

# Polonium-210 in London

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## Illness without diagnosis

Alexander Litvinenko was taken to the Barnet Hospital on 3 November 2006 with suspected food poisoning or gut infection. During the first week he was treated with high doses of antibiotics, without proper tests for bacterial contamination. Two weeks later, an outside toxicologist suggested thallium poisoning. Large doses of the antidote, Prussian blue, began to be administered. Litvinenko was transferred to another hospital, to the haematology department, where treatment for thallium poisoning was continued, without any effect. It was only on 22 November that suspicion of possible radioactive poisoning emerged, and the samples of urine clearly showed a high level of alfa radiation. Samples were sent to a nuclear research laboratory where Polonium-210 was identified. There are several antidotes for polonium poisoning. But it was too late. Litvinenko was left with two hours to live.

The last few days of Litvinenko's life seemed to be more under the supervision of a public relations operation, rather than medicine. The world-wide distribution of photographs of the half-dressed patient in his hospital bed appeared to be a serious violation of medical ethics. In the case of radiation syndrome, with the immune system weakened, the patient should have been kept in sterile isolation. Instead, Litvinenko was made a celebrity with a constant stream of visitors. A powerful statement was prepared on his behalf two days before his death, when he was under heavy sedation. Litvinenko's Chechen friends invited an imam from the London Central Mosque to convert the sedated man to Islam, despite apparent objections from his wife and father. The exact immediate cause of Litvinenko's death has not yet been confirmed by the coroner's office. The post-mortem results remain classified.

## Why Polonium-210?

Accidental poisoning with Polonium-210 of workers in the military and civilian branches of

the nuclear industry are known, and the toxicology of polonium is well studied. However, there are no known previous cases of the deliberate use of polonium-210, or other alfa sources of radiation, for criminal purposes. This isotope is difficult to handle. Polonium metal is very hot and volatile. Commercial solutions of polonium salts are very expensive. Two to three Gigabecquerels (GBq) of polonium-210, which is a single human lethal dose for oral administration, cost about \$2 million. This makes it unlikely that a free-lance or hired assassin would use it. This was the main reason for suspicion that the state was behind this crime. Because Russia is the main producer of Polonium-210, and because Litvinenko was a former Federal Security Service (FSB) officer, theories about the possible motives for his murder published in the general media tried to implicate Moscow or even Putin personally. Polonium-210 was, however, very convenient for the police. It left a very clear trail, which was followed. It was discovered that this trail leads to Moscow and Italy. Three persons were identified as carriers of polonium; Mario Scaramella, an Italian, and Andrey Lugovoy and Dmitry Kovtun, Russians.

### **Litvinenko – the escape from Russia**

Since 1994, Litvinenko, as an officer of the Russian Federal Security Service, collaborated closely with the oligarch Boris Berezovsky. When Putin started to reduce the political power of the oligarchs in Russia, Berezovsky was one of the first victims. He quickly sold his main oil, car dealership and media assets in Russia for nearly \$3 billion and left the country for good. In the process, Berezovsky also convinced Litvinenko to defect to the USA and subsidized preparations for the escape of Litvinenko and his family.

In October 2000, using false documents, Litvinenko managed to reach Turkey via Ukraine and Georgia. However, the US Embassy in Ankara refused to grant him an entry visa. The CIA officer at the embassy interviewed Litvinenko, but was not impressed by his explanations. Berezovsky sent his assistant, Alex Goldfarb, to Turkey apparently to solve the problem. Goldfarb worked out a plan to return to Moscow via London. While at Heathrow, Litvinenko refused to board the connecting flight to Moscow and asked for political asylum in the United Kingdom. He was allowed to stay, while the application was considered.

