

**GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO.2727
TO BE ANSWERED ON 19.08.2010**

SECOND STAGE DEVELOPMENT OF ATOMIC ENERGY

2727. SHRI KANJIBHAI PATEL:

Will the PRIME MINISTER be pleased to state:

- (a) whether Government is pursuing implementation of second stage development of Atomic Energy as envisaged by Dr. Bhabha;
- (b) if so, the details of achievements made in this regard;
- (c) whether second stage development is as per the time plan of 2011-12;
- (d) if so, whether Government intends to switch over to the third stage development programme by 2013;
- (e) if not, the reasons therefor and extended time-frame for the second stage;
- (f) whether any time-frame has been set for third stage development; and
- (g) if so, the details thereof?

ANSWER

THE MINISTER OF STATE FOR SCIENCE & TECHNOLOGY AND EARTH SCIENCES (INDEPENDENT CHARGE), PMO, PERSONNEL, PUBLIC GRIEVANCES AND PENSIONS AND PARLIAMENTARY AFFAIRS.

(SHRI PRITHVIRAJ CHAVAN):

- (a) Yes, Sir.
- (b) The second stage of Indian nuclear power programme envisages development of fast breeder reactors using plutonium-based fuel. The Department of Atomic Energy initiated technology development for liquid metal fast breeder reactors decades back. The Reactor Research Centre (RRC), later renamed as Indira Gandhi Centre for Atomic Research (IGCAR) was set up in 1969 at Kalpakkam in Tamilnadu for this purpose. An experimental 40 MWt Fast Breeder Test Reactor (FBTR) is in operation in IGCAR since October 1985. The reactor has been test bed for the development of subsequent fast breeder reactors. FBTR has provided valuable experience of liquid metal fast breeder technology resulting in the design of the 500 MW Prototype Fast Breeder Reactor (PFBR). The PFBR is now under construction at Kalpakkam.
- (c) No, Sir. The first Prototype Fast Breeder Reactor (PFBR) is scheduled to be completed by 2012. Several Fast Breeder Reactors will be set up subsequently. Fast Reactors with metallic fuel having improved breeding ratio will then be developed.
- (d) Only after sufficient inventory of U^{233} is generated through the operations of a large number of FBRs, the third stage power programme will be initiated.
- (e) to (g) Working out a precise time frame is not possible at this moment. The third stage will be initiated when sufficient installed capacity in the second stage has been built. It is envisaged that the third stage may commence three to four decades after introduction of fast breeder reactors using fuel with shorter doubling time.

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UNSTARRED QUESTION NO.2728
TO BE ANSWERED ON 19.08.2010**

RIGHT TO REPROCESS NUCLEAR FUEL

2728. SHRI RAM JETHMALANI:
SHRI RAVI SHANKAR PRASAD:

Will the PRIME MINISTER be pleased to state:

- (a) whether it is a fact that the country has got the right to reprocess the nuclear fuel sold by the American companies as per recent agreement signed with America;
- (b) if so, the facts in this regard;
- (c) whether the nuclear fuel purchased under this agreement include ownership right or Government has only reprocessing right; and
- (d) whether country would have to repay for reprocessing of nuclear fuel?

ANSWER

THE MINISTER OF STATE FOR SCIENCE & TECHNOLOGY AND EARTH SCIENCES (INDEPENDENT CHARGE), PMO, PERSONNEL, PUBLIC GRIEVANCES AND PENSIONS AND PARLIAMENTARY AFFAIRS.
(SHRI PRITHVIRAJ CHAVAN):

(a) to (b) - Article 6(iii) of the Agreement for Cooperation between the Government of India and the Government of the United States of America concerning Peaceful Uses of Nuclear Energy, inter-alia, states that India agreed to establish a new national reprocessing facility dedicated to reprocessing safeguarded nuclear material under IAEA safeguards. Article 6(iii) of the Agreement calls for consultations on arrangements and procedures within one year.

