



INTRODUCTION

The personal protective industry is not a well-defined industry. Therefore, this report will focus on a variety of groups or significant segments of the apparel industry as they relate to protection from chemicals, fire, and projectiles. The industry is comprised of manufacturers and suppliers of a myriad of different raw materials, fabric mills and producers, finished goods producers, and finished personal protective gear distributors.

In addition to these players in the personal protective equipment market, there are several other groups to consider. These additional groups or organizations are responsible for creating the standards, product certifications, testing methods, and governmental regulations by which this industry lives and dies. While there are only a handful of new or revised standards and regulations the industry is currently wading through, the existing standards and regulations are quite cumbersome and can be difficult to understand.

While DuPont Kevlar was the first ballistic material identified for use in modern concealable body armor, there are currently four other fiber manufacturers that are the predominant producers of material used in bullet-resistant armor. They include Spectra® fiber manufactured by Honeywell, Twaron® manufactured by Teijin Twaron, Dyneema® produced by DSM, and Zylon® produced by Toyobo.

Ballistic fiber can be woven into fabric or incorporated into a composite material that is used in the design of body armor. In the case of Honeywell's Spectra Shield®, ZShield®, and GoldFlex® composites, the fiber is arranged in unidirectional layers and held in place by a flexible resin. Manufacturers also use different layer counts, stitching, treatments, ballistic covers, carriers, and strapping systems. The differences between manufacturers' individual design concepts are a result of their attempts to provide an armor that will comply with the NIJ performance requirements with minimum weight and maximum comfort or wearability. These designs also attempt to address potential vulnerabilities of ballistic materials to degradation of the armor due to wear, care, and environmental factors.

The personal protective industry has historically been a slow grower over the past decade, with most segments only seeing about 2% to 3% growth on an annual basis. However, many segments and categories within those segments are suddenly poised for significant growth due to the terrorist events of September 11, 2001.

In addition, there are several other contributors to the remarkable growth. One of the greatest factors is the government grant programs that allocate significant funds to police and fire departments for the purchase of protective garments both for normal job-related hazards and for hazards related to terrorist or other catastrophic events.

However, some factors will offset the significant growth that is expected in some segments of this industry. These include the loss of many manufacturing jobs, as the economy switches from a manufacturing/industrial economy to a service economy.



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Another offsetting factor is the fact that many of the manufacturing jobs in this country are being lost, as the manufacturing sector moves significant numbers of its operations abroad to markets, such as Mexico, China, and South America, where it is less expensive to operate. While workers in these countries will undoubtedly need protection from the same environmental hazards that American workers required, it should not help the industry as much as it will hurt them. This is because these countries often are not as progressive as the United States when it comes to protecting the labor force. Therefore, the loss of American manufacturing jobs will probably have a greater effect on most segments of the personal protective industry than the addition of manufacturing workforces abroad.

This loss of American manufacturing jobs will slow down the growth of segments such as chemical protective garments and chemical protective gloves, as well as industrial fire-resistant garments. However, due to the recent events of September 11, chemical protective garments are still poised for remarkable growth, as fire departments, emergency medical teams, local law enforcement, and military personnel update and expand their line of equipment for the protection of chemical and biological hazards.

The fire protection industry is experiencing a similar situation. While there are fewer firefighters than there were 15 years ago, the firefighter turnout gear industry is expecting to see a significant increase in annual growth. This growth is due to fire departments across the country wanting to have the best equipment available for their firefighters. In addition, the government recently "upped the ante" on one of the programs that provides funds to fire departments for this purpose. The industry expects to see significant gains over the next 5 years due to these reasons.

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