

**Adverse impact of LED on retina**

308. SHRI PRABHAKAR REDDY VEMIREDDY: Will the Minister of POWER be pleased to state:

- (a) whether it has come to the notice of Government that as per a French Report (ANSAS), blue light in LED damage retina, if so, details of the study;
- (b) whether Government is aware that experts feel the need to regulate LED products to ensure low flicker rate;
- (c) whether any consultations with stakeholders and industry have been held in this regard; and
- (d) if so, how Government is planning to go ahead on this?

THE MINISTER OF STATE OF THE MINISTRY OF POWER (SHRI RAJ KUMAR SINGH): (a) to (d) As per information received from the Indian Council of Medical Research (ICMR), a white paper of French Agency for Food, Environmental and Occupational Health and Safety regarding LEDs has concluded that acute exposure to blue rich light causes retinal photo toxicity and exposure to blue rich light in evening and night causes disruption of circadian rhythms.

Central Power Research Institute (CPRI), an autonomous organization under the Ministry of Power, has informed that Indian Standards for flicker have been notified as IS 14700-3-3 which provide the limits for flicker present in equipment of public low voltage systems (rated current less than 16 A).

The following measures are already in place to regulate LED products:

- (i) The Bureau of Indian Standards (BIS) has mandated safety and performance standards for LED bulbs and LED tube lights. Further, recognizing the photo-biological impact of light sources, BIS has also mandated standards on photo-biological safety of Lamps and Lamp systems. The Indian standards for LED Lamps and LED Tube light [IS 16102 (Part 1) and IS 16614 (Part 1)] include mandatory marking requirement for photo-biological hazard-related risk group labeling of lamps as given in IS 16108 (Part 2).
- (ii) LED Lamps as per IS 16102 (Part 1) are covered under Compulsory Registration Order (CRO) issued by Ministry of Electronics and Information Technology (MeitY).

- (iii) LED bulbs procured by EESL under UJALA scheme conforms to Quality Control Measures *i.e.* IS 16102 (Part 1) and (Part 2): 2012 specified by BIS. These standards have been made mandatory in May, 2015 by BIS and are applicable to domestic manufacturing as well as imports.
- (iv) LED bulbs are placed under mandatory regime of Star labeling program of the Bureau of Energy Efficiency (BEE) w.e.f. 1st January, 2018. As part of this programme, it is mandatory for the manufacturers of LED bulbs to submit photo-biological test report for respective LED bulb model in accordance with the National Standard IS 16108-Photo-biological Safety of Lamps and Lamp Systems.

#### **Research on energy storage**

†309. SHRI P.L. PUNIA: Will the Minister of SCIENCE AND TECHNOLOGY be pleased to state:

- (a) whether Government is carrying out research work on storage of energy;
- (b) if so, the details thereof along with the achievements of the last five years; and
- (c) the actions being taken to inspire the students to do research on storage of energy, details thereof along with the outcome?

THE MINISTER OF SCIENCE AND TECHNOLOGY (DR. HARSH VARDHAN): (a) Yes Sir.

(b) Department of Science and Technology (DST) has supported 77 projects and has also set up 4 platforms for research on Batteries, Supercapacitors and Hydrogen Storage at a total cost of ₹ 89 Cr. Besides 50 scientific publications, the activities have also resulted in the development of ultracapacitor based powered lift technology and carbon nanotube coated cotton yarns to power wearable devices. International Advanced Research Centre for Powder Metallurgy and New Materials (ARCI), an autonomous institution under DST demonstrated lithium ion batteries and materials for stationery and mobile applications. Department of Space has also designed and developed Li-ion cells and supercapacitors of various capacities.

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†Original notice of the question was received in Hindi.