

Ethical perspectives on risks
associated with uranium mining
– an international overview

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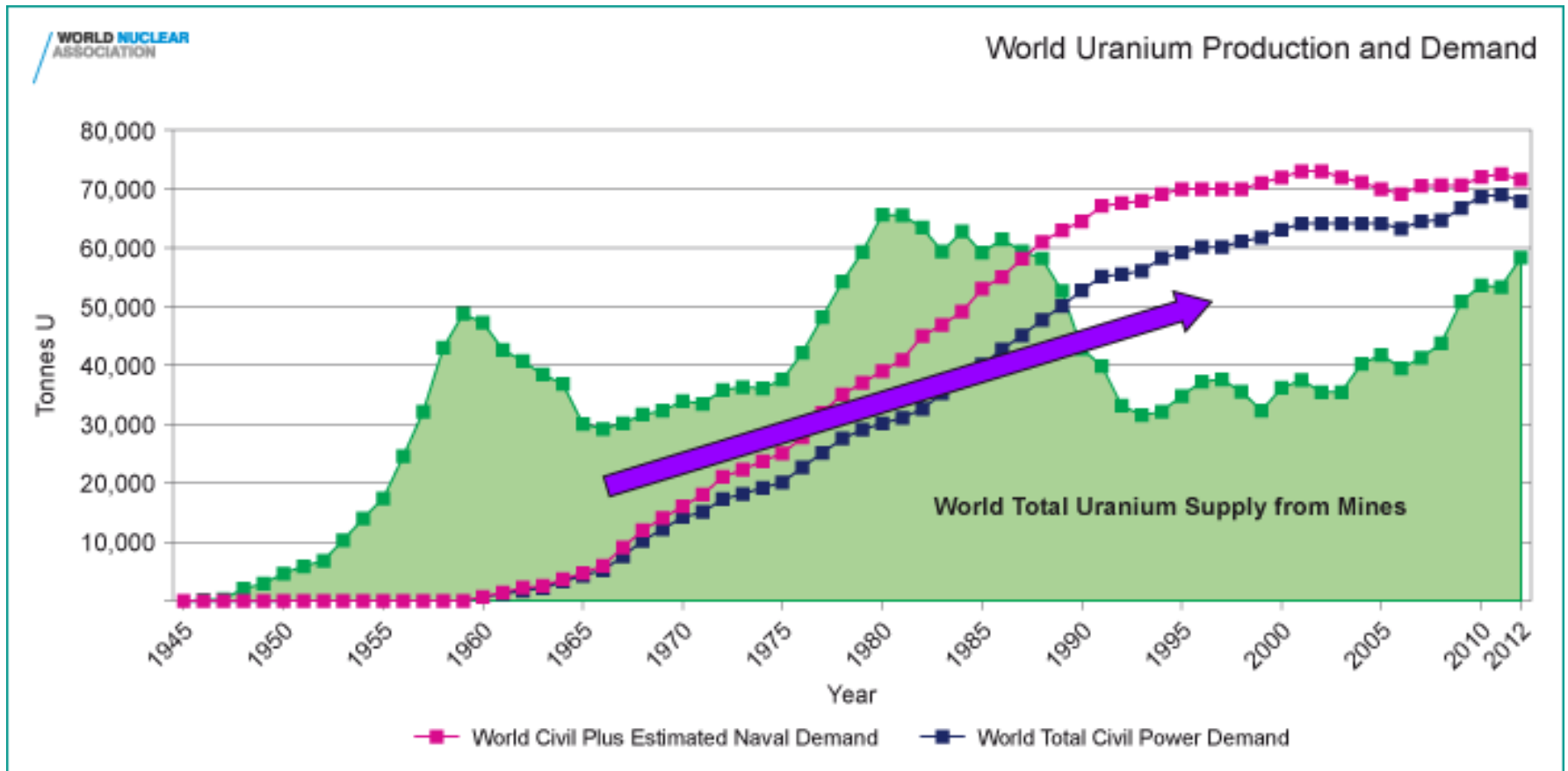
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Swedish electricity production, TWh

