served to 25 pupils of another teacher in the same kindergarten. The teacher was initially sentenced to only nine months in prison, but the sentence was later increased to the death penalty. One of the children died from organ failure ten months after consuming the poison, and most of the other children needed medical attention. The trial revealed that the teacher had poisoned the porridge to retaliate against her colleague, with whom she had had an argument. It later emerged that the woman had also attempted to poison her husband with the same substance two years earlier, but that he survived.[96]

In April, a 25-year-old Indian man practising Ayurvedic pseudo-medicine confessed to murdering his father and poisoning four other people, including his stepmother, by putting rat poison in food.[97] The man, a native of Thrissur, Kerala, harboured a grudge against his father, whom he blamed for his mother's suicide a number of years earlier. Reportedly, the man had an interest in chemicals, and parts of the family house had been converted into a chemical laboratory. Although the specific type of poison used remains unclear, the man reportedly ordered the necessary materials to create a rat poison. A year later, the suspected killer was found dead in a pond, while on bail and undergoing treatment, at an Ayurvedic hospital in Nepal.[98]

Two Indian women, aged 22 and 36, from a village near Nagpur, Maharashtra, were arrested in October on charges of poisoning and killing five relatives and poisoning two others with thallium.[99] The poisonings took place over a period of just under a month in September-October. The reason for the poisonings is believed to have been that one woman had a strong dislike for her husband and his family due to repeated bullying and that they had driven her father to suicide. The other woman was involved in an inheritance dispute. Doctors suspected

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[95] Anonymous, Kyoto man arrested over alleged thallium poisoning of aunt, Kyodo News, 2023-05-24.

[96] Shweta Sharma, China executes convicted kindergarten teacher who poisoned 25 students, killing one, The Independent, 2023-07-14.

[97] Anonymous, Father was my target, confesses Ayurvedic doctor held for Thrissur food poisoning death, Onmanorama, 2023-04-04.

[98] Staff, Ayurvedic doctor booked for poisoning father to death found dead in Nepal, Onmanorama, 2024-05-01.

[99] Anonymous, Serial killers: 2 women held for poisoning 5 of their family in Gadchiroli, Nagpur News, 2023-10-20.

deliberate poisonings, but the victims varied symptoms made it difficult to pinpoint which poison might have been used. The symptoms were wide-ranging and included tingling limbs, severe lower-back pain, swollen tongues, darkened lips, headache, and speech impediments. Apparently, the younger woman is an agricultural scientist and is thought to have ordered thallium through her work. The police's review of the woman's web-browsing history shows that she had carefully studied and learned how to carry out poisonings.[100]

[100] TNN, Scientist, 22, uses 'poisoner's poison' (thallium) to kill hubby, 4 in-laws, The Times of India, 2023-10-27.

Incidents with biological materials

In 2023, there have been no large-scale antagonistic attacks involving either infectious materials or toxins. However, in this report we have highlighted some examples of antagonistic incidents related to these types of agents.

The judicial process against two Iranian brothers arrested in January in the German city of Castrop-Rauxel on suspicion of planning to use cyanide and ricin for an upcoming Islamist terrorist attack was completed in Dortmund in November. The older brother was released early in the investigation, while the younger, 26-year-old brother, was prosecuted and sentenced to four years in prison. Neither cyanide, ricin, nor explosives were found during the police searches. However, the man is said to have been in contact with Daesh members who provided him with instructions for the production of ricin and cyanide. A subsequent search of two garages linked to the brothers' residence may have uncovered some new evidence, but it is unclear whether this is related to materials for producing ricin or cyanide or something else.[101, 102] At the trial, police officers testified that they found instructions for producing toxic materials and building a bomb on the perpetrator's smartphone. According to the indictment, the man had plans to distribute poisonous material to kill a large number of people.[103, 104, 105] Similar to raids in previous years, US intelligence , this time from the Federal Bureau of Investigation (FBI), reportedly alerted local police (Bundeskriminalamt) in December 2022. The Cologne case in 2018 employed a similar approach, tracking down and arresting a Tunisian man who was constructing a ricin bomb.[106] In that case, the US National Security Agency (NSA) reportedly notified its German counterpart. This shows how monitoring

[101] Herbert Maack, Ricin's round two: Germany prevents another Islamic State-motivated bioterrorism attack, The Jamestown Foundation Terrorism Monitor Vol. 21:5, 2023-03-03.

[102] dpa/AFP, Neue Beweismittel bei terrorverdächtigen Iranern gefunden [New evidence found on Iranian terror suspects], Frankfurter Allgemeine, 2023-01-16.

[103] Magnus Normark, Anna-Karin Tunemalm, Anders Lindblad, Per Wikström & Henrik Ramebäck, Page 24 in CBRN threats and incidents involving non-state actors – 2022 annual report, FOI-R--5471—SE, 2023-06-13.

[104] Andreas Böhme, Anschlag geplant! Haft und Sicherungswahrung für Iraner [Attack planned! Imprisonment and preventive detention for Iranians], Westdeutsche Allgemeine Zeitung, 2023-11-23.