### **Russian security officer in England Attempts at writing**

Berezovsky seemingly wanted Litvinenko in the United States to co-author the book *Blowing up Russia: The Secret Plot to Bring Back KGB Terror*, which he had personally sponsored. It was under preparation by Yuri Feltshtinsky, a Jewish *émigré* who had lived in New York since 1978. The book, apparently written to compromise Putin, was nearly finished. However, Feltshtinsky, a historian, was thought not to be a credible author on his own. With a real FSB officer as co-author, the book might enjoy much wider acceptance. However, the book, which was published in Russian in Latvia in 2001, and in English in 2002, was a failure, mainly because of the lack of documentation and factual evidence. Berezovsky

sponsored Litvinenko's second book, *The Lubianka Criminal Gang*, about the Federal Security Service. A professional journalist was brought from Moscow to help with the writing. Alex Goldfarb wrote a long 'Preface' for the book, putting it in the same class as Alexander Solzhenitsyn's *Gulag Archipelago*. However, this book, which was published in Russian in 2002, was also a failure. It was not translated into English or other languages.

Since his arrival in London in October 2000, Litvinenko reportedly received a generous grant of £60,000 per year via the Foundation for Civil Liberties, which was administered by Alex Goldfarb. After the failure of the second book there were no new projects for Litvinenko, and the grant from the Foundation came to an end. From 2004, Litvinenko was left without a regular income. He had to start earning a living.

### **Berezovsky and Goldfarb's 'Fund for Civil Liberties'**

Boris Berezovsky was charged in Russia with fraud, tax evasion and other offences. The warrant for his arrest and extradition was also issued by Interpol. As a person with political asylum status he was unable to use his considerable wealth for direct support of the opposition to Putin. However, he established the 'Foundation for Civil Liberties' with an initial fund of \$25 million and appointed Alex Goldfarb as its Director. This Foundation opened offices in Moscow, Kiev, Tbilisi and other cities of the former Soviet Union and became very active in support of oppositional movements.

Alexander Goldfarb, now an American citizen, graduated from Moscow University in 1969. From 1969 until 1975, he was a junior scientist and graduate student at the top secret Kurchatov Institute of Atomic Energy. His doctoral thesis project was on enzymes of DNA and RNA synthesis, and he was attached to the Radiobiology Division of the Institute. In 1975, Goldfarb unexpectedly applied for emigration to Israel and was granted an exit visa. He worked at the Weizman Institute in Tel Aviv until 1980. From 1980 to 1982, he worked in the Federal Republic of Germany and, since 1983, at Columbia University in New York as Assistant Professor. From 1991 to 1997, Goldfarb was chairman of the Moscow Bureau of the Soros Foundation, and distributed Soros grants to many academic projects. He also became head of the molecular biology laboratory of the Public Health Research Institute at Newark, New Jersey, in the United States, where he works as a biochemist. This laboratory has a large team of Russian scientists and publishes many research papers jointly with Moscow institutes, including the former Kurchatov Institute radiobiology division.

### **Scotland Yard detectives move along the radioactive trail**

Polonium-210 gave the police a unique opportunity to follow the radioactive trail. Their discoveries were widely reported by press and TV. More than 20 places in London, including Berezovsky's own office, were found to be contaminated with Polonium-210. Radioactivity was found on British Airways planes that flew from and to Moscow in October and November. The highest levels of contamination were

found to be associated with hotel rooms, bars and restaurants which were linked to three persons, Scaramella, Lugovoy and Kovtun. Polonium-210 was also found in Hamburg, and associated with Kovtun's visit to Germany on 28 to 31 October. However, the radioactive trail contained two peaks, the first dated 15-16 October, the second dated 30 October to 3 November. This discovery led to the theory that Litvinenko was poisoned twice, first in the middle of October and then again on 1 November. The first dose, it is suggested, was not sufficient to kill him. There were some spots of contamination which did not fit the theory.

The main puzzle was Mario Scaramella, an Italian friend of Litvinenko. He was invited to London for tests and found to have massive contamination with polonium. A few days later it was reported that only 'traces' were found. Scaramella returned to Italy. Italian doctors found polonium-210 in his body. There were no contacts between Scaramella and Lugovoy or Kovtun, the main initial suspects. Scaramella was invited again to London and was admitted to the same hospital where Litvinenko had been treated. Polonium-210 contamination was found, but the levels were not disclosed. The Italian spent nearly two weeks in hospital. He was allowed to return to Italy on 24 December. On arrival in Italy he was arrested and charged on several counts not related to radioactivity. He was put in jail and the bail application was refused. Apparently nobody wanted to interview him about polonium or Litvinenko. Scotland Yard detectives wanted to interview Lugovoy and Kovtun in Moscow. However, when these interviews were granted, both men were in a radiological clinic with symptoms of radiation syndrome, light in the case of Lugovoy and acute in the case of Kovtun. The interviews were carried out in hospital. Both men were classified as 'witnesses', not 'suspects'. From 30 October to 3 November, Lugovoy had been in London with his wife, two daughters and son. Scotland Yard's longest interview was with Lugovoy's wife. Details of these interviews have not been disclosed.

