

## Occupational Hazards in the Textile Printing Process

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### Abstract

The base of this research the work involves in the printing units without using proper PPE resulted in various types of physical, chemical and biological hazards. Due to these problems, the workers are affected by skin were itching, dry skin, cracks and pimple acne owing to the exposure of chemicals. Body problems comprised of pain, stiffness, and tremors in hand and pain in the elbow due to the suitable performance and lower parts. In results, it concludes that people working near the units suffering from many physical problems such as head pain, eye-irritancy, and difficulty in breathing and overflow of the drainage pipes from printing units, polluting the drinking water by mixing of chemical dyes.

**Keywords:** Occupational health, printing, safety, skin, textile industry

### INTRODUCTION

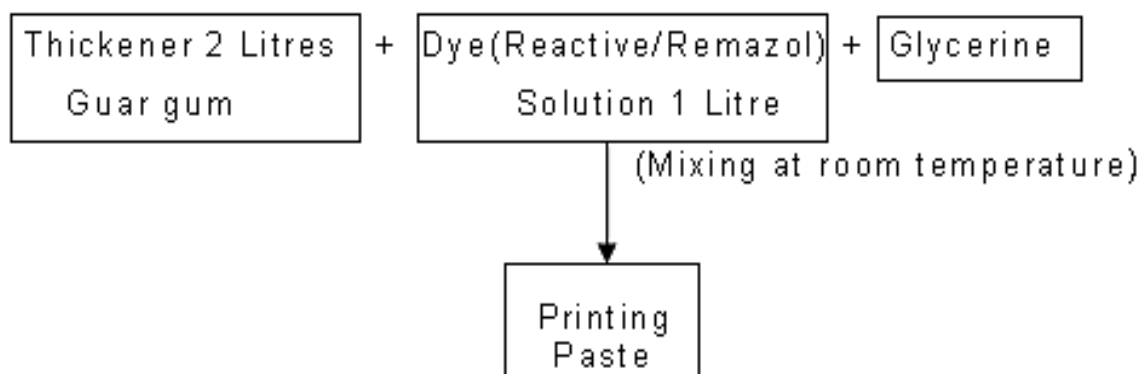
Textile unit is the second-largest unit in India. In the textile industry contributing huge employment officers. They employed almost 40 million people or employing around 30 percent of the country's labor force. There is approximately more than 3000 textile unit India. The textile industry consists of three departments are spinning, weaving and finishing. Printing is one of the finishing process and many potential hazards involving this process. At the same time management must take suitable

privation to protect the workers from the hazardous zone [1].

### The Printing Process

Printing processes undertaken within the units were printing and sodium silicate after treatment. Amongst 50 printing units, 11 units were confined to printing process whereas 39 units carried out both printing and after treatment. The production process of chemicals portrayed in Fig. 1 and printing procedure was observed to be similar in all the printing units [2].

### Preparation of printing paste

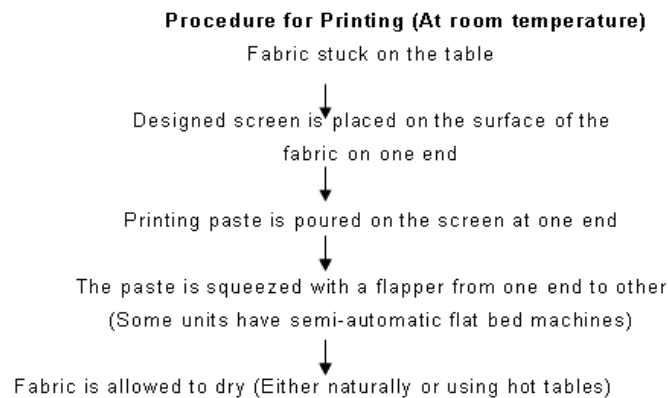


**Figure 1:** Preparation of Printing Paste.

In the initial stage, the fabric was attained in grey color by the yarn mills that is sent for the yarn market to trade for a local customer. To eliminate the original color (grey) Some chemical processing included scouring of fabric with Sodium bicarbonate and detergent to remove the actual color (grey) and dust particles from the fabric followed by bleaching using oxidizing bleach to improve white color. After the chemical process. The fabrics must be fully dry condition and sift the fabric to the printing area. It has to be cut into the suitable length as per the design to be printed i.e. for sari a length ranged between 4.4or 7 meter is needed; a fabric length of 1.8 meters for Kanga and 0.9 meters for Kitanga was required. The wax

will be applied to the printing table and fabric will be placed on it. The coating will be done either monthly or two-months once, based on the production. In most of the units, printing dyes are prepared manually by the experienced worker [2].