	1970	1980	1990	2000	2010
Hydro power	40.9	58.0	71.4	77.8	66.2
Nuclear power	0.0	25.3	65.2	54.8	55.6
Cogeneration	2.4	5.6	2.5	4.7	12.8
Cogeneration, industry	3.1	4.0	2.6	4.2	6.3
Wind power	0.0	0.0	0.0	0.5	3.5
Condense power	12.0	0.9	0.0	0.0	0.4
Gas turbines	0.7	0.2	0.0	0.0	0.0
<i>Total netto production</i>	59.1	94.0	141.7	142.0	144.8

Source: Energimyndigheten (Sweden)

World Uranium Production and Demand

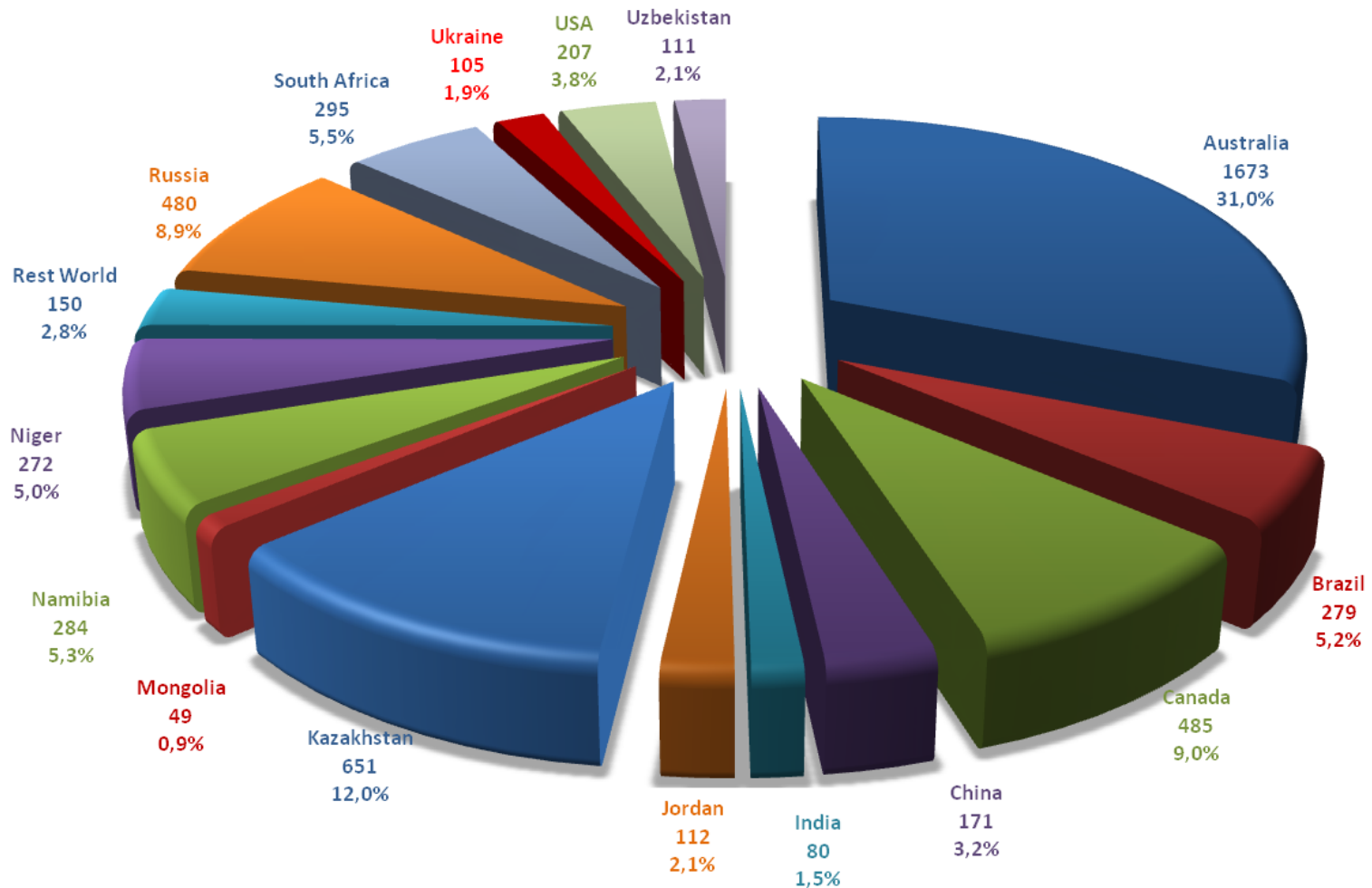


Overview of nuclear power plants and annual use of U