Scaramella remained in prison and nobody wanted to press charges. In April 2007, he was transferred to hospital, under guard, with a heart attack, high blood pressure, hair loss and other health problems. In June, whilst still ill, he was placed under house arrest.

### **Litvinenko in London – Attempts at consultancy business**

The first theory of Kremlin involvement which received the attention of Scotland Yard, and wide coverage in the media, was reportedly suggested by Yuri Shvets, a former Major in the KGB who defected. He had served as an intelligence officer in Washington under diplomatic cover. Shvets knew Litvinenko and Scaramella. He was a member of the Berezovsky-Goldfarb group, involved in several projects. Yuri Shvets apparently told British detectives who flew to Virginia, where he lives, that he and Litvinenko jointly prepared a report investigating Victor Ivanov, deputy head of President Putin's administration. The 'risk assessment report', running to eight pages, was commissioned by a well-known British company which was considering an investment worth 'dozens of millions of dollars' into an industrial project which was under the supervision of Victor Ivanov. The Litvinenko and Shvets report apparently described Victor Ivanov as a former KGB general and Stalinist 'old

guard'. The expected investment was cancelled. A substantial fee (some papers talked about \$100,000) was paid to Litvinenko and Shvets. According to this theory the murder of Litvinenko was possibly revenge for the lost contract. Lugovoy, as a former KGB major himself, was alleged to have carried out the order. This theory was apparently supported by Berezovsky, Goldfarb, Feltshtinsky and other members of Berezovsky's circle. However, Scotland Yard seemingly did little to pursue it. The 'risk assessment report' was found. It was poorly written and contained information easily available from Russian language internet sources. It was delivered to the British company on 20 September 2006. It is not clear how Ivanov was supposed to have been able to read it, and why polonium-210 should have been used.

### **Litvinenko in London – from consultancy to blackmail?**

The second theory that received prominence in *The Observer* on 3 December, which was also apparently not pursued by Scotland Yard, tried to explain Litvinenko's fate by his blackmailing activities. Yulia Svetlichnaya, 33, a Russian journalist and graduate student at the University of Westminster in London, provided information on Litvinenko's apparent attempt to offer her a kind of partnership in blackmailing wealthy 'New Russians' who live in London and do not want to disclose the sources of their wealth. These can often be linked to their Communist, KGB or even criminal backgrounds. Litvinenko apparently was particularly excited about the 'Yukos dossier' concerning a Russian oil company. Most the members of the Yukos management fled Russia for the West after Mikhail Khodorkovsky's trial in Moscow, in 2004. The main co-owner of Yukos, Leonid Nevzlin, settled in Israel. He was in charge of substantial capital, thought to be some \$7 billion, distributed among many offshore accounts and administered through the Gibraltar branch of the MENATEP bank. MENATEP was a Russian bank founded by Khodorkovsky and Nevzlin in 1993, which bought the Yukos company in 1996 at one of the privatization auctions of the Yeltsin era. MENATEP became a financial section of Yukos.

The obvious implication of *The Observer* story was that, if Litvinenko did indeed start his blackmailing plans, one of his targets might have reacted by silencing him for good. However, it became known that Litvinenko flew to Israel in September 2006 to deliver 'The Yukos dossier' personally to Nevzlin. Nevzlin acknowledged this unexpected visit, but said that the 'Yukos dossier' had been returned to the British Embassy in Israel. Litvinenko received British citizenship on 12 October 2006. His trip to Israel needed visa and Home Office travel documents available for stateless residents of the United Kingdom, and the approval of police necessary for political-asylum-protected refugees. The content of the 'Yukos dossier' was not disclosed.