In March 2009 the US responded to India's request invoking Article 6(iii) of the Indo-US agreement on Arrangements and Procedures confirming that the first round of formal consultations, would commence no later than 3 August 2009 and that final agreement on Arrangements and Procedures is to be reached no later than 3 August 2010. The text has been finalized in the last round of negotiations held from 2-4 March 2010 and signed in Washington on 30 July 2010. The Arrangements and Procedures will enter into force after completion of necessary formalities.

(c)&(d) - No nuclear fuel has been purchased from USA so far under the above agreement.

**GOVERNMENT OF INDIA
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UNSTARRED QUESTION NO.2729
TO BE ANSWERED ON 19.08.2010**

ACTIVITIES OF INDIAN RARE EARTHS

2729. SHRI K.N. BALAGOPAL:

Will the PRIME MINISTER be pleased to state:

- (a) the major activities of Indian Rare Earths (IRE) units situated in Kollam, Kerala;
- (b) the total income of IRE from sand mining from Kerala operations;
- (c) whether Government has studied about the value added products which can be developed from this sand;
- (d) if so, the details of the products; and
- (e) whether Government would start production units to develop value added products from rare earth available in Kerala?

ANSWER

THE MINISTER OF STATE FOR SCIENCE & TECHNOLOGY AND EARTH SCIENCES (INDEPENDENT CHARGE), PMO, PERSONNEL, PUBLIC GRIEVANCES AND PENSIONS AND PARLIAMENTARY AFFAIRS.

(SHRI PRITHVIRAJ CHAVAN):

- (a) Indian Rare Earths, a Public Sector Undertaking under the Department of Atomic Energy (DAE) produces ilmenite, rutile, leucoxene, zircon, sillimanite etc. in their minerologically pure marketable forms from beach sand in its unit situated in Kollam Kerala. Part of the zircon is used for production of zirflour which is used in ceramic industry.
- (b) Total income from IRE sand mining from Kerala operation was Rs. 9267.14 lakh in the year 2009-10.
- (c) Yes, Sir.
- (d) The value added products which can be produced from ilmenite are synthetic rutile, titanium slag, titanium sponge, titanium pigment and various titanium chemicals. Rutile & Leucoxene can be used directly to produce titanium sponge, titanium pigment and various titanium chemicals. The value added products that can be produced from Zircon are zirflour, microzir, zirconium metal and various zirconium chemicals.
- (e) Yes, Sir.

**GOVERNMENT OF INDIA
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UNSTARRED QUESTION NO.2730
TO BE ANSWERED ON 19.08.2010**

PROTECTION OF SCIENTISTS

2730. SHRI N. BALAGANGA:

Will the PRIME MINISTER be pleased to state:

- (a) whether Government is aware that scientists from Kalpakkam Atomic Power Plant are abducted and killed;
- (b) if so, the details thereof and the reasons therefor; and
- (c) the steps taken/proposed to be taken by Government to protect the scientists?

ANSWER

THE MINISTER OF STATE FOR SCIENCE & TECHNOLOGY AND EARTH SCIENCES (INDEPENDENT CHARGE), PMO, PERSONNEL, PUBLIC GRIEVANCES AND PENSIONS AND PARLIAMENTARY AFFAIRS.
(SHRI PRITHVIRAJ CHAVAN):

- (a)&(b) There is no incident of abduction or killing any Scientist of Madras Atomic Power Station., Kalpakkam.
- (c) Adequate security arrangements have been provided both at the plant site and in the residential township at Kalpakkam.

**GOVERNMENT OF INDIA
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UNSTARRED QUESTION NO.2731
TO BE ANSWERED ON 19.08.2010**

EXPLORATION OF URANIUM RESOURCES

2731. SHRI NAND KUMAR SAI:

Will the PRIME MINISTER be pleased to state:

- (a) whether Atomic Minerals Directorate for Exploration and Research, (AMD), Hyderabad, has conducted airborne electromagnetic time domain surveys of uranium resources in the country during 2008-09 and 2009-10;
- (b) if so, the details in this regard;
- (c) the estimated quantity of uranium resources identified during the said surveys in various locations in the country; and
- (d) the steps taken by Government to explore such resources?