	<i>Operable</i>	<i>Under construction</i>	<i>Planned</i>	<i>Proposed</i>	<i>Required tonnes U</i>
USA	99	5	18	24	18214
France	58	1	0	1	9211
Japan	43	3	9	3	1728
Russia	35	8	25	23	6416
China PR	32	22	42	136	6072
South Korea	25	3	8	0	4926
India	21	6	24	36	1077
Canada	19	0	2	3	1730
Ukraine	15	0	2	11	1985
United Kingdom	15	0	4	9	1734
Sweden	9	0	0	0	1471
Germany	8	0	0	0	1689
Belgium	7	0	0	0	1015

Source: World Nuclear Association (May 2016)

World uranium resources



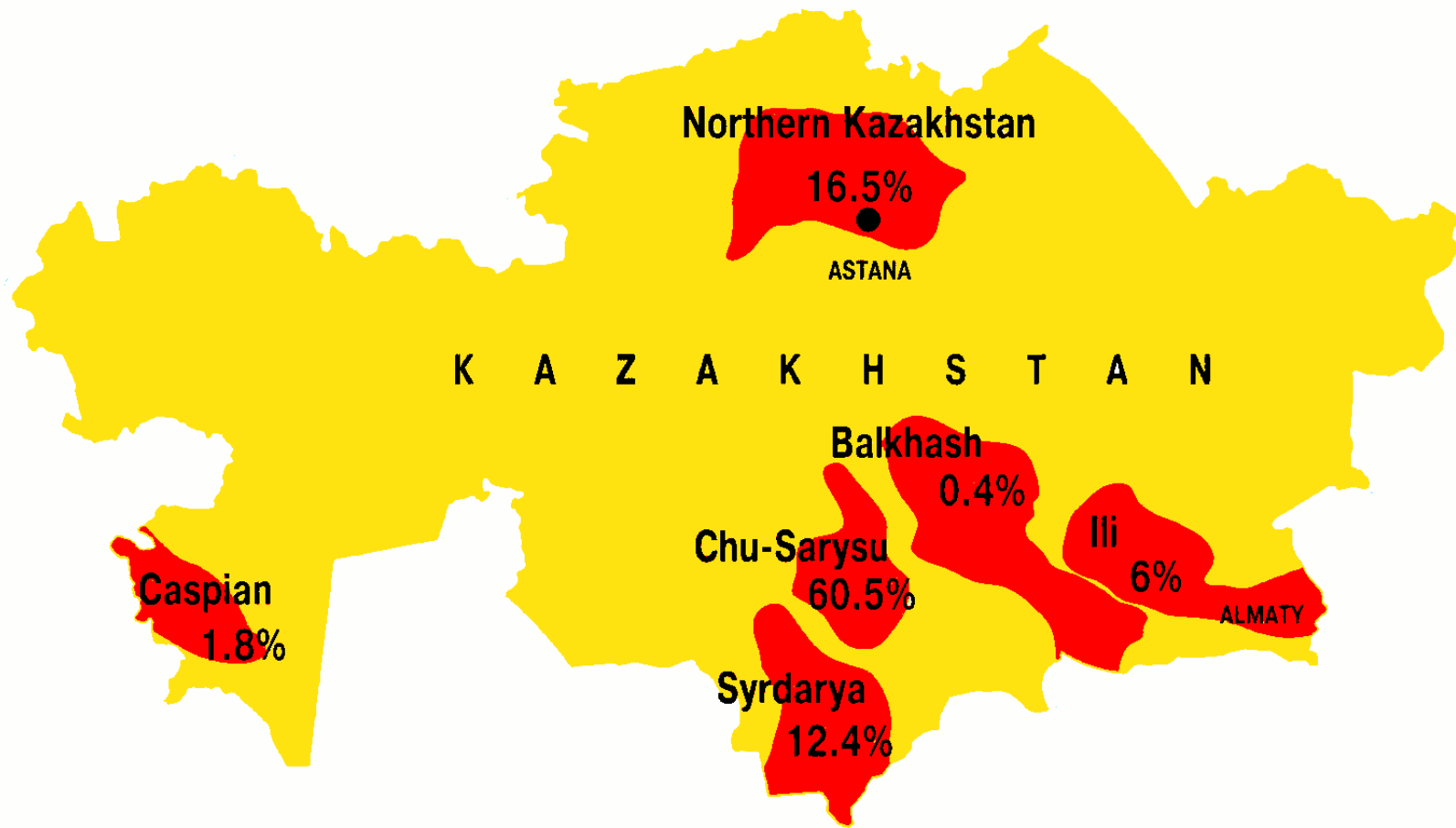
Uranium production i tonnes U_3O_8 per year 2008-2015

