

**GOVERNMENT OF INDIA  
DEPARTMENT OF ATOMIC ENERGY  
LOK SABHA  
UNSTARRED QUESTION NO.3953  
TO BE ANSWERED ON 18.08.2010**

**THREATS FROM TERRORIST OUTFITS**

3953. SHRI YOGI ADITYA NATH:

Will the PRIME MINISTER be pleased to state:

- (a) whether the Government has recently assessed the internal and external threat from terrorist outfits on our nuclear installations;
- (b) if so, the outcome thereof; and
- (c) the safeguards in place to meet these threats?

**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):

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- (a) Continuous and periodic assessment of internal and external threats are made by Central & State Intelligence Agencies.
- (b) Based on inputs received from Government of India/ Central Intelligence Agencies / State Intelligence Wing, security measures adopted in nuclear installations are reviewed and strengthened for effective security.
- (c) Nuclear installations are under security cover of the Central Industrial Security Force with additional manpower and equipment, whenever necessary.

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**GOVERNMENT OF INDIA  
DEPARTMENT OF ATOMIC ENERGY  
LOK SABHA  
UNSTARRED QUESTION NO.4014  
TO BE ANSWERED ON 18.08.2010**

**EXPLORATION OF URANIUM RESOURCES**

4014. SHRI PRADEEP MAJHI:  
SHRI UDAY PRATAP SINGH:

Will the PRIME MINISTER be pleased to state:

- (a) whether Atomic Minerals Directorate for Exploration and Research (AMD), Hyderabad, has carried out any survey and exploration of uranium resources in the country;
- (b) if so, whether AMD proposes to conduct Airborne Electromagnetic Time Domain Survey over some identified proterozoic basins in a phased manner;
- (c) if so, the details thereof, location wise;
- (d) the estimated quantity of uranium resources in each of such locations; and
- (e) the steps taken by the 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):

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- (a) Yes, Sir.
- (b) Yes, Sir.
- (c) During the XI Plan Period, the Atomic Minerals Directorate for Exploration and Research (AMD), Hyderabad has envisaged to conduct Airborne Geophysical Surveys including Airborne Electro-magnetic Time Domain Survey. So far, AMD has acquired data over 85,868 line kms. departmentally as well as through outsourcing. The details are as follows:

S. No.	Locations	Survey Conducted (in line km)
1	MOHAR AREA, MADHYA PRADESH	6,500
2	ALBITITE LINE, RAJASTHAN AND HARYANA	9,946
3	BHIMA BASIN, KARNATAKA	36,021
4	KALADGI BASIN, KARNATAKA	6,453
5	SONRAI - BIJAWAR BASIN U.P. AND M.P	3,099
6	NORTH SINGHBHUM, W.B. AND JHARKHAND	8,747
7	CUDDAPAH BASIN, ANDHRA PRADESH	15,102

AMD proposes to conduct the Time Domain Electromagnetic Surveys in the areas as per the details given below:

S.No.	Locations	Area (In line km)
1.	MAHADEK BASIN, MEGHALAYA	15,000
2.	PARTS OF BHIMA BASIN, KARNATAKA	10,000
3.	SRISAILAM AND KURNOOL SUB BASIN, A.P.	10,000
4.	NORTH&SOUTH SINGHBHUM, JHARKHAND & W.B	15,000
5.	SINGHORA AND BARAPAHARA PROTO BASIN, CHHATTISGARH AND ORISSA	9,000
6.	PARTS OF KALADGI AND BADAMI BASINS, KARNATAKA	25,000
7.	PARTS OF SONRAI AND BIJAWAR BASINS, U.P. & M.P	8,000
8.	PARTS OF ALBITITE LINE, RAJASTHAN	17,000
9.	ARAVALLI FOLD BELT, RAJASTHAN	25,000
10.	VINDHYAN – MAHAKOSHAL BASIN, M.P.	25,000
11.	ABUJMAR AND INDRAVATI BASINS, CHHATTISGARH	25,000
12.	KUNJAR-DARJING BASINS, ORISSA; SHILLONG, MEGHALAYA AND PAKHAL BASIN, ANDHRA PRADESH	25,000

(d)&(e) 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 which exhibit conductivity anomaly will be known only after completion of subsurface exploration by drilling.

