

Eco-Ways to Reduce Environmental Impacts of Flame Retardant Textiles at the End of Life

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Abstract : It is well-known that the presence of discarded textile products in municipal landfills poses environmental problems due to leaching of chemical products from the textile to the environment. Incineration of such textiles is considered to be an efficient way to produce energy and reduce environmental impacts of textile materials at their end-of life stage. However, the presence of flame retardant products on textiles would decrease the energy yield and emit toxic gases during incineration stage. While some non-durable flame retardants can be removed by wet treatments (e.g. washing), these substances pollute water and pose concerns towards environmental health. Our study shows that infrared radiation can be used efficiently to degrade flame retardant products on the textiles. This method is finalized to minimize the decrease in energy yield during the incineration or gasification processes of flame retardant cotton fabrics.

Keywords : degradation, flame retardant, infrared radiation, cotton, incineration

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