

## Ukraine: Uranium Mining and Milling

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Ukraine possesses approximately 11% of the uranium resources in the former Soviet Union.[1] In 1991-92, the two processing centers in Ukraine produced 1000 tons of uranium. The uranium industry is designed to meet the uranium requirements of Ukraine and to develop a base for export sales. The Ukrainian uranium production companies report to the Ministry of Machine Building, Military-Industrial Complex, and Conversion. Exploration and resource estimation and development are governed by the State owned Geologic Enterprise "Kirovgeology", which reports to the State Committee of Geology and Utilization of Mineral Resources ("Derzhkomgeologyi Ukrainy").[2]

Sources:

[1] Enerpresse, No. 6036, 16 March 1994

[2]"Uranium: 1993 Production Resources and Demand," *A Joint Report by the OECD Nuclear Energy Agency and the International Atomic Energy Agency*, 1994.

[3] Interview with Mykhailo Umanets, "Goskomatom Speaks," *NUKEM*, August 1995.

### EASTERN (SKHIDNYI) MINING AND CONVERSION COMBINE

Ukrainian: Skhidnyi Hirno-Zbahachyvalniy Kombinat; Russian: Vostochnyy Gorno-Obogatitelnyy Kombinat (VostGOK)

**LOCATION:** Zhovti Vody

**DIRECTOR:** Mykhailo Babak

**DEPUTY DIRECTOR:** Oleksandr P. Negrachevich

ACTIVITIES:

This mill, first operational in 1959, sells the uranium oxide concentrate U<sub>3</sub>O<sub>8</sub>, known as yellowcake.[1] The plant supplies the raw material for domestic reactor fuel, and uranium sales provide hard currency to buy Western equipment and parts for Ukrainian nuclear power plants.[2] This combine is the largest in the former Soviet Union's military industrial complex. The plant is fed by uranium mining operations in the Kirovograd region. According to the Chief Geologist Arnold Vasiliev, the Combine processes 500,000 to 1,500,000 tons of uranium ore per year, (with typical uranium concentrations of 0.08 to 0.2 percent) into U<sub>3</sub>O<sub>8</sub>. The amount of ore processed is set by the government.[3] In 1993, the IAEA put reasonably assured resources at 82,000 tU and the annual production of uranium at 1000 tU. Total uranium reserves of deposits currently operative or scheduled for operation exceed 200,000 tU, [2] which is estimated to be enough to support the domestic nuclear fuel cycle for at least one hundred years.[4]

Sources:

[1]"Datafile: Ukraine," *Nuclear Engineering International*, April 1996, pp. 10-16.

[2]"Uranium: 1993 Production Resources and Demand," *A Joint Report by the OECD Nuclear Energy Agency and the International Atomic Energy Agency*, 1994.

[3] Arnold Vasiliev, "Unearthing Ukraine's Uranium," *NUKEM*, August 1995, p. 10

[4] Interview with Mykhailo Umanets, "Goskomatom Speaks," *NUKEM*, August 1995.

COMMENTS:

The Skhidnyi Combine reportedly was closed in 1991 but was reopened in 1992. Uranium itself is no longer mined in this region since it is considered too deep and too costly. Gold is produced at this site now. According to the Combine's Chief Geologist, Zhovti Vody was mined out in 1989 and the Pervomaysk Deposit was depleted even earlier.[1,2,3,4]

Sources:

[1] Yanina Sokolovskaya, "Urania: Ukraine's Special Zone," *Izvestiya*, 2 June 1995, p. 5.

[2] Arnold Vasiliev, "Unearthing Ukraine's Uranium," *NUKEM*, August 1995, p. 11.

[3] "Eurasia," *NUEXCO Review*, 1993, p. 68.

[4] "Republics' Locations of Nuclear Materials Eyed," FBIS-SOV-92-034, 20 February 1992, p. 8.

### DNIPRO BASIN CHEMICAL PLANT

(Russian: Pridneprovskiy Khimicheskiy Zavod)

**LOCATION:** Dniprodzerzhynsk

"Uranium: 1993 Production Resources and Demand," *A Joint Report by the OECD Nuclear Energy Agency and the International Atomic Energy Association*, 1994.