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**GOVERNMENT OF INDIA  
DEPARTMENT OF ATOMIC ENERGY  
LOK SABHA  
UNSTARRED QUESTION NO.4030  
TO BE ANSWERED ON 18.08.2010**

**IMPLEMENTATION OF SECOND STAGE DEVELOPMENT**

4030. SHRI C.R. PATIL:

Will the PRIME MINISTER be pleased to state:

- (a) whether the Government is pursuing implementation of second stage development of Atomic Energy in the country as envisaged by Dr. Bhabha;
- (b) if so, the details thereof alongwith the achievements made in this regard so far;
- (c) whether Second Stage development is scheduled to be completed by 2012;
- (d) if so, whether the Government intends to move forward to the third stage development programme by 2013;
- (e) if so, whether any time frame has been set for completion of third stage development; and
- (f) 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):

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- (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<sup>233</sup> is generated through the operations of a large number of FBRs, the third stage programme will be initiated.
- (e)&(f) 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 of shorter doubling time.

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**GOVERNMENT OF INDIA  
DEPARTMENT OF ATOMIC ENERGY  
LOK SABHA  
UNSTARRED QUESTION NO.4077  
TO BE ANSWERED ON 18.08.2010**

**URANIUM CONTAMINATION**

4077. SHRI MANISH TEWARI:  
SHRI MADHU GOUD YASKHI:  
SHRI B.B. PATIL:  
SHRI EKNATH M. GAIKWAD:  
SHRIMATI HARSIMRAT KAUR BADAL:

Will the PRIME MINISTER be pleased to state:

- (a) whether high levels of Uranium contamination has taken place in the Malwa region of Punjab;
- (b) if so, the extent of damage caused to this region;
- (c) whether a German company called Micro-Trace Minerals Limited has conducted a study that has revealed that hair samples of 80% of 149 neurologically disabled children contain very high levels of Uranium as reported in the media;
- (d) if so, whether the Government has conducted any study to validate the source of Uranium contamination;
- (e) if so, the outcome thereof;
- (f) whether it is relatable to depleted Uranium used in military arsenal in Iraq and Afghanistan;
- (g) if so, the details thereof;
- (h) whether it is also a fact that very high levels of dangerous heavy metals in the water bodies of Malwa region has also been discerned; and
- (i) if so, the action plan of the Government to clean up this mess in Punjab which may become another Bhopal?

**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):

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- (a) Yes, Sir. The high levels of Uranium content in drinking water in some of the locations in Malwa region of Punjab have been observed.

- (b) - Gurunanak Dev University (GNDU), Amritsar has been conducting extensive sampling of water from Malwa region of Punjab. Once detailed analysis is carried out of these samples, the impact can be assessed.
- (c) - Yes, Sir, the Government has seen media reports that a resounding document from Germany's Microtrace Mineral Lab has revealed that hair samples of 80% of 149 neurologically disabled children mainly from southern Malwa region have high levels of Uranium.
- (d) & (e) - Gurunanak Dev University (GNDU) is conducting a study under the Board of Research in Nuclear Science (BRNS) project of the Department of Atomic Energy.
- (f) & (g) - Bhabha Atomic Research Centre (BARC) analysed a few samples for Uranium isotopic contents. The study shows that the Uranium present in the water samples is natural Uranium and not depleted Uranium.
- (h) & (i) - The study carried out by GNDU, Amritsar and Central Soil Salinity Research Institute, Karnal, Haryana shows that the ground water is contaminated with heavy metals like As, Pb, Cd and Ni in Malwa region. The levels of these heavy metals are higher than the levels prescribed by WHO in drinking water.

Department of Atomic Energy awarded a BRNS project to Guru Nanak Dev University, Amritsar for a comprehensive study for Uranium content in various environmental matrices including ground and surface water.

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**GOVERNMENT OF INDIA  
DEPARTMENT OF ATOMIC ENERGY  
LOK SABHA  
UNSTARRED QUESTION NO.4090  
TO BE ANSWERED ON 18.08.2010**

**PRODUCTION OF HEAVY WATER**

4090. SHRI JAI PRAKASH AGARWAL:

Will the PRIME MINISTER be pleased to state:

- (a) whether the Heavy Water Plants in the country are producing less heavy water than the targets fixed for production;
- (b) if so, the details thereof; and
- (c) the details of actual production as well as installed capacity of each plant during the last three years?

**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):

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- (a) Heavy Water Plants in operation are producing Heavy Water on most of the years more than their rated capacity as well as their yearly targets fixed for the production.
- (b) does not arise.
- (c) Heavy water production figures are "confidential". Total annual production of heavy water from all plants remain more than the total capacity of all the plants as well as the annual target fixed.

