Comments on Environmental Impact Assessment on Proposed Uranium Mining Project at Mohuldih, August 4, 2005

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An assessment of any proposed project must start with the question of whether it is necessary at all in the first place. The rationale offered for the project is to produce uranium for development of nuclear power. Because of the high capital cost of nuclear reactors, electricity produced at such facilities has been expensive. My own research has demonstrated that in India even for coal based thermal plants which are around 1200-1500 km away from coal mines, and so pay a high cost for coal due to the transportation charges, the per unit levelised cost of electricity is Rs. 0.40 to Rs. 0.50 cheaper than nuclear electricity (for real discount rates of 5-6%).[1] Therefore even if the environmental impacts of uranium mining were to be as benign as the EIA makes it out to be, even this level of impact is unnecessary.

Within the narrow context of the mining operations itself, the EIA omits well known facts about the harmful environmental and public health impacts of uranium milling facilities both within India and elsewhere in the world. This omission robs us of the insights from valuable, though painful, past experiences and amounts to concealing factual data, at least in spirit if not in letter. The Ministry of Environment & Forests notification on Environmental Impact Assessment of Development Projects (dated January 27, 1994) warns that concealment of factual data could result in the project being rejected.

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[1] M. V. Ramana, Antonette D'Sa, and Amulya Reddy, "Economics of Nuclear Power from Heavy Water Reactors," *Economic and Political Weekly*. **40** (17), pp. 1763-1773 (April 23, 2005).

One result of not looking at the experiences around the world, especially the Indian experience, is that the EIA does not really assess how good the technologies proposed to be used to mitigate environmental impact are. For example, on p. ES-6 in the executive summary, the EIA mentions that UCIL proposes to provide "water sprinkling arrangement on transportation roads [and] dust suppression system in surfaqe material handling system". A thorough assessment should have looked at, for example, if UCIL has adopted similar measures at the Jaduguda uranium mines and mill. If not, why not? If so, how effective has that been? Have there been any failures of the system? What have been the dust levels in the areas surrounding the Jaduguda uranium mill? Since UCIL is operating that plant, and is going to operate the proposed plant, such a comparative exercise makes eminent sense. Unfortunately the EIA attempts nothing of that sort.

It must be pointed out that UCIL's record at Jaduguda leaves much to be desired. For example, the tailing pond in Jaduguda is close to inhabited villages and till recently was not fenced off to prevent access by people or cattle.[2] Mill tailings have been used for road and home construction and authorities have not informed the residents of the risks involved. The relatively scant official data available in the public domain on the state of health of workers employed by UCIL only heightens this concern. In 1986, for example, 42 per cent of all workers at UCIL received a radiation dose greater than the value of 20 mSv/year recommended by the International Commission on Radiological Protection; 6 per cent received doses in excess of 35 mSv/year.[3] Table 1 shows exposures for India as well as world averages from a United Nations survey. Workers involved in uranium milling and extraction in India have received doses per unit of uranium extracted that are more than ten times the world average.

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[2] Aziz ur Rahman and Jayanta Basu, "Living in death shadow," *Sunday* (4 April 1999).

[3] A. U. Sonawane et al, "New ICRP Dose Limit and Prospects for its Implementation in Nuclear Fuel Cycle," *Bulletin of Radiation Protection* 15, no. 1 (January – March 1992), pp. 10-12.

Table 1: Radiation Exposures from Uranium Mining and Milling

	Annual Collective Effective Dose		Average Dose
Region	Total (man Sv)	Average per unit extracted (man-Sv/kt)	Per Monitored Worker (mSv)
Uranium Mining			
India (1981-84)	13.8	108	11.9
India (1985-89)	15.2	101	11.3
World (1980-84)	1580	29	5.15
World (1985-89)	1140	25.9	4.45
Uranium Milling and Extraction			
India (1981-84)	3.58	27.9	7.35
India (1985-89)	3.40	22.6	5.86
World (1980-84)	117	1.84	5.1
World (1985-89)	116	2.01	6.3

Source: United Nations Scientific Committee on the Effects of Atomic Radiation (UNSCEAR), S*ources and Effects of Ionizing Radiation* (New York: United Nations, 1993), pp. 447 – 51.

The EIA does not mention what has happened near uranium mining and milling facilities around the world. At many locations, mill tailings have contaminated water supplies. The contamination of ground and surface water by seepage introduces radium-226 and other hazardous substances like arsenic into drinking water supplies and the food chain. The seepage problem is very important with acidic tailings, as the radionuclides involved are more mobile under acidic conditions. For villagers who are dependent on local sources of water, the threat to these supplies amounts to the risk of sacrificing their health and livelihoods at the altar of nuclear energy.

The risk assessment performed by the EIA is incomplete and takes a limited view of accident possibilities. Even elementary accidents are overlooked; for example, the possibility of an accident involving a truck carrying uranium ore to the milling site. Given the large number of such trucks with heavy loads that are supposed to be traveling

every day on roads whose conditions are not really suited for the sorts of loads envisioned, it is but inevitable that some of them will have accidents leading to the dispersal of material containing uranium and other radioactive elements. Due to the greater traffic loads expected, such accidents are more likely in populated areas. The consequences of such accidents have not been explored in the EIA.

Neither has the EIA tried to calculate what the radiation doses will be to potential workers or members of the general public. A good EIA should calculate the potential radiation doses both during the course of regular operations and accidents. Neither of these have been done.

To summarize, the EIA for the Proposed Uranium Mining Project at Mohuldih leaves much to be desired and cannot be used as the basis for giving the project clearance. Indeed, there are good reasons to question the project itself.