

Short Commentary

The Role of the Fashion Industry and Textiles in Lung Health and Associated Pathogens: A Review

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Abstract

The fashion industry is a significant contributor to global pollution, which can adversely impact lung health. This review examines the impact of the fashion industry and textiles on lung health and the pathogens involved, as reported in recent studies published within the last five years. We discuss the various sources of air pollutants, toxic fibers, and allergens in the fashion industry and textiles that can contribute to lung diseases and infections. Furthermore, we highlight the importance of taking appropriate preventative measures to minimize these risks and ensure better lung health.

Keywords: Air pollutants; Fashion industry; Lung health; Pathogens; Textiles

Introduction

The fashion industry has grown exponentially in recent years, with fast fashion driving rapid production cycles and high levels of consumption. Unfortunately, this growth comes at a cost, as the industry has become a significant contributor to air, water, and soil pollution [1]. Consequently, these pollutants can have a detrimental effect on human health, particularly lung health. This review aims to summarize recent studies on the impact of the fashion industry and textiles on lung health and the pathogens involved, published within the last five years.

Air Pollutants and Lung Health

Particulate Matter (PM) and Lung Disease

Particulate matter (PM) is a major air pollutant that originates from various sources, including the fashion industry. PM can lead to

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several lung diseases such as asthma, chronic obstructive pulmonary disease (COPD), and lung cancer [2]. The manufacturing process of synthetic fibers, such as polyester, nylon, and acrylic, can emit significant amounts of PM, which can have detrimental effects on lung health [3].

Volatile Organic Compounds (VOCs) and Respiratory Illness

VOCs are released during the production of textiles and garments, primarily from dyeing, printing, and finishing processes [4]. Studies have found that exposure to VOCs can lead to respiratory illnesses, including asthma, bronchitis, and allergic rhinitis [5].

Textile Fibers and Allergens

Exposure to Toxic Fibers

Asbestos, a toxic fiber once used in textile production, has been linked to lung cancer and mesothelioma [6]. Although asbestos has been banned in many countries, remnants of asbestos-containing materials still pose a risk to workers and consumers [7].

Allergens and Lung Health

Textile materials can harbor allergens, including dust mites, molds, and animal dander, which can exacerbate asthma and other respiratory conditions [8]. Additionally, some textiles may contain chemicals, such as formaldehyde, which can cause allergic reactions and respiratory symptoms [9].

Pathogens in the Fashion Industry

Bacterial and Fungal Contaminants

The fashion industry can contribute to the spread of bacterial and fungal pathogens due to poor working conditions, inadequate sanitation, and cross-contamination during production [10]. These pathogens can cause respiratory infections and exacerbate existing lung diseases.

Antimicrobial Resistance

The overuse of antimicrobial agents in the fashion industry can contribute to the development of antimicrobial resistance (AMR), posing a significant threat to human health [1]. AMR can lead to the proliferation of drug-resistant pathogens, which can cause serious respiratory infections that are difficult to treat [11].

Preventative Measures and Recommendations

To mitigate the adverse effects of the fashion industry on lung health, the following preventative measures and recommendations should be considered.

Reducing Air Pollution

Regulations and monitoring should be implemented to reduce emissions of PM and VOCs from textile manufacturing processes [12-15]. This can be achieved by adopting greener technologies, such as water-based dyes and low-VOC solvents [16-22].

Improved Working Conditions

Improving working conditions in the fashion industry, including proper ventilation, sanitation, and personal protective equipment, can minimize the risk of pathogen transmission and exposure to allergens and toxic fibers [23].

Antimicrobial Stewardship

The responsible use of antimicrobial agents in the textile industry is crucial to combat the spread of drug-resistant pathogens [24-25]. The implementation of antimicrobial stewardship programs can ensure the judicious use of these agents and help prevent the development of AMR.

Consumer Awareness and Sustainable Choices

Increased consumer awareness of the impact of the fashion industry on lung health can drive the demand for sustainable and environmentally friendly textiles and garments [26]. By choosing organic, natural fibers and supporting brands with ethical and sustainable practices, consumers can play a vital role in promoting better lung health.

Conclusion

The fashion industry and textiles have a significant impact on lung health through the release of air pollutants, toxic fibers, allergens, and the spread of pathogens. By implementing preventative measures and increasing consumer awareness, the adverse effects of the fashion industry on lung health can be minimized. Further research is needed to better understand the long-term effects of exposure to pollutants and pathogens in the fashion industry and to develop more effective strategies for promoting lung health.

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