ACTIVITIES:

This facility was used at least until 1993 to process uranium and produce U<sub>3</sub>O<sub>8</sub>. [1] It was known as the Dneprodzerzhynsk Special Combine during the Soviet era. [2] In the 1990s the plant developed zirconium production technologies, [3] and processed zirconium from a mine near the city of Volnogorsk, the only zirconium mine in the former Soviet Union. Dnipro Basin Chemical Plant and the Volnogorsk mine have the capacity to meet all of Ukraine's long-term zirconium demand. [4] The facility was also considered as a site for gold ore processing. [5] As of early 2001 the plant was undergoing restructuring; 11 new companies were created. They include the Baryer plant, which is tasked with cleaning up the 36 million tons of radioactive waste

accumulated on the site.[6,7]

Sources:

- [1] "Uranium: 1993 Production Resources and Demand," A Joint Report by the OECD Nuclear Energy Agency and the International Atomic Energy Association, 1994.
- [2] Vladimir Ovdin, "Yadernyy mogilnik mozhet 'poplyt'," *Zerkalo nedeli*, 6 May 2000; in Integrum Techno, <http://www.integrum.ru/>.
- [3] Konstantin Zvarych, "Ukrainskim AES--'yadernoye toplivo'," *Zerkalo nedeli*, 18 July 1997; in Integrum Techno, <http://www.integrum.ru/>.
- [4] Interview with Mykhailo Umanets, "Goskomatom Speaks," *NUKEM*, August 1995.
- [5] Leonid Glok, "V Dneprodzerzhinske budet poluchen pervyy slitok zakarpatskogo zolota," 4 September 1998; in Integrum Techno, <http://www.integrum.ru/>.
- [6] "Sozdayetsya gospredpriyatiye dlya rekultivatsii otvalov byvshego proizvodstva obogashchennogo urana," UNIAN, 26 February 2001; in Integrum-Techno, <http://www.integrum.ru/>.
- [7] "V Ukraine 7 tys. 541 obekt potentsialno opasen dlya zhizni i deyatelnosti lyudey," UNIAN, 26 February 2001; in Integrum-Techno, <http://www.integrum.ru/>. {Updated 5/15/2001 MJ}

## URANIUM DEPOSITS AND MINING

There are currently 21 identified uranium deposits in Ukraine. According to 1993 figures, they are (from largest to smallest deposits): Severinske, Vatutinske, Michurinske, Kalynovske, Yuzhnoye (Pivdenne), Safonivske, Zhovtorichenske, Adamovske, Markovske, Lozovatske, Mykolokozelske, Bratske, Mykolayivske, Novogurievskoye, Devladoske, Surske, Berekske, Chervonooskolske, Sadovokostyantynivskoye, Chervonoyarske, and Pervomayske. The greatest deposits are concentrated in two principal underground uranium mining districts, both located near Zhovti Vody: Kirovohradska Oblast and Kryvyy Rih Oblast. There are two additional uranium districts located in Central Ukraine: Novokostyantynivskiy and Pobuzhskiy.[1] Two mines are currently in operation: Vatutininski and Ingulskiy.[2] The Vatutinskiy mine is located near the Zhovti Vody combine in the town of Smolino and is the largest uranium mine in the Ukraine.[3] The deposits at this mine, the Yuzhnoye (Pivdenne) and Kalinovske deposits, should be sufficient for 25 years.[4,5] The Ingulskiy mine, on the outskirts of Kirovohrad, is located 40 km from the Novokostyantynivskiy mine and 150 km from the Smolino mine.[3] The deposits at this mine, the Michurinske and Severinske deposits, should last for approximately 15 years.[4,5] The Novokostyantynivskiy mine taps the largest known uranium deposit in Ukraine.[3] Reportedly, new deposits will be opened in early 1996, at which point Ukraine's uranium output will double.[6] This will allow Ukraine to meet domestic demand and to export uranium as well.[7,8] The Tsentralnyi mine has been mined out. The Severinski mine may be brought into operation after 2010.[1]

Sources:

- [1] Arnold Vasiliev, "Unearthing Ukraine's Uranium," *NUKEM*, August 1995, p. 10.; "Uranium: 1993 Production Resources and Demand," A Joint Report by the OECD Nuclear Energy Agency and the International Atomic Energy Agency, 1994.
- [2] New Uranium Mining Projects, <http://antenna.nl/~wise/wupuproj.html#Ukraine>, December 1996.
- [3] Yanina Sokolovskaya, "Urania: Ukraine's Special Zone," *Izvestiya*, 2 June 1995, p. 5.
- [4] Olena Zvarych, "For Ukraine to Have Its Own Nuclear Fuel We Have to 'Activate the Process'," *Ukrayina moloda*, 24 April 1995, p. 4; in "Uranium Mining, Nuclear Fuel Cycle Viewed," FBIS-SOV-95-089, 28 April 1995.
- [5] "Uranium: 1993 Production Resources and Demand," A Joint Report by the OECD Nuclear Energy Agency and the International Atomic Energy Agency, 1994.
- [6] "Kiev to Double Uranium Output," UNIAN, 18 October 1995; in "Ukraine," FBIS-SOV-95-202, 18 October 1995.
- [7] NUCLEAR ENGINEERING INTERNATIONAL, 1/96, p. 6.
- [8] "New Uranium Source," *Nuclear Engineering International*, January 1996, p. 6.