Dissemination of information regarding clean technologies in textile processing

■ MEENU SRIVASTAVA **and** VINITA KOKA

■ **ABSTRACT :** The present paper is a part of the research work undertaken by researcher to find out the "Environmental sensitization of textile processing units of Pali district (Raj.)". Findings of the study revealed that majority of the respondents (86.66%) were not aware about the clean technologies and about eco friendly chemicals and processes. In view of this, the researcher developed an awareness package and organize awareness generating programme at Pali District on "Clean technologies in textile processing units" for generating awareness among textile mill owners. The main aim of this campaign was to sensitize and raise awareness level of textile mill owners about clean technologies.

See end of the paper for authors' affiliations

MEENU SRIVASTAVA
Department of Textile and Apparel Designing, College of Home Science, Maharana Pratap University of Agriculture and Technology, UDAIPUR (RAJASTHAN) INDIA

Rajasthan has leading position in spinning of polyester, viscose yarn and synthetic suiting and processing, printing and dyeing of low cost, low weight fabric at several places (*http://www.rajasthan tour4u.com/business/ textile.html.*). Now a days, chemical dyes are used in textile processing units, which generate polluted effluents. At places *viz.,* Pali, Balotra, Jasol, Bithuja, Jodhpur, Sanganer and Bagru, there are concentrations of large number of small scale units of textile dyeing and printing, which discharge water containing dyes and other chemical pollutants (*http:// rajasthantextile.com/aboutrajasthan.html*).

Textile effluents discharged from various textile processing units of Pali, flow about 55 Kilometer downstream, making the ground water in several riverbank villages unfit for drinking and irrigation and also causes adverse effect on crops productivity and health of people residing in those areas. Before disposal they need to be treated for certain acceptable tolerance limits since pollution control laws are strictly followed all over the world and captured worldwide attention. The use of toxic chemicals in these units cause threat to the manpower employed in such units in a way directly resulting in occupational health hazards. Further to be in tune with the government restrictions to be connected to CETP, majority of textile processing houses/units of Pali district are now adjoined to CETP. Inspite of the installation of CETP, the Bandi River still have enormous water and soil pollution adversely affecting the fertility of soil and purity of drinking water. The major problem threatening the textile processing units of Pali is the environmental pollution arising out of wet processing of

textiles. Huge amount of water and chemicals are used in different processes which are discharged as waste water that are high in COD, BOD, TDS and toxic chemicals (Srivastava and Koka, 2014).

Sivaramkrishna (2008) discussed in his article "Effluent treatment a review" that, due to the nature of various chemical processing of textile, large volumes of waste water with numerous pollutants are discharged. Textile wastes are highly alkaline in nature. pH of effluents affects physiochemical properties of water which in turn adversely affects aquatic life, plants and humans. This also changes the soil permeability which results in polluting underground sources of water Heavy metals cause severe health and environmental problems which can cause damage to the human nervous system. (Landage, 2009). These metals tend to mount up in the human part like liver, kidney, heart, bones and brain when they are absorbed in to our body from the textile and apparels. The effect on our health can be terrific when the accumulation of heavy metals reaches high level. (Kesavan and Parameswari, 2005).

Cleaner production is an attractive approach to tackle environmental problems associated with industrial poor efficiency (Parvathi *et al.,* 2010).

The present investigation is a part of the research work undertaken by researcher to find out the "Environmental sensitization of textile processing units of Pali district (Raj.)". Findings of present study revealed that majority of the respondents (86.66%) were not aware about the clean technologies and about eco friendly chemicals and processes. Majority of respondents agreed that textile processing units create hazardous effect on the environment through water, air, noise and solid waste and affect the health of workers. Few of the respondents provide safety features at workplace. Major causes of pollution were use of synthetic dyes and chemicals, faulty drainage system, no effluent treatment in units and insufficient treatment at CETP. Respondents were also not aware about clean technologies and eco-friendly chemicals and processes. In view of this, the need to generate awareness about "Environmental pollution" to textile processing units owners was felt be make them acquainted with new technologies available to the environment in terms of water and soil.

Development of awareness package :

Clean technologies are preventive business strategy designed to conserve resources, mitigate risks to humans and the environment and promote greater overall efficiency through improved production techniques and technologies. It also improves profitability and competitiveness of enterprise in present global market.

The researcher developed an Awareness package on "Clean technologies in textile processing units" for generating awareness among owners, based on the findings of the present research, by consulting resource persons, reviewing literature, searching internet etc. Awareness aids *viz.,* pamphlets and booklets were prepared including clean technologies in textile processing and suggestive measures for prevention of occupational health hazards.