ANSWER

THE MINISTER OF STATE FOR SCIENCE & TECHNOLOGY AND EARTH SCIENCES (INDEPENDENT CHARGE), PMO, PERSONNEL, PUBLIC GRIEVANCES AND PENSIONS AND PARLIAMENTARY AFFAIRS.
(SHRI PRITHVIRAJ CHAVAN):

- (a) Yes, Sir.
- (b) The Atomic Minerals Directorate for Exploration and Research (AMD), a constituent Unit under the Department of Atomic Energy, has conducted Airborne Electromagnetic Time Domain Surveys during the year 2008-09 and 2009-10 as detailed below:

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Basins	Agency	2008-09	2009-10
		(Figures in Line Kms)	
Albitite Line, Alwar District, Rajasthan and Mahendragarh Dist., Haryana	M/s.Geotech Ltd., West Indies	9,946	-
Bhima Basin, Gulbarga and Bijapur District, Karnataka	M/s.Geotech Ltd., West Indies	31,689	-
Bhima Basin, Gulbarga, Bijapur Districts, Karnataka and Medak and Mahabubnagar Districts, Andhra Pradesh	M/s.Geotech Ltd., West Indies	-	4,333
Kaladgi-Badami Basin, Gulbarga and Bijapur Districts, Karnataka, Ranga Reddy, Medak, Mahaboobnagar Districts, Andhra Pradesh	M/s.Fugro Airborne Survey Ltd., Canada	--	3,358
Sonrai-Bijawar Block, Tikamgarh, Panna, Damoh and Sagar Districts, Madhya Pradesh and Lalitpur District, Uttar Pradesh	M/s.Fugro Airborne Survey Ltd., Canada	--	1,354
Tamar-Beldih-Kutni-Susina-Porapahar Tract, Ranchi, East Singhbhum, Saraikela, Kharsawan Districts, Jharkhand and Purulia and Bankura Districts, West Bengal	National Geophysical Research Institute (NGRI), Hyderabad	--	1,792
Srisaillam, Nallammalai and Kurnool, Sub-basin, Kadapa.Basin, Mahboobnagar and Kurnool Districts, Andhra Pradesh	Atomic Minerals Directorate for Exploration and Research (AMD), Hyderabad	--	4,271

(c)&(d) The airborne surveys have been planned in a phased manner and subsequent to the same, the data evolved out of the said surveys are to be interpreted and detailed drilling activities are to be carried out to finalize the uranium occurrence. The surveys will hence help in demarcating the favourable areas for further detailed exploration by ground radiometric, geophysical and subsurface exploration. Interpretation of data acquired during 2008-09 is in advance stage of modeling and interpretation. Tasks taken up during 2009-10 are yet to be completed. The uranium potential of identified areas exhibiting conductivity anomaly will be known only after completion of subsurface exploration by drilling.

**GOVERNMENT OF INDIA
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UNSTARRED QUESTION NO.2732
TO BE ANSWERED ON 19.08.2010**

LEGAL COMPULSION TO CAP NUCLEAR LIABILITY

2732. SHRI M.V. MYSURA REDDY:

Will the PRIME MINISTER be pleased to state:

- (a) the extraneous legal compulsions to cap the overall liability amount at US \$300 million for nuclear liability;
- (b) whether the External Affairs Ministry has recommended for treating 300 million as minimum; and
- (c) if so, the reasons for this Ministry for putting 300 million as maximum?

ANSWER

THE MINISTER OF STATE FOR SCIENCE & TECHNOLOGY AND EARTH SCIENCES (INDEPENDENT CHARGE), PMO, PERSONNEL, PUBLIC GRIEVANCES AND PENSIONS AND PARLIAMENTARY AFFAIRS.
(SHRI PRITHVIRAJ CHAVAN):

- (a) to (c) - The Civil Liability for Nuclear Damage Bill, 2010 was introduced in the 15th Lok Sabha on 07.05.2010. The 'Civil Liability for Nuclear Damage Bill, 2010' as introduced and pending in Lok Sabha was referred to the Parliamentary Standing Committee on Science & Technology, Environment & Forests for examination. The report of the Committee (Numbered 212) has been presented to the Rajya Sabha on 18th August, 2010 and laid on the table of the Lok Sabha on 18th August 2010.