	2008	2009	2010	2011	2012	2013	2014	2015
Kazakhstan	8521	14020	17803	19451	21317	22451	23127	23800
Canada	9000	10173	9783	9145	8999	9331	9134	13325
Australia	8430	7982	5900	5983	6991	6350	5001	5672
Niger	3932	3243	4198	4351	4667	4518	4057	4116
Namibia	4366	4626	4496	3258	4495	4323	3255	2993
Russia	3521	3564	3562	2993	2872	3135	2990	3055
Uzbekistan (est.)	2283	2657	2874	3000	2400	2400	2400	2385
USA	1430	1453	1660	1537	1596	1792	1919	1256
China (est.)	769	750	827	885	1500	1500	1500	1616
Ukraine	800	840	850	890	960	922	926	1200
South Afrika	539	655	563	583	465	531	573	393
India (est.)	271	290	400	400	385	385	385	385
Malawi		104	670	846	1101	1132	369	0

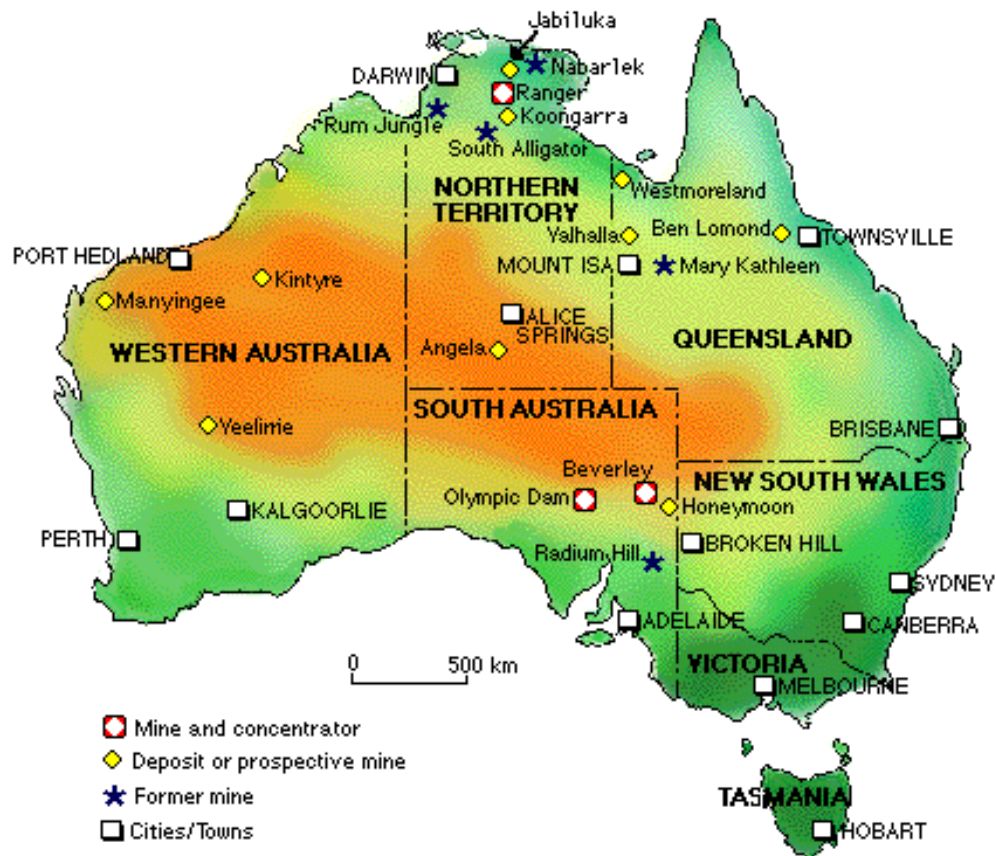
Source: World Nuclear Association (May 2016)