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**GOVERNMENT OF INDIA  
DEPARTMENT OF ATOMIC ENERGY  
LOK SABHA  
UNSTARRED QUESTION NO.4094  
TO BE ANSWERED ON 18.08.2010**

**MISSING PICTURE OF '69 MOON MISSION'**

4094. SHRI PRADEEP MAJHI:  
SHRI UDAY PRATAP SINGH:

Will the PRIME MINISTER be pleased to state:

- (a) whether the picture of '69 Moon Mission' is missing from the research lab;
- (b) if so, whether the Tata Institute of Fundamental Research has constituted a Committee for investigation in this regard;
- (c) if so, the details thereof and the outcome therefrom;
- (d) the action taken/proposed to be taken against the persons found guilty in this regard; and
- (e) if not, the time by which the investigations will be completed?

**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):

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- (a) The Tata Institute of Fundamental Research (TIFR) was presented with a framed, autographed photograph of the Appollo 15 mission in 1985 by US Astronaut, James Irwin. As per archival records of TIFR, no photograph of 1969 moon mission was presented to TIFR.
- (b) & (c) In June 2009 there was a news report in the Times of India about an autographed photograph of moon mission presented to TIFR having gone missing from TIFR Lab. TIFR constituted a Committee to investigate in to the news paper reports. The Committee conducted an extensive search through the records at the Institute and found that there was only a photograph of the Apollo 15 mission autographed by US Astronaut James Irwin, which was presented to TIFR in 1985. This photograph is still in the Institute in its archive.
- (d) & (e) Since no photograph has gone missing, the question of action being taken against persons found guilty, does not arise.

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**GOVERNMENT OF INDIA  
DEPARTMENT OF ATOMIC ENERGY  
LOK SABHA  
UNSTARRED QUESTION NO.4098  
TO BE ANSWERED ON 18.08.2010**

**FUEL RECYCLE BOARD**

4098. SHRI E.G. SUGAVANAM:

Will the PRIME MINISTER be pleased to state:

- (a) whether the Government has any proposal to set up a Fuel Recycle Board;
- (b) if so, the details alongwith its proposed functions thereof; and
- (c) the time by which the said Board is likely to be set up?

**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):

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- (a) Yes, Sir. Order setting up Nuclear Recycle Board (NRB) has been issued on 24.9.2009.
- (b) The Nuclear Recycle Board has been constituted as an entity under Bhabha Atomic Research Centre (BARC) for reprocessing of Spent Fuel from Pressurised Heavy Water Reactors and Associated Waste Management activities. Safety surveillance for board activities will be carried out by BARC Safety Council. Director, BARC is Chairman of the Board. Executive functions will be carried out by the Chief Executive of the Board.
- (c) Does not arise, in view of (a) above.

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**GOVERNMENT OF INDIA  
DEPARTMENT OF ATOMIC ENERGY  
LOK SABHA  
UNSTARRED QUESTION NO.4100  
TO BE ANSWERED ON 18.08.2010**

**ATOMIC RESEARCH CENTRE**

4100. SHRI MAHABAL MISHRA:

Will the PRIME MINISTER be pleased to state:

- (a) whether the Government proposes to set up a Atomic Research Centre along the eastern coast of the country on the lines of Bhabha Atomic Research Centre (BARC), Mumbai;
- (b) if so, the details thereof; and
- (c) the time by which the Research Centre is likely to become functional?

**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):

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- (a) Yes, Sir.
- (b) A new campus of Bhabha Atomic Research Centre (BARC), Trombay, on the Eastern Sea Coast approximately 35 Km South of Vishakhapatnam is being set up to carry out strategic and allied R&D work in the field of Nuclear Science.
- (c) Land for the campus has been acquired. The Project will be completed by 2012 subject to the statutory clearances.

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**GOVERNMENT OF INDIA  
DEPARTMENT OF ATOMIC ENERGY  
LOK SABHA  
UNSTARRED QUESTION NO.4104  
TO BE ANSWERED ON 18.08.2010**

**SUPPLY OF NUCLEAR FUEL**

4104. SHRI KACHHADIA NARANBHAI:

Will the PRIME MINISTER be pleased to state:

- (a) the names of the countries that have agreed to supply nuclear fuel after the nuclear deal with United States of America;
- (b) the quantity of nuclear fuel that they have promised to supply;
- (c) the names of the countries and the quantum of fuel received from and quantum of fuel to be supplied this year for which deal has been struck;
- (d) the names of the countries that have not supplied fuel even after giving consent; and
- (e) the reasons therefor?

