

Understanding why disposal and accumulation of ELT is a serious problem

It is important to understand why disposal and accumulation of ELT is a serious problem in today's world. When tires reach their end-of-life phase, they are either sent to recycling facilities or stockpiled, depending on local regulations. If the latter happens more frequently, there is risk that ELT not only occupy more and more stockpile space, but that they pose threat to environment and human health. Two most dangerous threats are tire fires (burning tires cannot be easily extinguished and release huge amounts of hazardous toxic substances into the air) and the fact that ELTs serve as ideal breeding grounds for mosquitoes which easily spread diseases like Zika or West Nile Virus. As an example of the former, five million tires burned accidentally in Kuwait in April 2012 and recently, in 2016, another 5 million tires burned in Spain heavily polluting adjacent residential areas.

On the other hand, tires are composed of precious high-priced materials which, thanks to tire recycling, are now available in abundance back on the market. Tire recycling enables to recover the bulk of precious rubber and utilize it in numerous consumer goods and industrial applications. Thus, tire recycling helps close the loop of circular economy, create new value, new jobs and clean environment.

A major problem here is that tire collection and tire recycling programs are much better established in the developed economies rather than all around the world. According to the European Tire and Rubber Manufacturing Association (ETRMA), the global tire output is estimated at over 1.5 billion units per year – and not all of these tires are recycled in the developing countries. To address the problem, governments around the world need to take decisive actions to launch and efficiently supervise tire collection programs and give incentives to tire recycling companies. Successful examples include very differently organized programs: the bulk of them use small tire fees levied on the public to fund collection and support activities of tire collection and recycling companies.

Another and complementary way of tackling the problem in the sustainable manner is the further market development for tire-derived rubber products: besides R&D activities, industries should devote more attention to recycled rubber content in their products. This regards particularly to tire and rubber compounding industries.

Among many applications of recycled tire rubber, there are several major groups:

1. TIRE-DERIVED FUEL (TDF) – FUEL FOR CEMENT PRODUCERS

Estimates show that OECD countries utilize, on average, 50% of annually accumulated ELTs as a tire-derived fuel, mostly in cement kilns and heating. When incinerated in proper environment-friendly way, tires produce more energy than coal and result in lower CO₂ emissions compared to fossil fuels;

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2. CRUMB RUBBER – VAST USE IN CIVIL ENGINEERING APPLICATIONS AND CONSTRUCTION INDUSTRY

According to Environmental Protection Agency (EPA), civil engineering applications for ELT derived rubber consumed 17 million tires in 2015 in the US alone. This is because recycled tire rubber can replace virgin rubber materials in products like insulation blocks, drainage aggregate, playground mats, rubberized flooring, landscaping products, etc.

3. RUBBER POWDER – THERMOPLASTIC ELASTOMERS AND RUBBERIZED ASPHALT

According to EPA in United States, over 62 million ELTs were transformed into rubber powder in the US alone in 2015. Fine rubber powder can be used in many high-end and high-value applications like thermoplastic elastomers – a steadily growing market. Another big market with a growing potential for fine rubber powder is road construction, namely rubberized asphalt. In different parts of the world, this field of industry is booming, as rubberized asphalt reduces highway maintenance costs and increases endurance of the surface.

4. TIRE PYROLYSIS FUEL – FUELS FOR STATIONARY AND VEHICULAR ENGINES, HEATING OIL, MARITIME FUEL

Pyrolysis oil is a promising substitute for conventional diesel, maritime fuel, heating oil, etc. However, strict environmental regulations pose challenges to the use of the product, and high-end purification technologies are required.

5. RECOVERED CARBON BLACK – HIGH-QUALITY SUBSTITUTE FOR VIRGIN CARBON BLACKS

Followed by recent break-through in the technology, high-quality recovered carbon black piqued attention of the automotive and the rubber industries. As a capital-intensive business with a lot of R&D involved, it is led by a handful of successful companies in Europe and the US.

While each of these fields has its own leaders in driving innovation and conducting R&D activities at their own expense, efforts to substitute recycled rubber, tire pyrolysis oil and recovered carbon black for virgin materials must be supported by tire and rubber industry majors, environmental organizations, universities and, most importantly, governments. This is a major prerequisite for success of the whole tire recycling industry.

Recycling tires and utilizing recycled rubber in industrial applications and consumer goods eventually creates jobs and stimulates economic growth, therefore governments should not be afraid of launching tire collection programs and investing in development of tire recycling industry.