

GOVERNMENT OF INDIA
DEPARTMENT OF ATOMIC ENERGY
RAJYA SABHA
UNSTARRED QUESTION NO. 962
TO BE ANSWERED ON 10.02.2022

TECHNOLOGY TRANSFER FOR COMMERCIAL USE BY DAE

962 Shri Sambhaji Chhatrapati:

Will the PRIME MINISTER be pleased to state:

- (a) whether Department of Atomic Energy (DAE) has developed some exclusive technologies which are useful to the industries also;
- (b) if so, the areas of technology that are useful in industries;
- (c) whether Government had prepared a plan for technology transfer to industries and the conditions to be imposed on the industries to restrict their misuse; and
- (d) if so, the details of technologies transferred during the last 3 years and those which are planned to be transferred in 2021-22 and 2022-23?

ANSWER

THE MINISTER OF STATE FOR PERSONNEL, PUBLIC GRIEVANCES & PENSIONS
AND PRIME MINISTER'S OFFICE (Dr. JITENDRA SINGH):

- (a)&(b) Yes Sir. Areas of technology useful to the industries include Agriculture & Bioscience, Radiation technology, Advanced instrumentation, Medical equipment, Engineering, Environment, Chemical and Water technology.
- (c) Yes Sir.
- (d) The list of technologies transferred during the last three years and list of technologies planned to be transferred in 2021-22 and 2022-23 is enclosed as Annexure- I & II respectively.

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The areas of technology which are useful in industries and transferred during last three years:

1	A rapid, continuous and renewable method for production of the anti-cancer drug camptothecin
2	Ambient prolonged natural calamities & other targets
3	Biopesticide based on <i>B. Thuringensis</i> varkeniyae
4	Cost effective production of xanthan gum (food & Pharmaceutical grade)
5	Foldable Solar Dryer
6	Partially hydrolyzed guar gum
7	Soil Organic Carbon Detection Kit
8	A purely organic, seed dressing bio-fungicide formulation of an improved <i>Trichoderma Virens</i> Mutant Strain with Toxicological and Environment safety data
9	Process for long lasting Ready-To-Eat (RTE) intermediate moisture (IM) fruit cubes
10	Micro fine neem pesticide tech.
11	Bioavailable curcumin formulations for pharmaceuticals and nutraceutical applications-Curcumin loaded NASAL DROP CONCENTRATE (curesol-nd)
12	A rapid bio-composting technology for decomposition of Dry Leaves, Kitchen waste and Temple waste
13	A process for development of phosphorus....
14	A process for dev...Biosludge
15	A post harvest technology for development of intermediate moisture shrimp
16	Banana Health Drink
17	Preparation of Biodegradable Packaging Films using Extrusion Process
18	Biosensor kit (BIOKIT) for detection of organophosphate and organocarbamate pesticides
19	Gluten free-multi grain premix
20	Delicious & preservative free shelf stable natural jamun product
21	Safe and prolonged storable legume sprouts & sweet corn kernels
22	Inductively coupled plasma mass spectrometer (ICPMS)
23	Optical spectrometer
24	UF membraneassited.....drinking purpose
25	RFID based hand held reader for attendance recording
26	Pico-Ampere meter
27	RFID reader
28	Helium leak detector
29	Ultra sensitive-flexi range pulsating sensor based conductivity meter
30	Radio frequency Directional power sensor

31	60KW broadband dual directional coupler
32	Fast current transformer
33	Radiofrequency amplifier modules
34	Rigid coaxial transitions
35	High stability, current-controlled, card based, true bipolar, switch mode power converter for electromagnets
36	Thermal ionization mass spectrometer
37	AkrutiTeck pack.
38	Production of dysprosium doped calcium sulphate thermoluminescence dosimetry phosphor powder
39	Production of the intumescent rigid polyurethane foam
40	Boron carbide
41	Synthesis of cathode....lithium ion battery tech
42	Alkaline water electrolyser plant
43	Production of Tungsten metal powder and fabrication of Tungsten (W) and Tungsten Heavy Alloy (WHA)
44	Low carbon ferro alloys
45	Synthesis of NMC cathode for lithium ion battery
46	Sodium Hypochorite electrolyser plant
47	Large-scale synthesis of carbon nanotubes
48	12KW, 80KV electron beam welding machine
49	Bhabha kavach
50	Compact pulsed plasma based high pressure shock wave generators for contrained liquid immersed spaces
51	Air plasma torch
52	Nisargruna
53	Particle aerodynamic size separator (PASS)
54	Hybrid granular SBR for waste water treatment
55	Body composition analyser
56	Dust respirators & air line respirators
57	Handheld 12-channel Tele-ECG
58	Peripheral pulse analyser system
59	DNA microarrayer sys.
60	The spot picker robot
61	Extra cellular acidity analyser
62	Semi automated staircase climbing trolley
63	Tuberculosiscope
64	Oncodiagnoscope
65	NEELBHASMI- UV based area sanitization device....corona viruses

66	DEAP—Device to ease Apnea problem
67	Auto TLD Badge Rader
68	Production of CaSO ₄ : DY embedded Teflon discs & TLD cards
69	Setting up of Gamma radiation processing plant
70	Super cotton
71	Modified polyurethane (PU)sponge for oily substance removal
72	Radiation monitoring watch
73	Arsenic removal filter- domestic water purification
74	FDK- fluoride detection kit for groundwater
75	Membrane assisted defluoridation
76	Arsenic reoval from drinking water by physicochemical process
77	On-line domestic...polysulfane membrane
78	UF membrane assisted device for removal of iron from contaminated water for drinking purposes
79	Tech for fluoride remediation
80	Cellulose based water purifier for arsenic removal
81	Multi effect distillation with themo vapour compresion from sea water
82	Chlorine dioxide releasing polymer for water disinfection (CLEAN)

Technologies planned to be transferred in 2021-22 & 2022-23:

Sl. No.	Name of the technology	Year of Transfer
1	Liquid Nitrogen Based Transportable Refrigeration System– Sheetal Vahak Yantra (SHIVAY)	2021-22
2	Agni Rakshak (AR)-Raman optical fiber based fire sensor system	2022-23
3	Laser Additive Manufacturing System using Powder-fed Directed Energy Deposition	2022-23