

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO. 1242
TO BE ANSWERED ON 11.08.2011

AVAILABILITY OF THORIUM

1242. SHRI SANJAY RAUT:
SHRI GOVINDRAO ADIK:

Will the PRIME MINISTER be pleased to state:

- (a) whether it is a fact that there is much availability of thorium in the country and the country has the potential to serve as feedstock for an ambitious nuclear power programme;
- (b) if so, the details thereof; and
- (c) the details of steps taken or proposed be taken to discover thorium and to utilize this for our nuclear power programme in the country?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS AND
IN THE PRIME MINISTER'S OFFICE (SHRI V. NARAYANASAMY)

- (a) Yes, Sir.
- (b) The Atomic Minerals Directorate for Exploration and Research (AMD), a constituent Unit of the Department of Atomic Energy has established 10.70 million tonnes of Monazite in the country, which contains 9,63,000 tonnes of Thorium Oxide (ThO₂). Indian Monazite contains about 9-10% of ThO₂ and about 8,46,477 tonnes of Thorium Metal can be obtained from 9,63,000 tonnes of ThO₂ which will be used for future programmes of DAE.
- (c) India is pursuing a three stage nuclear power generation programme aimed at long term energy independence based on use of our abundant Thorium resources. The programme is to use Thorium for electricity generation in the long-term. In order to realize this goal, we are well into the first stage based on our modest domestic Uranium resources. This will be followed by second stage comprising of fast reactors.

It is proposed to set up a large power generation capacity based on fast reactors before getting into the third stage. Thorium in itself cannot produce electricity and it has to be first converted to Uranium-233 in a nuclear reactor. A comprehensive three-stage nuclear power programme is therefore being implemented sequentially.

India has been working on the development of technologies for Utilisation of Thorium for Nuclear Power Generation since the inception of the Indian Nuclear Programme. As a part of this work, thorium has been irradiated in our Research Reactors and also in Pressurised Heavy Water Reactors. Technologies for reprocessing of irradiated thorium fuel for the separation of Uranium-233 have also been developed on a pilot plant scale. Uranium-233 thus separated has been used as fuel in research reactor Purnima-II and later in the 30 Kw Research Reactor Kamini now in operation at Indira Gandhi Centre for Atomic Research(IGCAR), a constituent Unit of the Department of Atomic Energy (DAE). Thorium based fuel has been manufactured and placed in the Advanced Heavy Water Reactor (AHWR) critical facility for Reactor Physics experiments as well. Further development of technologies for large scale commercial level manufacture and reprocessing of Uranium-233 bearing fuel is underway.
