

GOVERNMENT OF INDIA  
MINISTRY OF DEFENCE  
DEFENCE RESEARCH & DEVELOPMENT ORGANISATION  
LOK SABHA

UNSTARRED QUESTION NO.2768  
TO BE ANSWERED ON THE 2<sup>ND</sup> DECEMBER, 2016

**DRDO LABORATORIES**

2768. SHRI RAGHAV LAKHANPAL:

Will the Minister of DEFENCE j{k k ea=h  
be pleased to state:

- (a) the details of Defence Research and Development Organisation (DRDO) laboratories / units and the areas of their research activities, location-wise;
- (b) the names of various products including food products developed by DRDO for defence and civilian use during each of the last two years and the current year; and
- (c) the details of funds allocated for the research works in DRDO during the said period?

**A N S W E R**

MINISTER OF STATE (DR. SUBHASH BHAMRE)  
IN THE MINISTRY OF DEFENCE

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(ड० सुभाष भामरे)

**(a) Details of laboratories / establishments / units functioning under Defence Research and Development Organisation (DRDO) alongwith their areas of research and locations are given at Annexure 'A'.**

**(b) A list of products developed by DRDO during last two years (2014, 2015) and the current year (2016) for defence and civilian use is given at Annexure 'B'.**

**(c) Details of funds allocated to the Department of Defence Research & Development during the last three years are given below:-**

Year	Allocation of funds (Rs. in crore)
2014-15	13716.14
2015-16	13540.11
2016-17 (Budget Estimates)	13593.78

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**ANNEXURE 'A' REFERRED IN THE REPLY GIVEN IN PART (a) OF LOK SABHA UNSTARRED QUESTION NO. 2768 FOR ANSWER ON 2.12.2016**

**Areas of Research of DRDO Laboratories/Establishments/Units and their locations**

<b>Sl. No.</b>	<b>Laboratories/Establishments/Units</b>	<b>Location</b>	<b>Area of Research</b>
<b><u>Cluster Laboratories/Establishments</u></b>			
1	Advanced Numerical Research & Analysis Group (ANURAG)	Hyderabad	Computational System
2	Advanced Systems Laboratory (ASL)	Hyderabad	Missiles & Strategic Systems
3	Aerial Delivery Research & Development Establishment (ADRDE)	Agra	Parachutes & Aerial Systems
4	Aeronautical Development Establishment (ADE)	Bengaluru	Aeronautics
5	Armaments Research & Development Establishment (ARDE)	Pune	Armaments
6	Centre for Air Borne System (CABS)	Bengaluru	Air-Borne Systems
7	Centre for Artificial Intelligence & Robotics (CAIR)	Bengaluru	Artificial Intelligence & Robotics
8	Centre for Fire, Explosives & Environment Safety (CFEES)	Delhi	Explosives
9	Centre for High Energy Systems and Sciences (CHESS)	Hyderabad	High Energy Weapons
10	Combat Vehicles Research & Development Establishment (CVRDE)	Chennai	Combat Vehicles
11	Defence Avionics Research Establishment (DARE)	Bengaluru	Avionics
12	Defence Bio-engineering & Electro-medical Laboratory (DEBEL)	Bengaluru	Bio-engineering
13	Defence Electronics Applications Laboratory (DEAL)	Dehradun	Electronics & Communication Systems
14	Defence Food Research Laboratory (DFRL)	Mysore	Food Research
15	Defence Institute of Bio-Energy Research (DIBER)	Haldwani	Bio-Energy
16	Defence Institute of High Altitude Research (DIHAR)	Leh	High Altitude Agro-animal Research
17	Defence Institute of Physiology & Allied Sciences (DIPAS)	Delhi	Physiology
18	Defence Institute of Psychological Research (DIPR)	Delhi	Psychological Research
19	Defence Laboratory (DL)	Jodhpur	Camouflaging and Isotopes

20	Defence Electronics Research Laboratory (DLRL)	Hyderabad	Electronic Warfare
21	Defence Materials & Stores Research & Development Establishment (DMSRDE)	Kanpur	Textiles, Polymers & Composites
22	Defence Metallurgical Research Laboratory(DMRL)	Hyderabad	Metallurgy
23	Defence Research & Development Establishment (DRDE)	Gwalior	Chemical & Biological Warfare
24	Defence Research & Development Laboratory (DRDL)	Hyderabad	Missile & Strategic Systems
25	Defence Research Laboratory (DRL)	Tezpur	Health & Hygiene
26	Defence Terrain Research Laboratory (DTRL)	Delhi	Terrain Research
27	Gas Turbine Research Establishment (GTRE)	Bengaluru	Gas Turbine
28	High Energy Materials Research Laboratory (HEMRL)	Pune	High Energy Materials
29	Institute of Nuclear Medicines & Allied Sciences (INMAS)	Delhi	Nuclear Medicine
30	Instruments Research & Development Establishment (IRDE)	Dehradun	Electronics & Optical Systems
31	Integarted Test Range (ITR)	Balasore	Missile Testing
32	Joint Cypher Bureau (JCB)	Delhi	Cypher Systems
33	Laser Science & Technology Centre (LASTEC)	Delhi	Laser Technology
34	Electronics & Radar Development Establishment (LRDE)	Bengaluru	Radars
35	Microwave Tube Research & Development Centre (MTRDC)	Bengaluru	Microwave Devices
36	Naval Materials Research Laboratory (NMRL)	Ambernath	Naval Materials
37	Naval Physical & Oceanographic Laboratory (NPOL)	Kochi	Sonar Systems
38	Naval Science & Technological Laboratory (NSTL)	Visakhapatnam	Underwater Weapons
39	Proof and Experimental Establishment (PXE)	Balasore	Armament Testing
40	Research Centre Imarat (RCI)	Hyderabad	Missile & Strategic Systems
41	Research & Development Establishment (Engrs) (R&DE[E])	Pune	Engineering Systems & Weapon Platforms
42	Scientific Analysis Group (SAG)	Delhi	Cryptology
43	Snow and Avalanche Study Establishment (SASE)	Chandigarh	Snow and Avalanche
44	Solid State Physics Laboratory (SSPL)	Delhi	Solid- State/ Semiconductor Materials
45	Terminal Ballistics Research Laboratory (TBRL)	Chandigarh	Ballistics
46	Vehicles Research & Development Establishment (VRDE)	Ahmednagar	Wheeled Vehicles