### **Why did Scotland Yard close the investigation? Who poisoned Litvinenko? The British press verdict**

Scotland Yard's anti-terrorist branch formally closed the Litvinenko case at the end of January 2007 and sent it to the Crown Prosecution Service. There were some reports that the British government considered a request for the extradition of Lugovoy and

Kovtun from Moscow. Later, Kovtun was dropped as a main suspect apparently because he had been a military intelligence officer, not KGB. There were no new interviews or investigations of possible motives behind this crime. A team of Russian detectives arrived in London in April 2007 to work on the Russian Prosecutor's case which was entitled 'The murder of Russian citizen Litvinenko and the attempted murder of Russian citizen Dmitry Kovtun'. Russian detectives interviewed Berezovsky and some members of the Yukos management who live in London. The main focus of the Russian investigation was on the financial details of Litvinenko's life in the United Kingdom. Meanwhile, the Russian Federation Prosecution Service somehow found, in December 2006, entirely new materials on Yukos and ordered a new trial of the Yukos managers Mikhail Khodorkovsky and Platon Lebedev, who were serving nine year sentences in a Siberian camp. At the beginning of December 2006, both men were transferred to the regional capital and put in jail. The estimated sum of hidden capital managed by MENATEP was raised to \$25 billion.

### **Litvinenko in London**

#### **The trade in confidential FSB documents or blackmail – what is more dangerous?**

Very poor knowledge of English made it difficult for Litvinenko to do independent consultancy work for British companies. He was apparently negotiating for some 'risk assessment' or 'due diligence' reports on behalf of two of his new friends who were members of Berezovsky's circle, but dependent also on free-lance income. They were Yuri Shvets, graduate of Moscow University and the KGB Academy economy section, and Evgeny Limarev, son of a KGB general and graduate of the Moscow Institute of International Relations. They were reportedly both experts in computer penetration work. Limarev settled in France where he created an Internet site, *RusGlobus*, for Berezovsky. Shvets and Litvinenko also did some work for Mario Scaramella, who was employed by the Italian Parliamentary Commission to study a part of the smuggled KGB archive, known as the 'Mitrokhin Papers', apparently in search of links between the KGB and socialist and communist politicians and academics in Italy. This study was commissioned by Prime Minister Berlusconi, who was reportedly looking for some compromising materials about Romano Prodi, his main rival. The Italian file of the 'Mitrokhin Papers' was sent by the Secret Intelligence Service (SIS) from London, where Vasily Mitrokhin lived after the collapse of the Soviet Union. The documents were in Russian, and this necessitated the assistance of Litvinenko and Shvets. Scaramella paid Litvinenko a modest fee for this work. He also used to invite Limarev as well, but had to fly to the United States when it was necessary to get Shvets' opinion. When Romano Prodi won the elections in Italy he liquidated the 'Mitrokhin Commission'.

Since 2005, Litvinenko had also been trying to sell the British media some secret papers that originated from his former FSB special unit. Apparently, he was able to penetrate some FSB sites, probably because he knew secret passwords or had an accomplice inside the service. However, these documents (I was able to read some of them) were mostly about corruption, ethnic mafia clans and organised criminal

gangs. They were of little interest to the British press or British intelligence and their circulation was limited. In 2004, both Litvinenko and Shvets were apparently employed by the Foundation for Civil Liberties to research tape recordings of President Leonid Kuchma of Ukraine. These were known as the ‘Melnichenko Tapes’. The alleged attempt to use these tapes for blackmail apparently failed.

The ‘Yukos dossier’, which Litvinenko was excited about in May 2006, was under preparation for a few months. Limarev apparently did some research on the foreign assets of Yukos, while Shvets was said to be an expert in finding offshore accounts. Litvinenko, as a former FSB operations officer, did the practical work, delivering the ‘dossier’ personally to Nevzlin in Tel Aviv.