Uranium production method

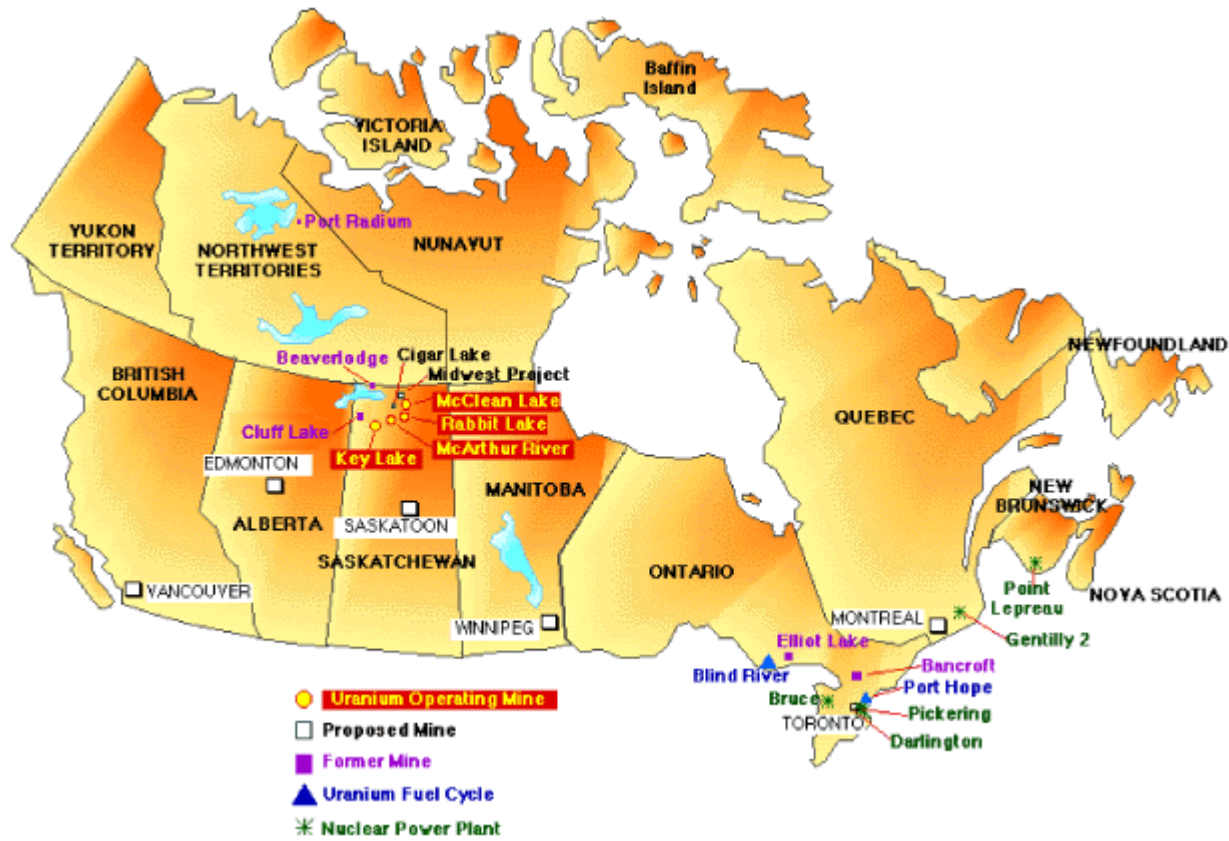
	tonnes U	%
In situ leaching	29,197	48
Underground and open pit	27,791	46
By-product	3,525	6
Total	50,513	