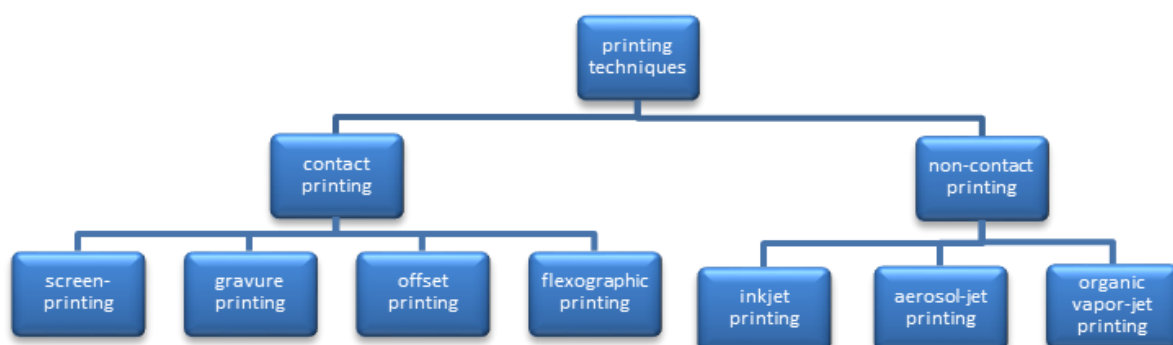
After the completion printing process, final finishing touches will be given at all border. At some port of the fabric, dye paste will not penetrate for that the process will be carried out manually with the help of a sponge dipped in dye paste. At least two to three hours the fabric must be dried on the table followed by hanging on the cords for complete drying in open sunlight area in some of the units also used hot tables for drying the fabric Fig. 2.



**Figure 2: Procedure for Printing.**

To fix the prints on the fabric the next chemical process was after treatment given with sodium silicate carried out by padding mangle the fabric was treated with a solution of sodium

silicate and was kept for 12 hours followed by drying in natural air. The fabric was then sent for washing for the removal of free silicate and gum adhered to the fabric surface [2].



**Figure 3: fabric surface Process.**

## **Printing**

With the help of organic solvent, it is prepared in case of pigment colors, to prepare the emulsion, dye or pigment is to be mixed in a correct format. To print the material with the help of engraved rollers by using emulsion [3].

## **Hazards in the Printing Process**

### ***Air Emissions***

During drying and curing process the solvents in the paint will flash outside will cause burn injury.

### ***Flammability***

It has huge flammability range and 40% solvents of thickening content [3].

### ***Physical Hazards***

In printing shops, the noise level will exceed above 100 dBA.

Usage of curing will affect UV radiation.

Possible of affecting laser light.

The printing process will cause whole-body vibration [4].

### ***Chemical Hazards***

In most of the printing unit, the usage of toxic level in chemical is very high because of that workers are getting ill in the working area. Since, a major time of a worker is spent in his workplace, the need for the concern towards health problems and factors responsible for the same becomes a decisive point of the study [4].

### ***Biological Hazards***

In printing shops the location will be cellars or oldest building may be occupied

with insects, infected with rodents. There is a possibility of spreading disease from worker to worker. Bacteria will generate. In some of the printing media, there is a possibility of bacterial hazard in the presence of bacteria [4].

## **CONCLUSION**

In every industry, they are mainly concentrating on health and safety and health measures. The worker must be thought of the occupational hazard in the industry. At the same time, it is compulsory to protect the worker from a hazardous situation by management and give suitable precaution for takes the necessary steps to protect workers from a potentially hazardous situation.

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