Chapter 8
Impact of Textile Dyes on Human Health and Environment

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ABSTRACT

The textile industry is one of the important industries that generates a large amount of industrial effluents. Color is the main attraction of any fabric. Manufacture and use of synthetic dyes for fabric dyeing has therefore become a massive industry. Synthetic dyes have provided a wide range of colorfast, bright hues. However, their toxic nature has become a cause of grave concern to environmentalists. Use of synthetic dyes has an adverse effect on all forms of life. Presence of sulphur, naphthol, vat dyes, nitrates, acetic acid, soaps, enzymes chromium compounds, and heavy metals like copper, arsenic, lead, cadmium, mercury, nickel, and cobalt and certain auxiliary chemicals all collectively make the textile effluent highly toxic. These organic materials react with many disinfectants, especially chlorine, and form byproducts (DBPs) that are often carcinogenic and therefore undesirable. This effluent, if allowed to flow in the fields, clogs the pores of the soil resulting in loss of soil productivity. This chapter gives an overview on the health and environmental impact of dyes.
INTRODUCTION

Dyes may be defined as substances that, when applied to a substrate provides color by a process that alters, at least temporarily, any crystal structure of the colored substances (Othmer, 2004, Bafana et al., 2011). Such substances with considerable coloring capacity are widely employed in the textile, pharmaceutical, food, cosmetics, plastics, photographic and paper industries (Zollinger, 1987, Carneiro et al., 2007). The dye manufacturing industry represents a relatively small part of the overall chemical industries. In the world-wide production of dyes is nearly 800,000 tons per year. About 10-15% of synthetic dyes are lost during different processes of textile industry. Synthetic dyes are valuable in numerous industries such as textile, paper printing, food, pharmaceutical, leather and cosmetics. It is classified into acid, reactive, direct, basic, vat, disperse, metal complex, mordant and sulphur dyes. There are more than 10,000 dyes used in textile Manufacturing alone nearly 70% being azo dyes which is complex in structure and synthetic in nature (Hassaan, 2016, Ananthashankar, 2012). A major source of colour release into the environment is associated with the incomplete exhaustion of dyes onto textile fibre from an aqueous dyeing process and the need to reduce the amount of residual dye in textile effluent has become a major concern in recent years. (Hassaan, 2016, Ananthashankar, 2012).

HEALTH AND ENVIRONMENTAL IMPACT OF DYES

There is no confirmation to propose that the greater part of the dyestuffs at present utilized in material coloring and completing are dangerous to human wellbeing at the dimensions of introduction that laborers by and large face in the industrial facilities. Nonetheless, with long haul or incidental over introduction, there can be likely wellbeing dangers and all colors and synthetic substances should thus be treated with consideration. The most widely recognized peril of responsive colors is respiratory issues because of the inward breath of color particles. Once in a while they can influence an individual’s resistant framework and in outrageous cases this can imply that when the individual next breathes in the color their body can respond drastically. This is called respiratory sharpening and side effects incorporate tingling, watery eyes, sniffing and indications of asthma, for example, hacking and wheezing (Hassaan, 2016). Maybe the most dominating medical issues identified with coloring and completing procedures emerge from introduction to synthetic substances going about as aggravations. These may cause skin disturbance, irritated or blocked noses, sniffing and sore eyes. They incorporate formaldehyde-based gums, smelling salts, acidic corrosive, some psychologist oppose synthetic concoctions, some optical whiteners, soft drink cinder, burning soft drink and blanch. Certain responsive,
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