

Council of Scientific and Industrial research (CSIR)

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CSIR is a pioneer in the field of Scientific research today. It covers a wide spectrum of fields from radio and space physics, oceanography, geophysics to biotechnology, environmental engineering and information technology. It is important to study about the organisation both from prelims and mains point of view.

In news: CSIR has said that the coronavirus vaccine will be equally effective against the new mutant of coronavirus (UK Coronavirus strain).

Placing it in syllabus: Scientific organisations

Dimensions:

1. About CSIR
2. Organisational structure of CSIR
3. CSIR achievements
4. Shanti Swarup Bhatnagar

Content

About CSIR:

- The Industrial Intelligence and Research Bureau was set up in April 1935.
- At the onset of World War II in 1939, by the efforts of **Arcot Ramaswamy Mudaliar**, a member **Board of Scientific and Industrial Research (BSIR)** was created on 1 April 1940 for a period of two years.
- Mudaliar became the chair of the board.
- It was at this point that **Shanti Swarup Bhatnagar was appointed as the Director.**
- Major achievements of BSIR included development of the techniques for the purification of Balochistan sulphur anti-gas cloth manufacture, vegetable oil blends as fuel

and lubricants, plastic packing cases for army boots and ammunition, dyes for uniforms and the preparation of vitamins, and the invention of a pyrethrum emulsifier and cream.

- Bhatnagar persuaded the government to set up an **Industrial Research Utilisation Committee (IRUC)** in early 1941 for further investment into industrial research.
- The constitution of the **Council of Scientific and Industrial Research (CSIR)** as an autonomous body was prepared under Mudaliar and Bhatnagar which came into operation on 26 **September 1942**.
- The BSIR and IRUC became the advisory bodies to the governing body of the CSIR.
- In 1943, the governing body of CSIR approved the proposal of Bhatnagar to establish **five national laboratories** – *the National Chemical Laboratory, the National Physical Laboratory, the Fuel Research Station, the Glass & Ceramics Research Institute and the National Metallurgical Laboratory.*

CSIR, today is perhaps among the world's largest publicly funded R&D organisations. It has a chain of 38 world class R&D establishments with 80 field stations spread across India. Its patrons and partners hail from over 50 countries.

Organisational structure of CSIR:

- **President: Prime Minister** (Ex-Officio)
- **Vice President:** Minister of Science & Technology, India (Ex-Officio)
- **Governing Body:** The Director General is the head of the governing body. The other ex-officio member is the finance secretary (expenditures). Other members' terms are three years.
- **CSIR Advisory Board:** 15-member body (with a term of 3 years each) composed of prominent members from respective fields of science and technology. Its

function is to provide S&T inputs to the governing body.

CSIR achievements: CSIR is **granted 90% of US patents granted to any Indian publicly funded R&D organization.** On an average CSIR file about 200 Indian patents and 250 foreign patents per year. About 13.86% of CSIR patents are licensed – a number which is above the global average.

CSIR has put in place **CSIR@80: Vision & Strategy 2022 – New CSIR for New India.** CSIR's **mission** is *"to build a new CSIR for a new India"* and CSIR's **vision** is to *"Pursue science which strives for global impact, the technology that enables innovation-driven industry and nurtures trans-disciplinary leadership thereby catalyzing inclusive economic development for the people of India"*.

CSIR is the only Indian organization among the top 100 global institutions, according to the Scimago Institutions Ranking World Report 2014. It holds the 17th rank in Asia and leads the country at the first position.

CSIR milestones:

- Developed India's first synthetic drug, methaqualone in 1950.
- Developed Optical Glass at CGCRI for defence purposes.
- Developed the first Indian tractor Swaraj in 1967 completely based on indigenous know-how.
- Achieved the first breakthrough of flowering of Bamboo within weeks as against twenty years in nature.
- First to analyse genetic diversity of the indigenous Andamanese tribes and to establish their origin out of Africa 60,000 years ago.
- Developed the first transgenic Drosophila model for drug screening for cancer in humans.
- Invented, once a week non-steroidal family planning pill Saheli and non-steroidal herbal pill for asthma called

Asmon.

- CSIR developed cheaper processes for manufacture of anti-HIV drugs and transferred the technology to CIPLA, which introduced the drug in India and other third world countries at a fraction of the original price of expensive drugs.
- Flosolver, India's first parallel computer to get supercomputing power was built in 1986.
- Rejuvenated India's one-hundred-year-old refinery at Digboi using the most modern molecular distillation technology.
- With TCS, developed a versatile portable PC-based software 'Bio-Suite' for bioinformatics.
- Design of 14 seater plane 'SARAS'.
- Established first ever in the world 'Traditional Knowledge Digital Library' accessible in five international languages, English, German, French, Japanese and Spanish.
- Successfully challenged the grant of patent in the US for use of haldi (turmeric) for wound healing and neem as insecticide.
- In 2009, completed the sequencing of the Human Genome.
- In 2011, successfully tested India's 1st indigenous civilian aircraft, NAL NM5 made in association with National Aerospace Laboratories and Mahindra Aerospace.
- In 2020, initiated clinical trials to evaluate Sepsivac's efficacy to reduce mortality rate in COVID-19 patients.

Shanti Swarup Bhatnagar:

- Sir Shanti Swarup Bhatnagar was an Indian colloid chemist, academic and scientific administrator.
- He is revered as the **"father of research laboratories" in India.**
- He was the **first Chairman of the University Grants Commission (UGC).**

- Shanti Swaroop Bhatnagar's first industrial problem was developing the process for converting bagasse into food-cake for cattle.
- His major innovation was an improvement of the procedure for drilling crude oil.
- Later the Department of Petroleum Research was set up under his guidance.
- Investigations carried out under this collaborative scheme included deodorisation of waxes, increasing flame height of kerosene and utilisation of waste products in the vegetable oil and mineral oil industries.
- Shanti Swaroop Bhatnagar persistently refused any personal monetary benefit from his research fundings, and instead advocated for strengthening research facilities at the university.
- Shanti Swaroop Bhatnagar wrote jointly with K.N. Mathur '**Physical Principles and Applications of Magnetochemistry**' which is considered a standard work on the subject.

Shanti Swarup Bhatnagar Prize

- It was established by CSIR in 1958.
- The nominees for the award are filtered out from the research categories of – **Biological Sciences, Chemical Sciences, Earth Sciences, Atmosphere, Ocean and Planetary, Engineering, Mathematical Sciences, Medical Sciences & Physical Sciences.**
- The Prize comes up with a Citation, a Plaque & a Cash Award of 5 Lakh Rupees with the addition of a stipend of ₹15,000/- per month (till the age of 65).
- Every year, the Award Selection Committee of CSIR presents the award to **maximum 2 individuals from each research category.**
- As per the stats, the SSB Prize **has been awarded to 525 individuals** for their exemplary work in Science & Technology.
- The candidates must be Indian Nationality or Overseas

citizen of India (OCI) and Persons of Indian Origin (PIO) working in India.

- The awardee must have made important and outstanding contributions to human knowledge and progress – fundamental and applied – in the field of endeavour, which is his/her specialisation.
- **Upper Age Limit is 45 years.**
- The selection will be based on the results of the selection procedure which is conducted by the Advisory Committee of CSIR.

Mould your thought: CSIR has emerged as a pioneer in the field of Scientific research in India. Explain.

Approach to the answer:

- Briefly write about CSIR history
- Write about its achievements
- Write its milestones
- Conclusion