[105] t-online/nfr, Geplanter Chemieanschlag – Haftstrafe für Islamisten [Planned chemical attack - prison sentence for Islamists], t-online, 2023-11-23.

[106] Magnus Normark, Anders Lindblad, Anna-Karin Tunemalm, Daniel Wiktelius, Per Wikström & Stina Holmgren Rondahl, Page 29 in CBRN threats and incidents involving non-state actors – 2018 annual report, FOI-R--4812—SE, November 2019.

digital platforms and mobile data on the internet and the exchange of information with foreign security services, especially from the United States, yield results in the hunt for criminals, and also prevent preparations for BC attacks and other crimes.

The accused man could be located by tracing an IP address. The brothers planned to carry out a BC attack on New Year's Eve, but as they were unable to obtain poisonous materials, the attack had to be postponed. There were reportedly some suspicions of Daesh links, but so far nothing has emerged to suggest that the accused were directed from outside or belonged to a terrorist cell. A perpetrator profile of the brothers also did not show that they were radicalised violent Islamists and were therefore not on the radar of any intelligence agency before the 2023 operation. On the contrary, one of the brothers claimed to have fled Iran after converting to Christianity and therefore Germany granted him a residence permit in 2016.[107] 2019 saw the younger brother receive a seven-year prison sentence for attempted murder. After being ejected from a bus for being over-intoxicated, he had thrown a log from a road bridge that hit a car and injured its driver as it passed below.

In June, a teenager from Oslo was charged with producing ricin. He called an ambulance himself after being poisoned by ricin and admitted trying to make it at home. Analyses confirmed that he had managed to produce the substance. The teenager pleaded not guilty in the case, as he claims he had no intention of using ricin to harm anyone else.[108]

The Canadian woman, Pascale Ferrier, who in 2020, among other things, sent ricin letters to then President Donald Trump,[109] pleaded guilty at the trial in 2023 and was sentenced to 22 years in prison.[110]

Incidents with threats and powder letters

Since the 2001 case involving anthrax letters in US mail, there have been numerous incidents of mail containing some type of powder, sometimes

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[107] Axel Spilcker, Die verstörenden Lebensläufe der verdächtigen Bomben-Brüder [The disturbing biographies of the suspected bombing brothers], FOCUS Online. 2023-01-09.

[108] Ola Haram, Line Fausko, Vilde Elgaaen, Opplysninger til VG: Tenåring på Bøler lagde giftstoffet ricin [Information to VG: Teenager at Bøler made the toxin ricin], VG, 2023-06-09.

[109] Magnus Normark, Anders Lindblad, Anna-Karin Tunemalm, Anna Vesterlund, Per Wikström & Daniel Wiktelius, Page 29 in CBRN threats and incidents involving non-state actors – 2020 annual report, FOI-R--5151—SE, May 2021.

[110] lo/ab (AP, dpa, Reuters), Canadian woman who mailed ricin to Trump jailed for 22 years, DW (Deutsche Welle), 2023-08-18.

accompanied by an expressed threat. This has happened in Sweden, as well as in other countries. In the vast majority of cases, the substances involved have been harmless, but the incidents have caused much concern among people handling and receiving this type of mail. In addition, they have required considerable community resources to deal with a potentially hazardous substance and have caused disruption to the affected organisations. In Sweden, public authorities and religious institutions have been particularly targeted.

At the end of March, powder letters were sent to 18 of the 21 Swedish county administrative boards. Subsequent analyses showed that the sugar-like powder was harmless.[111]

In November, the Swedish Social Insurance Agency office in Örebro received a powder letter. Medical staff isolated and cared for the woman who opened the letter and came into contact with its contents. The powder was later found to be harmless. According to a spokesperson at the Swedish Social Insurance Agency, they have a specially adapted mail room, where the ventilation can be turned off in case of this particular type of event.[112]

In August, a mosque in Hisingen, Göteborg, received a powder letter, which, after analyses, turned out to contain a harmless powder. The same mosque had also received a powder letter with a threatening written message in 2020.[113]

According to media reports in April, the Finnish Embassy in Moscow received three letters that contained powder. No additional details exist regarding the actions taken or the findings of subsequent analyses. The incident coincided with Finland's entering into NATO.[114, 115]

A powder letter was sent to Arthur Engoron, a New York judge, in February 2024. He oversaw a civil fraud trial against Mr. Trump and had received numerous threats before, during, and after the judicial process. Court staff were

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[111] Ella Käck, Tobias Holmqvist, Oscar Lundberg, Axel Brantemo, Pulverlarm hos flera länsstyrelser samtidigt – polispådrag [Powder alarm at several county administrative boards simultaneously - police action], SVT Nyheter Öst, 2023-03-30.

[112] Jonas Kraft & David Fiedler, Kvinna fick isoleras efter pulverlarm på Försäkringskassan i Örebro [Woman had to be isolated after powder alarm at The Swedish Social Insurance Agency in Örebro], SVT Nyheter Örebro, 2023-11-23.

