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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**Annexure- I**

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

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| 1 | A rapid, continuous and renewable method for production of the anti-cancer drug campothecin |
| 2 | Ambient prolonged natural calamities & other targets |
| 3 | Biopesticide based on B. Thuringensisvarkeniyae |
| 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 Trichoderma Virens 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 neutraceutical 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 memberaneassited……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 |

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| 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 intumiscent 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 | Exra cellular acidity analyser |
| 62 | Semi automated staircase climbing trolley |
| 63 | Tuberculoscope |
| 64 | Oncodiagnoscope |
| 65 | NEELBHASMI- UV based area sanitization device….corona viruses |

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| 66 | DEAP—Device to ease Apnea problem |
| 67 | Auto TLD Badge Rader |
| 68 | Production of CaSO4: 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) |

**Annexure- II**

**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 |