### **The group radioactive poisoning – Litvinenko was one of several victims**

From 1995 to 1999, Litvinenko’s job in a special unit of the FSB, which had been created to fight organised criminal gangs, gave him practical knowledge of blackmail. The extortion of money from gang leaders or ‘godfathers’ was part of the operation. He knew that the messenger to the mafia territory should be protected. The messenger is a member of the group, and sensitive information will be disclosed if the messenger finds himself in trouble. However, both Limarev and Shvets, who did some research on Yukos, would hardly have been able to disclose the ‘dossier’, if attempts to silence the messenger were taken. Litvinenko delayed a trip to Israel several times. However, when he met Andrey Lugovoy in London in July 2006, he thought that he had found a reliable partner. Litvinenko and Lugovoy were friends since 1995 when they both provided security for Berezovsky in Russia. In 1996, Lugovoy was a KGB bodyguard for Berezovsky’s travels to Chechnya, while Litvinenko was investigating an attempt on Berezovsky’s life, in 1994. In 2004, when Litvinenko resumed contacts with Lugovoy in London, his friend was already a wealthy businessman in Russia and the owner of several companies worth about \$100 million. One of his companies, ‘The Ninth Wave’, provided security services.

Large international corporations such as Yukos employ professional security units to protect their management and interests. These professionals would deal with blackmail as well. They apparently knew that Litvinenko, who arrived in Tel Aviv in September, was a member of a group. To silence him might mean the release of information damaging to the interests of Yukos. Was it necessary to neutralise the whole group for real practical results? In September, after his return to London from Israel, Litvinenko was under close observation. When stakes are measured in billions of dollars, professional expenses of this kind are an easy part of the exercise. The problem was the task. The persons probably identified as possible suspects lived in different countries: Italy, Russia, France, the United States. If one of them was to be neutralised, the others would act. Neither firearms nor chemical poisons would give enough time. Only radioactive poisoning can do the job. Among radioactive isotopes, only alfa sources escape the airport radiation monitors. Among alfa emitters, only polonium-210 has the necessary qualities:

minimal gamma impulses, long half-life, and a well-studied toxicology. It is also commercially available. A person poisoned by polonium is ‘walking dead’ for nearly two weeks, without suspecting the danger. When he is taken to hospital, the discovery of alfa radiation is difficult. His home or flat can be cleared of sensitive documents without any undue haste. We now know that four men received substantial amounts of polonium-210: Litvinenko, Kovtun, Lugovoy and Scaramella. This was well above the possible ‘contamination’ level. Limarev’s house in the French Alps was broken in to, during his trip to Italy, and some documents were stolen. Apparently nobody tried to find out why. After Litvinenko’s death, Limarev and all the members of his family went into hiding for two weeks. Yuri Shvets, as a professional spy, probably took better protective measures.

### **Who poisoned Litvinenko and Kovtun? The theory**

The propaganda and publicity effect of Litvinenko’s death was accidental. It was likely that polonium poisoning would never be discovered, and no links identified

### **A Timeline of Events**

On 21 November 2000, at a meeting with Russian President Vladimir Putin in Moscow, British Prime Minister Tony Blair promised to be an intermediary between Russia and the United States regarding a missile defense system. In February 2001, London took the side of the US on the issue.

In August 2001, Rafael Bravo, an employee of the company BAE Systems Avionics, was arrested for spying for Russia.

In March 2002, another employee of BAE, Ian Parr, was caught attempting to pass information to Russia about a new missile.

On 12 September 2002, a London court denied a Russian request for the extradition of businessman Boris Berezovsky. Similar decisions were made regarding former LogoVAZ Chief Executive Yulia Dubova and Chechen envoy Ahmed Zakayev.

On 7 June 2004, the Russian Foreign Ministry announced that the British Council was engaged in commercial activities in Russia and that it could face fines. After the issue was discussed by Mr. Putin and Mr. Blair at the G8 summit in the US on 10 June, the complaints were dropped.

On 18 March 2005, a London court refused to extradite former Yukos employees Dmitry Maruyev and Natalia Chernysheva, and, on 23 December 2005, a similar request for the extradition of Yukos vice president and deputy managing chairman Alexander Temerko was denied.

In August 2005, British sailors participated in the rescue of an AS-28 submarine off the coast of Kamchatka and were rewarded by Vladimir Putin personally.

In January 2006, several British diplomats in Moscow were accused of espionage and the illegal financing of non-commercial organizations.



between several deaths in different countries and at different dates. If the dose had been only slightly higher for Litvinenko, his fate would not have been such a sensation.