<http://www.aua.org.au>



<http://www.uic.com.au/nip03.htm>



McArthur River - underground pit mine



Olympic Dam - underground pit mine



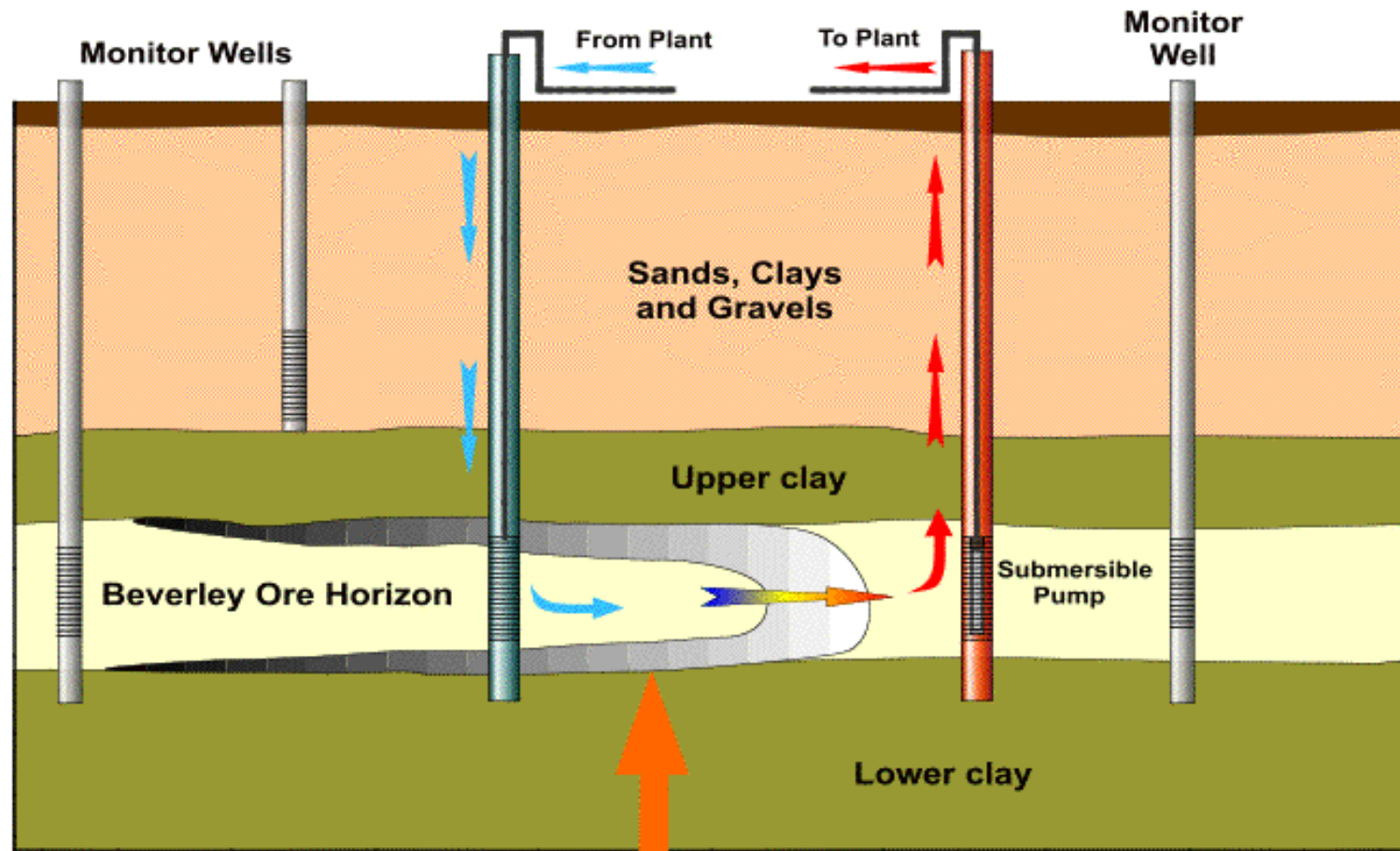
Ranger – open pit mine



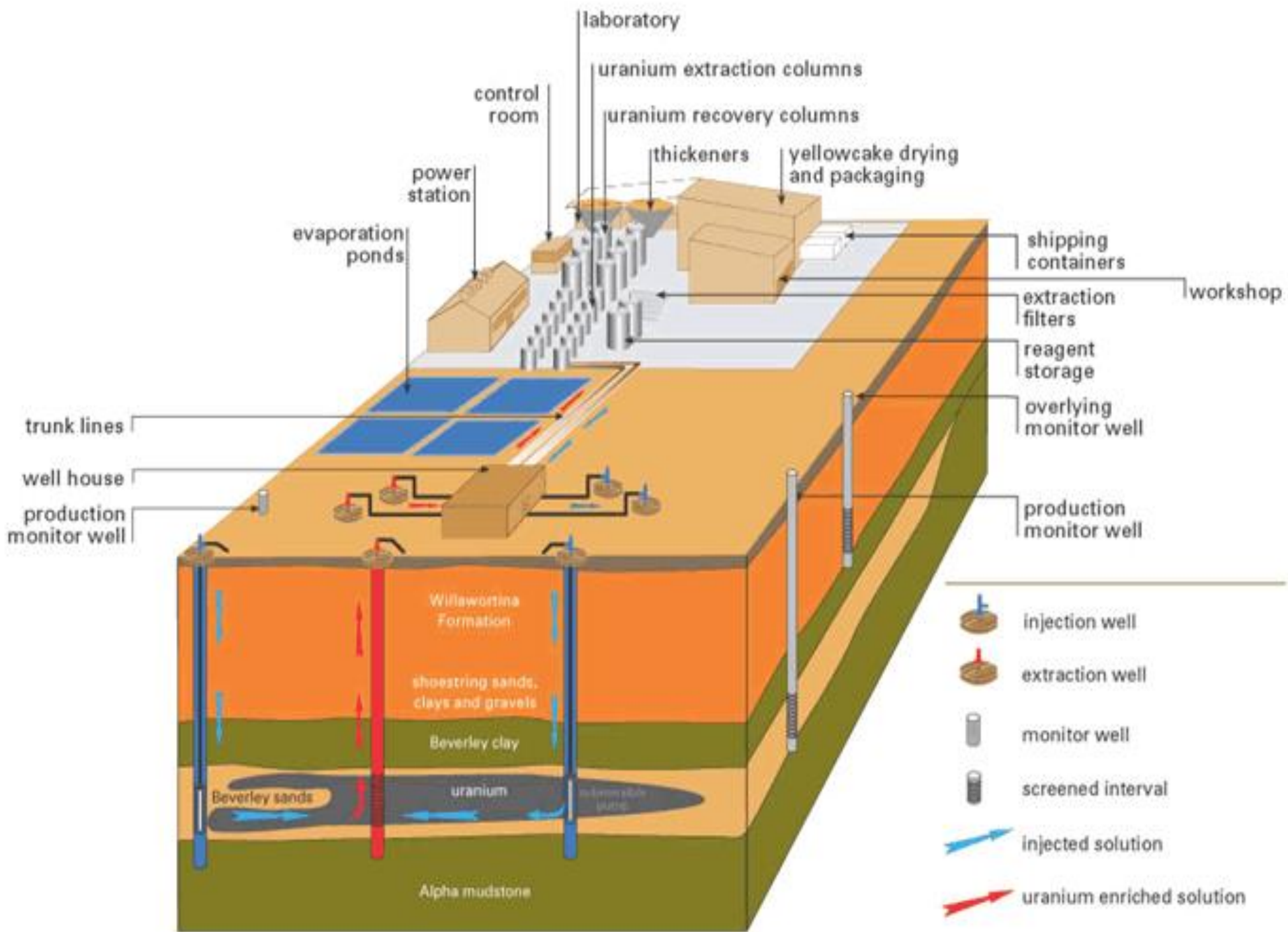
Ranger Mine and Plant



Aerial view of Ranger Mine and Plant



Uranium Deposit



Major environmental concerns

Open and underground pit mines

- Radioactive dust
- Milling of ore
- Waste ponds

Open pit mines

- Weathering of uranium containing minerals

Underground pit mines

- Radon in air

Major environmental concerns

In situ leaching

- Contamination of groundwater
- Limited control of leaching liquids at use