### **HR Institutions**

1	Centre for Personnel Talent Management (CEPTAM)	Delhi	Talent Management
2	Institute of Technology Management (ITM)	Mussoorie	Technology Management
3	Recruitment and Assessment Centre (RAC)	Delhi	Human Resource

### **Other Institutions**

1	Advanced Centre for Energetic Materials (ACEM)	Nasik	High Energy Materials
2	Centre for Advanced Systems (CAS)	Hyderabad	Advanced Systems
3	Centre for Military Air-worthiness & Certification (CEMILAC)	Bengaluru	Airworthiness & Certification
4	Defence Scientific Information & Documentation Centre (DESIDOC)	Delhi	Information System and Documentation
5	DRDO Integration Centre (DIC)	Panagarh	Systems Integration
6	Institute for Systems Studies & Analyses (ISSA)	Delhi	Systems Analysis
7	Mobile Systems Complex (MSC)	Pune	Missile Systems
8	SF Complex (SFC)	Jagdapur	Propellant

### **Centres of Excellence**

1	DRDO Bhartiya University (DRDO-BU), Centre of Excellence	Coimbatore	Life Sciences
2	Advanced Centre for Research in High Energy Materials (ACRHEM)	Hyderabad	High Energy Materials
3	Centre of Excellence in Cryptology	Kolkata	Cryptology
4	Centre of Millimeter Wave Semiconductor Devices and Systems	Kolkata	Millimeter Wave and Semiconductor
5	Advanced Centre for Excellence on Composite Materials (ACECM)	Bengaluru	Composite Materials
6	Research and Innovation Centre (RIC)	Chennai	Sensors & MEMS
7	Centre of Propulsion Technology (CoPT)	Mumbai	Propulsion Technology
8	Jagdish Chandra Bose Centre for Advanced Technology (JCBCAT)	Jadavpur	Strategic Systems
9	Joint Advanced Technology Centre (JATC)	Delhi	Photonic Technologies, Plasmonics and Quantum Photonics

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**ANNEXURE 'B' REFERRED IN THE REPLY GIVEN IN PART (b) OF  
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**Products developed by DRDO for defence and civilian use during last two years and current year:**

- 120 mm FSAPDS Mk-II Ammunition for MBT Arjun
- 120 mm FSAPDS Practice Ammunition for MBT Arjun
- 250 Kg Pre-fragmented Bomb
- 46m Inflatable Radome
- Abhay Sonar
- Air Bursting Grenades for Individual Weapons
- Akash Weapon System
- Anti Torpedo Decoys
- Anti-Torpedo Decoy System (Maareech)
- Bar Mine Layer
- CBRNe Remotely Operated Platforms
- Commander's Non-Panoramic TI Sight for AFVs (T-90, T-72 & BMP-II)
- Computerized Pilot Selection System
- Dual Colour Missile Approach Warning System for Fighter Aircraft
- Electro-Optical Fire Control System for Naval Ships
- Electro-Optical Sensors for Airborne Platforms
- Enhanced Range Rocket (Pinaka Mk-II)
- EW Suite for Fighter Aircraft
- Exotic and Indigenous Varieties of Vegetables under Protected Environment
- G-band CC-TWT for Weapon Locating Radar
- Heavy Drop System - 16T
- High Speed Heavy Weight Ship Launched Torpedo (Varunastra)
- Hull Mounted Sonar (HUMSA)
- Integrated Automotive Vetrionics Systems for AFVs
- Ku-Band MPM based Transmitter for Airborne Radar
- Laser Target Designator with Thermal Imager for Air Force
- Medium Power Radar for IAF
- Medium Size Integrated Aerostat Surveillance System

- Minefield Marking Equipment Mk-II
- Mountain Foot Bridge
- Multi Calibre Individual Weapon System
- Multi-Influence Ground Mine
- NBC Technologies
- Penetration-cum-Blast
- Sub-Munition Warheads for Pinaka
- Synthetic Aperture Radar for UAV
- Terrain Assessment System for Trans-border Deserts in Western Sector
- Thermo-Baric Ammunition for 120 mm Arjun Tank
- Upgraded Troposcatter Communication System for IAF
- Vehicle Mounted High Power Laser Directed Energy System Against RPVs/UAVs/DRONES
- Water Mist System Validation for Fire Protection in Naval Ships

(DRDO) has developed various nutritious and protein-rich foods to cater the requirements of Service personnel deployed at high altitude and snow bound areas. The major protein food products developed by DRDO are: Protein-rich bars; Energy-rich bars; Protein-rich instant Halwa-mix, Upma-mix; and Protein-rich Chapattis.

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