GOVERNMENT OF INDIA
MINISTRY OF SCIENCE AND TECHNOLOGY
DEPARTMENT OF BIOTECHNOLOGY
(Environmental Biotechnology)

CALL FOR PROPOSALS

for

BIOTECHNOLOGICAL INTERVENTIONS FOR MITIGATING MICROPLASTIC POLLUTION AND DEVELOPMENT OF ALTERNATIVES TO SINGLE USE PLASTIC

Background: Plastic waste is one of the most formidable challenge in today's world. As per reports for recent past years, annual plastic waste generation in India was about 3 metric tons. Moreover, Microplastics are emerging environmental pollutants of persistent and pervasive nature. The increasing reports on plastic pollutant's occurrence, possible impact on the aquatic as well as terrestrial ecosystems, and their inevitable exposure to humans motivate to make advanced interventions for the management of these pollutants. It is important to decode the biological processes for the management and mitigation of these pollutants in a sustainable way.

Biological processes have immense potential to address plastic as well as microplastic pollution, and for the development of alternatives to single-use plastics in an eco-friendly manner. In these directions, this call for proposal is intended to support scalable biotechnological interventions for the abatement of plastic as well as microplastic pollution in India.

KEY DATES:

Activity	**Date/Month/Year**
Call Opening Date	21st March, 2022
Call Closing Date	**Extended to 15th May, 2022**

WHO CAN APPLY: Faculties of recognized universities and academic institutions, scientists working in National Laboratories, R&D institutions, and Research organizations recognized by DSIR, individually or in consortium mode. The roles and responsibilities of each partner should be delineated in the proposal. Industry participation is not mandatory, however, the proposals having industrial contribution can be considered. The industrial partner should have proven standing and R&D capability in the proposed R&D area.

INDUSTRIAL CONTRIBUTION: Participating Industry would be required to invest financial and other resources within its own system i.e. production/ test lines and/or develop required infrastructure to adopt research leads and is expected to bring design, engineering, and development capability for the benefit of the project.

THEMATIC FOCUS AND PRIORITY AREAS:

A. Microplastic Management & Mitigation

a) Characterization, quantification, and profiling of the microplastics from aquatic including marine, soil ecosystem including wastewater system.

b) New technologies for the detection of micro plastic in human and animals

c) Evaluation of microbes for biodegradation of the microplastics, essentially concerning first sub-degradation and nature of the degraded products.

d) Biobased Methods and Green Hybrid technologies for degradation of microplastics, where chemical processes coupled with biological processes

e) Evidence-based microbial/biological degradation of microplastics. Design and application of effective microbial consortium for lab-scale (50L) demonstration and exploring mitigation using biofilms. Insect/fungal communities/other life forms having the potential to degrade microplastics/plastics.

f) Co-contaminants of microplastics and their degradation products. Toxicity of microplastics, co contaminants as well as degradation products

B. Alternatives to Single-Use Plastics

a) Development of bio-based plastics/polymers which are degradable and their conversion to useful products. Prospecting for biological sources for such materials.

b) Development of biopolymers that are not readily available and fabrication to usable products.

c) Bioremediation:- Plastic Waste Recycling & Valorization

d) Abiotic influencing factors for plastic waste pretreatment to make it susceptible to biodegradation.

e) Decoding metabolomics of plastic waste degrading organisms, functional enzymes and their development for cell-free system utilization.

f) Biobased Methodologies for handling the entire plastic (Nano/Micro/Macro) pollution in landfills.

ASSESSMENT CRITERIA:

The proposal will be evaluated based on the following criteria:

Category 'A' Fundamental Research Projects

a) The potential impact of the project and the national importance of the proposed research.

b) Need assessment and demand for proposed work, Defined achievable targets in alignment to National Priorities

c) Scientific and technical merit

d) Expertise, facilities, and track record and ability of the Project Investigation Team to achieve the research goals

e) Proposal formulation (Precision in the objective, adequacy, and completeness of literature review, preliminary work done, methodology and work plan, resources requested for this purpose, effectiveness of planning and resource management, etc.)

Category 'B' Translational research projects

In addition to assessment criteria given for Category 'A', proposals can be assessed for established proof-of-concept ready to go to the next phase for technology development, validation and commercialization; promising late translational leads ready for technology enhancement and commercialization; validation and field trials

COMPONENT OF GRANT

a) Equipment cost
b) Research Manpower (Nomenclature and salary as per DBT/DST guidelines only)
c) Outsourcing / Fabrication cost
d) Domestic travel
e) Consumables
f) Contingencies
g) Other costs
h) Overheads as per DBT norms.

PROPOSAL SUBMISSION:

Interested researchers should submit project proposals online only through DBT electronic project management system 'eProMis' (http://dbtepromis.nic.in/Login.aspx) under the Programme **'Environmental Biotechnology'**.

PROCESSING OF PROPOSAL Upon receipt of the detailed proposal, the same will be reviewed by the Internal Screening Committee. Incomplete applications and those which do not fulfill eligibility criteria will not be considered. Shortlisted applications that are complete and responsive will be evaluated for scientific and technical merit by a high-powered committee. The project investigators may be invited to make a detailed presentation before the committee. The decision of the committee on a proposal will be final and communicated to the investigator.

Any queries in this regard can be addressed to **Dr. Balendra Singh, Scientist 'C' Room No. 525B, 5th Floor, Block-3, CGO Complex, Lodhi Road, New Delhi- 110003. Email:** balendra.singh@dbt.nic.in

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