[113] Anonymous, Pulverlarm vid Göteborgs moské – polisinsats pågår [Powder alarm at Gothenburg mosque - police operation underway], SVT Nyheter Väst, 2023-08-18.

[114] Staff, Finnish embassy in Moscow receives letter containing unknown powder, Reuters, 2023-04-14.

[115] Märta Nummenmaa, Rysk tidning: Brev med vitt pulver i har skickats till finska ambassaden i Moskva [Russian newspaper: Letters containing white powder sent to the Finnish Embassy in Moscow], Yle.fi, 2023-04-14.

tasked with opening and reviewing mail addressed to the judge and his colleagues. The judge had also received bomb threats at his home. Nothing in the report suggests that the powder was harmful to health.[116]

Natural occurrence of potential bioterrorism materials

As a group, biological materials are quite different from chemical and radiological materials, as natural outbreaks caused by these materials continually occur around the world. Thus, for those who hold the relevant skills and have the opportunity to acquire infectious agents in these outbreaks, there is a possibility of obtaining them. A malevolent actor in possession of a potent biological agent, with the capability to, for example, cultivate and disseminate the agent, and who is willing to cause harm to other humans, animals, or plants, may potentially be a lethal threat. The following paragraphs describe some natural disease outbreaks in 2023 that were caused by biological materials commonly cited as potential bioterrorism agents.

In the first half of 2023, a disease outbreak caused by the Marburg virus occurred in Equatorial Guinea. The Marburg virus causes haemorrhagic fever and has a very high mortality rate. Out of 17 confirmed cases in Equatorial Guinea, 12 patients died.[117] Tanzania also had a Marburg outbreak during the same period. The number of confirmed cases was nine, of whom six patients died.[118] These are the first ever known Marburg outbreaks in these two countries. There are no clear links between the two outbreaks.[119] It is known that the Soviet Union's offensive B-weapons programme included research on the Marburg virus.[120]

An unusually large anthrax outbreak occurred in Zambia in 2023, with the World Health Organization reporting 684 suspected human cases in November, of

[116] Nina Lakhani, Judge in Trump civil fraud trial was sent envelope with white powder, The Guardian, 2024-02-28.

[117] WHO, Disease Outbreak News; Marburg virus disease - Equatorial Guinea, World Health Organization, 2023-06-09.

[118] WHO, Disease Outbreak News; Marburg virus disease - United Republic of Tanzania, World Health Organization, 2023-06-02.

[119] Olivier Sibomana & Emmanuel Kubwimana, First-ever Marburg virus disease outbreak in Equatorial Guinea and Tanzania: An imminent crisis in West and East Africa. Immunity, inflammation and disease, 2023 Aug; 11(8):e980.

[120] Milton Leitenberg & Raymond A Zilinskas, pages 67, 92-94 and 109 in The Soviet biological weapons program – A history, Harvard University Press, 2012.

which only four were fatal (0.6% mortality).[121] Anthrax is caused by the bacterium, *Bacillus anthracis*. This bacterium has been present in several B-weapons programmes in the 20th century.[122] There are several cases of anthrax in domestic and wild animals every year. People who come into contact with and handle affected animals are at risk of infection.[123]

In June, the toxin, ricin, poisoned 20 villagers after they consumed castor beans, according to Pakistani officials. The poisoning caused unconsciousness and required hospitalisation. It is unknown whether any of the patients died as a result of the poisoning.[124] The incident was most likely caused by unfortunate circumstances, but it shows how easy it is to obtain castor beans, as they grow wild in many parts of the world. Extraction of ricin from castor beans is well described and relatively straightforward. The example above illustrates that even the ingestion of castor beans can cause serious symptoms of poisoning. Ricin has long been of interest to terrorists and criminals as an alternative to other types of weapons. Its availability, relatively high toxicity, and the ease with which toxin can be extracted and produced, are most likely the main reasons for this interest.

[121] WHO, Disease Outbreak News; Anthrax - Zambia, World Health Organization, 2023-12-08.

[122] Filippa Lentzos, Pages 50, 57-58 and 94-95 in Biological threats in the 21st century, Imperial College Press, 2016.

[123] Colin J Carlson, Ian T Kracalik, Noam Ross, Kathleen A Alexander, Martin E Hugh-Jones, Mark Fegan, Brett T Elkin, Tasha Epp, Todd K Shury, Wenyi Zhang, Mehriban Bagirova, Wayne M Getz & Jason K Blackburn, The global distribution of Bacillus anthracis and associated anthrax risk to humans, livestock and wildlife, Nature Microbiology, 2019 Aug;4(8):1337-1343.

[124] News Desk, 'Alian' beans makes 20 villagers including 9 kids unconscious to hospitalized in Mian Channu, 24News HD TV, 2023-06-11.

FOI
Swedish Defence Research Agency
SE-164 90 Stockholm

Phone: +46 8 555 030 00
Fax: +46 8 555 031 00

www.foi.se