The assassins in blackmail plots do not like too much attention because it means more intensive investigation. The Russian Procurator General received some important materials after Litvinenko's death. When his office opened a criminal case on the murder of Litvinenko and the attempted murder of Kovtun, it immediately combined this with the Yukos criminal case which had existed since 2003, when Khodorkovsky and Lebedev were arrested, and Nevzlin fled to Israel. The Russian Procurator reportedly made Nevzlin the main 'suspect' for the Litvinenko and Kovtun investigation. Litvinenko died on 23 November 2006. Ten days later, the former directors of Yukos, Khodorkovsky and Lebedev, who, as we have seen, were serving sentences of nine years in an East Siberian camp near the uranium mining town of Krasnokamensk, were transferred to the regional capital, Chita, and put into a local prison. Their lawyers in Moscow were informed that a new trial was forthcoming.

In July 2006, British Ambassador to Russia Anthony Brenton attended a forum organized by the opposition coalition The Other Russia, after which the pro-Kremlin youth movement Nashi carried out several protests demanding apologies for the 'speech before the fascists'.

On 12 October 2006, the British Foreign Office included Russia on its list of countries that are human rights violators.

On 23 November 2006, Alexander Litvinenko, who had been granted political asylum in the United Kingdom, died in London after being poisoned with polonium-210.

On 22 May 2007, British prosecutors charged Russian former FSB officer Andrei Lugovoy with Mr. Litvinenko's murder.

On 6 June 2007, Tony Blair said that he would not recommend investment in Russia to British companies.

On 16 June, the British government awarded official honours to a defector named Oleg Gordievsky and the judge Timothy Workman, who turned down Russia's extradition request for Boris Berezovsky and Ahmed Zakayev.

On 25 June, the FSB announced that charges had been filed against the former head of the Russian tax police, Vyacheslav Zharko, who was recruited by British intelligence.

On 5 July, the Russian General Prosecutor's Office announced (informally) that it would not hand over Mr. Lugovoy.

On 10 July, the Russian General Prosecutor's Office formally announced its refusal of the British government's request to extradite Mr. Lugovoy.

Source: *Kommersant*, 12 July 2007

The murder of Litvinenko remains unresolved. It seems that this may suit both sides in the investigation. The Russian Procurator is unlikely to acknowledge that he was a beneficiary of the blackmail plot. The Metropolitan Police in Britain, it seems, will not try to follow the blackmail theory suggested in *The Observer*. Is this lead too sensitive politically? Dmitry Kovtun fortunately survived the effects of polonium. But the fate of Mario Scaramella, who was transferred to hospital in April 2007, is still uncertain.

### **Polonium-210 as radiopoison – toxicology and radiobiology**

The organisers who were behind this operation knew some of the basics of radiobiology. However, they studied only a limited amount of literature, probably via the internet. They were in a hurry. Internet sources do not cover the literature published between 1960 and 1980. In these early studies it was found that polonium-210, if ingested, is very poorly absorbed into the blood stream. Only about five or six per cent of ingested polonium passes through the intestine wall. 90 to 95 per cent is removed via the faeces without any damage. Alfa radiation does not reach the stem cells layer of the intestine. All studies of the toxicity of polonium-210 during the last 20 to 25 years were carried out using intravenous injections. To do otherwise would have been a waste of money. The first poisoning of several men, carried out in the middle of October, was a failure due to insufficient doses. The second attempt was not easy to make. The dynamic of polonium in different tissues, and the results of the post-mortem, might solve the problem of dates. But it is not likely that the results of such a study will be published. Experts have already published the graphs of the possible distribution of polonium-210 in Litvinenko's tissues. When it will be possible to compare them with the real picture, nobody knows.

### *Postscript*

The decision of the Crown Prosecution Service, as reported on 22 May 2007, to charge Lugovoy with the murder of the former 'Russian Spy', Alexander Litvinenko, was perhaps inevitable, but was it irrelevant? Was it embarrassing just to close the case without charging anyone? Was it the case that the Crown Prosecution Service could not leave the problem for the next British government, which took office in June? Lugovoy had already been accused many times by the press, TV and even in books published in London. Can a 'fair trial' be possible in these circumstances?