

DRDO develops eco-friendly alternatives to single use plastics

World Trade Center Jaipur, MSME DI-Jaipur, Ministry of MSME, Government of India, DRDO Hyderabad and Malviya National Institute of Technology (M.N.I.T.), Jaipur organized a brainstorming session to discuss the challenge of uninterrupted use of single use plastic. The session also aimed to identify ethical business opportunities in the current scenario.

Distinguished guest speaker for the webinar, Dr. Shivom Meena, Assistant Professor, (M.Tec., IIT Kharagpur) Department of Chemical Engineering, M.N.I.T., Jaipur, explained in detail, "Plastic is a light weight, hygienic and resistant material which can be molded in a variety of ways and utilized in a wide range of applications. Unlike metals, plastics do not rust or corrode. Most plastics do not biodegrade, but instead photodegrade, meaning that they slowly break down into small fragments known as microplastics. The fragmentation of large plastic items into microplastics is common on land such as beaches because of high UV radiation and abrasion by waves, while the degradation process is much slower in the ocean due to cooler temperatures and reduced UV exposure."

Dr. Meena further explained, "Single-use plastics, or disposable plastics, are used only once before they are thrown away or recycled. It's used in making items such as plastic bags, straws, coffee stirrers, soda and water bottles and most food packaging materials. The pros of single-use plastic products are that it prevents the spread of infection. Instruments such as syringes, applicators, drug tests, bandages and wraps are often made to be disposable. Also, single-use plastic products have been enlisted in the fight against food waste, keeping food and water fresher for longer and reducing the potential for contamination. Being cost effective and convenient, it has replaced all other materials from the packaging industry, but the downside of using this material is that it takes hundreds of years to disintegrate, which poses as a huge problem for the environment. If we look at the data, out of 9.46 million tons of plastic waste generated every year in our country, 43% is single use plastic."

Dr. Meena further added, "Single-use plastic bags and Styrofoam products are widely used because they are strong, cheap and hygienic ways to transport goods. Plastic grocery bags consume less energy and water to produce and generate less solid waste than paper bags, taking up less space in landfills. However, some of the characteristics that make them commercially successful are price, durability and resistance. However, they are environmentally unsafe (when mismanaged) and difficult to recycle. Plastic waste and microplastics, if ingested by fish or other marine life, can enter our food chain. Microplastics have already been found in common table salt and in both tap and bottled water. Although, in recent years research on the effect of microplastics has been growing, still little is known. Hence, the responsibilities are vested on human shoulders to reduce the impact and maintain ecological balance."

Earlier, Mr. Girish K Sharma, Assistant Director, MSME DI Jaipur and Mr. Balaram Meena, Investigator, MSME DI Jaipur welcomed the participants and Mr. V.K. Sharma, Director, MSME DI Jaipur delivered the theme address of the webinar.

Session's guest speaker and renowned businessman, Mr. A. R. Kohli, Managing Director, Neelkanth Retorts, New Delhi shared his industry experience with the delegates and also gave solutions to single use plastic problem.

Dr. K. Veera Brahmam, Scientist-E, Advanced Systems Laboratory, DRDO, Hyderabad, further enlightened the delegates by pointing out, "Polythene bags or bottles have become persistent threats to the environment. The pollution caused by all pervasive polyethylene based packing

material is having inadvertent impact on nature. Plastics and polyethylene take about 200-300 years to decompose on its own. The efforts to recycle plastic by collection and segregation are tedious and costly. Keeping in view the ill effects of pervasive usage of plastics and polyethylene bags, various options are being explored to replace these hazardous materials. In such effort, scientists from DRDO have developed bio-degradable bags to replace single use polyethylene bags which are made from a starch and food graded materials. The final product was realized in collaboration with M/s Ecolastic Products, Hyderabad. DRDO has developed two types of bags i.e. Water soluble bags (for sea applications) and water resistant bags (for land application) The salient features of the product are: an alternative to conventional single use plastic which is Eco friendly, Bio-degradable and Home compostable, as it does not contain conventional plastic, causes no harm to animals or aquatic life by disposal/consumption, Bio-degradability of the same is within 60 days and completely turns into manure after 80 days, good tensile strength and elongation, fully tested and certified from CIPET, printable in multiple colors based on user requirement and cost effective. DRDO is willing to transfer the technology to industries for mass production and polythene bag manufacturers can migrate to manufacturing these environmentally safe bags with minimum change in plant and machinery.”

Mr. Navneet Agarwal – Assistant Director, Trade Promotion, World Trade Center Jaipur proposed the vote of thanks.

The webinar was held on October 8, 2021



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Mr. Girish K. Sharma
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Dr. Shivom Meena
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