**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)&(c) As part of the civil nuclear cooperation, agreements for supply of nuclear fuel has been entered into with France, Russia & Kazakhstan. The details are tabulated below :-

Sr. No.	Country	Quantity of nuclear fuel to be supplied	Quantum of fuel received till date	Quantum of fuel to be supplied this year
1.	France	Supply of 300 MT of Natural Uranium Ore Concentrates	Full supply received	Nil
2.	Russia	2000 MT Natural Uranium pellets spread over five years	210 MT received	120 MT
		58 MT of Enriched Uranium pellets	Full supply received	Nil
3.	Kazakhstan	2100 MT of Natural Uranium Ore Concentrate spread over six years	300 MT received	300 MT

- (d) & (e) The supplies have been regular in accordance with the agreements entered into.

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**GOVERNMENT OF INDIA  
DEPARTMENT OF ATOMIC ENERGY  
LOK SABHA  
UNSTARRED QUESTION NO.4112  
TO BE ANSWERED ON 18.08.2010**

**EXPLORATION OF URANIUM AND PLUTONIUM**

4112. SHRI RAMSINH RATHWA:  
SHRI GHANSHYAM ANURAGI:  
SHRI P. BALRAM NAIK:  
SHRI SURESH KUMAR SHETKAR:

Will the PRIME MINISTER be pleased to state:

- (a) whether the Government through its agencies has successfully identified new reserves of Plutonium and Uranium in various parts of the country during the last three years;
- (b) if so, the quantity of these metals explored during the above period, location-wise and agency-wise; and
- (c) the steps initiated by the Government to further refine these metals for peaceful use in the nuclear plants?

**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):

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- (a)&(b) The Atomic Minerals Directorate for Exploration and Research (AMD), Hyderabad, a constituent Unit of the Department of Atomic Energy, carried out survey and exploration for uranium in India and has established 1,47,898 tonnes of uranium deposits as on 31.05.2010. During the last three years the uranium resources established by AMD are as follows.

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**(FIGURES IN TONNES)**

AREA	STATE	2007-08	2008-09	2009-10
ROHIL	RAJASTHAN	547	220	795
KOPPUNURU	ANDHRA PRADESH	1,228	--	293
PEDDAGATTU	ANDHRA PRADESH	1,407	--	854
TUMMALAPALLE	ANDHRA PRADESH	1,690	12,007	14,131
CHITRIAL	ANDHRA PRADESH	--	--	440
GOGI	KARNATAKA	--	449	--
LOSTOIN	MEGHALAYA	--	12	7
	<b>Total:</b>	<b>4,872</b>	<b>12,688</b>	<b>16,520</b>

Plutonium does not occur in nature. Plutonium is produced by nuclear transmutation in nuclear reactors. Thus, resources of plutonium can not be established by survey and exploration.

- (c) At Tummalapalle, Kadapa District, Andhra Pradesh, Uranium mine is under construction by the Uranium Corporation of India Ltd. (UCIL), a Public Sector Undertaking of the Department of Atomic Energy. In Gogi, Gulbarga District, Karnataka, exploratory mining is in progress to delineate the ore body configuration and for recovery of bulk samples for development of flow sheet for recovery of Uranium. At Peddagattu-Lambapur, Nalgonda District, Andhra Pradesh; Rohil, Sikar District, Rajasthan and Wahkyn, West Khasi Hills District, Meghalaya, exploratory mining is under consideration.

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**GOVERNMENT OF INDIA  
DEPARTMENT OF ATOMIC ENERGY  
LOK SABHA  
UNSTARRED QUESTION NO.4125  
TO BE ANSWERED ON 18.08.2010**

**DEATH OF SCIENTISTS**

4125. SHRI INDER SINGH NAMDHARI:  
SHRIMATI MANEKA GANDHI:  
SHRI YOGI ADITYA NATH:

Will the PRIME MINISTER be pleased to state:

- (a) whether a number of scientist/employees of Bhabha Atomic Research Centre (BARC), Mumbai have committed suicide and also died due to cancer;
- (b) if so, the details of such incidences for the last three years and the current year;
- (c) whether the Government has analysed the reasons for high incidences of cancer and suicides among scientists/employees;
- (d) if so, the outcome thereof; and
- (e) the corrective measures taken/being taken by the Government in this regard?

**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):

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(a)&(b) The number of scientists/employees of BARC who have committed suicide and also died due to cancer is given below:

YEAR	2007	2008	2009	2010	TOTAL
DEATHS DUE TO CANCER	2	2	2	2	8
SUICIDES	NIL	NIL	1	4	5

(c), (d) & (e) The incidence of deaths on account of suicide/cancer cannot be said to be high among the BARC employees, as may be seen from the information given above. The reasons for suicide are general and not specifically attributable to official work. However, necessary facilities to provide medical, psychiatric and social assistance is being provided to them.

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