CHAPTER 1

INTRODUCTION

Over many centuries, the growth of human civilisation has benefited greatly from the textile sector. Around 6000 different chemicals are thought to be employed in the manufacture of textile and garment items. **(Sivaramakrishnan, 2012)**

Environmental friendliness is a prerequisite in the textile wet processing sector. By choosing the proper chemicals and colours for the wet processing of textiles rather than sourcing hazardous and harmful chemicals and dyes, ecological concerns can be addressed. The textile sector contributes to pollution in one way or another, as do all industrial activities. It is important to take into account how the production of textiles affects social issues like child labour and unsanitary working conditions as well as environmental factors like how it affects the air, water, land, and human body. The environmental friendliness of the finished product has now gained another dimension. This includes the restriction on azo dye which is known to be carcinogenic and the presence of dangerous compounds such as formaldehyde and certain metals. To meet consumer demands for aesthetics, handling, imparting desirable properties, etc., a large number of chemicals in enormous quantities are used in textile wet processing. Some of these chemicals, such as dyes and finishing agents, remain attached to the textiles, whereas a significant portion of these chemicals remains in processed water pollution. It has been discovered that many of the dyes and finishing compounds left on the completed fabric offer health risks. Because of this, both the government and the textile industry have taken a number of steps to lessen the pollution and potential health risks associated with the sector. **(Panda, 2021; Patel, 2004)**

In the last few decades, the chemicals employed in various production operations greatly contaminated the air, land, and water. The traditional Indian way of "walking with nature" was harmed by the urban industrial culture. The enlightened citizens stress sustainable development and view this as a darker aspect of the changes.

When dyes are made, both the intermediates and the finished product are extremely poisonous, not biodegradable, and completely recalcitrant. Certain synthetic fabrics and plastics have seriously harmed the environment.

Despite the world's current information explosion, senior managers, technicians, and chemical producers are not sufficiently aware of these important issues.

A significant amount of environmental contamination is caused by the numerous procedures employed in the textile processing sector. The wet processing of textiles typically produces a significant amount of complex and varied effluents, both in terms of quantity and properties. It is well known that wastewater from the textile sector is highly colourful, has a lot of suspended particulates, has a pH that fluctuates a lot, is extremely hot and has a high chemical oxygen demand (COD). The psychological impact of colour on water contamination is equally significant. In addition to being unsightly, the discharge of highly coloured garbage disrupts biological processes, interferes with light transmission, and may even directly cause the death of aquatic species in the receiving stream. The pollutant load is reduced in a number of ways.

The following factors have made pollution reduction innovations necessary:

- Heightened awareness of the environment
- Public policy regulations
- Global rivalry **(Arya, 2009; Kanimozhi, 2011)**

Hence, there are 3 main sections to this thesis' organisation:

First section: Chapters 1 and 2 are theoretical reflections on the Introduction, literature review, classification of fibres and list of ecofriendly wet processing products for cotton and viscose rayon.

Second section: Chapters 3 and 4 of this portion provides innovative desizing and wetting agent formulations, materials and experimental techniques employed for pretreatment of cotton and viscose rayon in woven and knitted form, as well as the findings gained and pertinent remarks.

Third section: Chapters 5 general discussion, conclusions and outlook.