Dissemination of information among textile owners:

The researcher organized one day awareness generating programme on the theme "Clean technologies in textile processing" which was held at District club, Pali. This programme was jointly organized by common Effluent Treatment Plant and Textile Association of Pali. The main aim of this campaign was to sensitize and raise awareness level of textile mill owners about clean technologies.

The textile mill owners/managers were selected as sample for present investigation and others who were not included were also invited to attend this workshop. In total, there were 60 participants who got benefit of this workshop. The activities in awareness programme include information dissemination through lectures and interactive session with the help of power point presentation and distribution of awareness package among textile owners. They raised several queries, which were solved by the researcher quite confidently. The display of research findings with proper tables and photographs showing soil and water pollution and health hazards among workers was very alarming to them.

The researcher also distributed them a booklet entitled "Suggestive measures to prevent occupational health hazards of textile workers" is emphasizing the need of maintaining proper hygiene, sanitation, water supply, hygienic toilets, proper ventilation, lighting, health education among workers besides having the facility of first aids and safety equipments.

The researcher also provided them several internet sites to explore and contact resource persons for detail enquires.

Table 1 : Knowledge acquisition of respondents regarding clean technologies in textile processing						(n=60)
	Pre –test		Post - test			
Knowledge parameter	Mean	Standard deviation	Mean	Standard deviation	Z	Result
Awareness about the benefits of clean technologies	1.62	0.85	4.72	0.52	-24.14	***
Awareness about recycling of textile effluents	1.87	0.93	4.75	0.54	-20.78	***
Awareness about processes of reduction of waste concentration	1.90	0.90	4.82	0.43	-22.71	***
Awareness about Bio processing of textiles	1.52	0.79	4.67	0.66	-23.74	***
Awareness about eco friendly and new technologies in textile processing	2.03	0.96	4.65	0.68	-17.24	***

*** indicates significance of value at $P < 0.001$

Impact assessment of awareness workshop on respondents :

A self structured performa was prepared to assess the existing knowledge level of textile owners regarding clean technologies in textile processing. The performa was administered by personal interview method to 60 respondents. Post exposure knowledge level of the respondents was measured after dissemination of awareness through package and lectures using the same performa.

The Table 1 clearly highlights that significant difference was found in the knowledge of textile owners at pre and post exposure stage on different aspects *i.e.* Awareness about the benefits of clean technologies (Mean 1.62 ± 0.85 and 4.72 ± 0.52), Awareness about recycling of textile effluents (Mean 1.87 ± 0.93 and 4.75 ± 0.54), Awareness about processes of reduction of waste concentration (Mean 1.90 ± 0.90 and 4.82 ± 0.43), Awareness about Bio processing of textiles (Mean 1.52 ± 0.79 and 4.67 ± 0.66) and Awareness about eco friendly and new technologies in textile processing (Mean 1.79 ± 0.90 and 4.72 ± 0.57). The mean differences at post exposure stage on all the aspects were comparatively higher than that of means at pre exposure stage of respondents. These differences clearly highlighted the impact of awareness campaign on the knowledge of respondents on different aspect of clean technologies in textile processing.

Conclusion :

The developed awareness package was used to disseminate awareness about 'clean technology and 'occupational health hazards' to textile owners to make them acquainted with new technologies available to reduce the pollution load on environment in terms of soil and water. Thus the present study has been an effort to describe features and risk factors of pollution and health hazards from textile wet processing units and apply these findings towards pollution free, better and safe environment for textile workers, owners and local people.

Authors' affiliations:
VINITA KOKA, Department of Textile and Apparel Designing, College of Home Science, Maharana Pratap University of Agriculture and Technology, UDAIPUR (RAJASTHAN) INDIA

■ REFERENCES

Kesavan, K.G. and Parameswari, R. (2005). Evaluation of groundwater quality in Kancheepuram. *India J. Environ. Protec.*, **25** (3): 235-239.

Landage, M. (2009). Removal of heavy metal from textile effluent. *Colourage,* pp. 51.

Sivaramkrishna, C.N. (2008). Effluent treatment review. *Colourage,* **55** (1):42

Srivastava, M. and Koka, V. (2014). Assessment of textile effluent discharge on soil quality in Pali district of Rajasthan. *Asian J. Home Sci.,* **8** (2): 232-236.

■ WEBLIOGRAPHY

http://www.rajasthan tour4u.com/business/ textile.html.

http://rajasthantextile.com/aboutrajasthan.html

Parvathi, C., Maruthavanan, T. and Prakash, C. (2010). Environmental impact of textile industries. *http://www. indiantextilejournal.com/articles.*

12th Year
★★★★★ of Excellence ★★★★★