

TEXTILE INDUSTRY POSES ENVIRONMENTAL HAZARDS

O Ecotextiles—the producer of high quality, organic fabrics—hopes to raise awareness about textile choices and support environmentally preferable processes, practices, power sources and materials, from the start of the textile’s process to its arrival in homes. O Ecotextiles aims to change the way fabrics are made, by proving that it's possible to produce luxurious, sensuous fabrics in ways that are non-toxic, ethical and sustainable.

The textile industry has been condemned as being one of the world’s worst offenders in terms of pollution because it requires a great amount of two components:

- **Chemicals:** as many as 2,000 different chemicals are used in the textile industry, from dyes to transfer agents; and
- **Water:** a finite resource that is quickly becoming scarce, and is used at every step of the process both to convey the chemicals used during that step and to wash them out before beginning the next step. The water becomes full of chemical additives and is then expelled as wastewater; which in turn pollutes the environment:
 - by the effluent’s heat;
 - by its increased pH;
 - and because it’s saturated with dyes, de-foamers, bleaches, detergents, optical brighteners, equalizers and many other chemicals used during the process.

Traditionally produced fabrics contain residuals of chemicals used during their manufacture—chemicals that evaporate into the air we breathe or are absorbed through our skin. Some of the chemicals are carcinogenic or may cause harm to children even before birth, while others may trigger allergic reactions in some people. According to a June 5, 2005 article in Business Week, the population that is allergic to chemicals will grow to 60 percent by the year 2020.

O Ecotextiles hopes to make environmentally appealing technologies appealing and available to the mainstream, and to be among the forefront of companies raising peoples’ consciousness about the far-reaching implications of their textile choices. As such, O Ecotextiles ensures that its partners and products do not:

- support the sale and use of chemical pesticides and fertilizers to grow the fibers, which poison our soils and pollute groundwater;
- pollute wastewater; O Ecotextiles mills treat their wastewater so it doesn’t degrade our streams and waterways;
- contain harmful chemical residues that evaporate into the air or are absorbed into skin;
- accumulate in landfills; O Ecotextiles fabrics biodegrade (given conditions that allow it to proceed);
- come from producers who pay unfair wages or have poor working conditions.

Water Usage:

The textile industry is one of the most chemically intensive industries on earth, and the No. 1 polluter of clean water (after agriculture). It takes about 500 gallons of water to produce enough fabric to cover one sofa. Half a billion people already live in regions prone to chronic drought, and by 2025, that number is likely to have increased five-fold, to between one-third and one-half of the entire world population. Global consumption of fresh water is doubling every 20 years.

O Ecotextiles is thrilled to have a relationship with a mill based in southern Italy, which uses no water for the weaving process.

Water Pollution:

Mills discharge millions of gallons of effluent each year, full of chemicals such as formaldehyde (HCHO), chlorine, heavy metals (such as lead and mercury) and others, which are significant causes of environmental degradation and human illnesses. The mill effluent is also often of a high temperature and pH, both of which are extremely damaging.

All of the mills O Ecotextiles uses have wastewater treatment in place. Every 25 meters of an O Ecotextiles sofa fabric prevents 2,300 liters of chemically infused effluent—about the size of a California hot tub and containing from 1 to 10 kg of toxic chemicals—from entering the environment. (Based on VPI study for Dept. of Environmental Quality for the state of Virginia.)

Fibers:

O Ecotextiles emphasizes the use of the "bast" fibers such as hemp, linen, and abaca. A "bast" plant is one where the fiber that is spun into yarn comes from the stalk, and not the flower of the plant. Bugs don't munch on stalks, so the plants can be grown without pesticides. O Ecotextiles fibers include:

- Hemp and Flax (Linen) made from water-retted hemp, employing biological processes to extract the fiber from the stalk. The colors of the fibers vary, depending on the weather during cultivation and retting, yielding subtle, natural variations.
- Bamboo used by O Ecotextiles does not impact Panda habitats. Almost all bamboo fiber is made using the viscose process (non-viscose bamboo fiber is too coarse for furnishings or apparel), which employs sulfuric acid (often improperly handled because the processes are so laborious and expensive). O Ecotextiles is proud to produce bamboo viscose with minimal deleterious environmental effects. In its wastewater, sulfuric acid is sequestered completely and neutralized using bacteria.

O Ecotextiles uses only fibers that have been grown without any toxic pesticides, herbicides, or chemical fertilizers. The company supports maintenance of healthy soils, which in turn helps minimize global warming.

Cotton is the second-most damaging agricultural crop in the world; 25 percent of all pesticides used globally are put on cotton crops. Most cotton is irrigated, and the combination of chemical application (through pesticides and fertilizers) with irrigation is a direct conduit for toxic chemicals to circulate in groundwater worldwide. Although O Ecotextiles uses organic cotton, we try to de-emphasize its use because organic cotton is too thirsty a crop for most of the areas where it is grown. O Ecotextiles takes care to assure that the organic cotton we use comes from fields that enjoy natural rainfall sufficient to irrigate the crops. In this way, the desertification of vast areas of the globe - as in Kazakhstan and Uzbekistan around the Aral Sea - does not result in environmental catastrophe.

Sizing:

At O Ecotextiles mills, no polyvinyl alcohol (PVA) is used; the company requires its mills to use potato starch or carboxymethylcellulose (CMC) which is cellulose dissolved by an acid to become a liquid. It is used in food and is chemically inert – and non-toxic – and is allowed under Global Organic Textile Standard 2.3.5.

Bleaching:

Chlorine bleach is known to be extremely toxic to the environment and to consumers, yet chlorine-based chemicals are still often used to bleach fabrics. In O Ecotextiles' mills, the bleaching method must be oxygen-based (hydrogen peroxide) and the wastewater is treated. In one mill, ozone, a very new technology, is used for bleaching. This technology relies on cool water (rather than having to maintain the fabric in a hot water bath for many hours) and the ozone breaks down into water and oxygen.

Dyeing:

Many textile manufacturers use dyes that release aromatic amines (e.g., benzidine, toluidine). Dyebath effluents may contain heavy metals, ammonia, alkalai salts, toxic solids and large amounts of pigments - many of which are toxic. About 40 percent of globally used colorants contain organically bound chlorine, a known carcinogen. Natural dyes are rarely low-impact, depending on the specific dye and mordant used. Mordants (the substance used to "fix" the color onto the fabric) such as chromium are very toxic and high impact. The large quantities of natural dyestuffs required for dyeing, typically equal to or double that of the fiber's own weight, make natural dyes prepared from wild plants and lichens very high impact.

O Ecotextiles uses low-impact reactive dyes in a closed-loop system. While they are the lowest-impact fiber reactive dyes available, the dyes are by no means low impact. At best, about 80 percent of the dyestuffs stay on the fabric, while the rest go down the drain (although the water is contained and treated before returning to the ecosystem).

O Ecotextiles dyes contain no heavy metals, so the dye house wastewater treatment yields pristine water.



Finishing:

O Ecotextiles does not apply functional finishes (such as flame retardants) to its fabrics. However, the company offers the application—after manufacture—of certain flame-retardants that have no VOCs, PBDEs, deca-BFRs or other hazardous chemicals.

Rather than using harsh chemicals to soften and finish our fabrics, O Ecotextiles' finish is made of bees wax, aloe vera and Vitamin A.

Best Practices:

O Ecotextiles routinely reevaluates its environmental best practices and life cycle assessment in light of new developments. The company encourages dialogue among consumers about the implications of their textile choices, and is planning a textile blog where shared information can help sort out the complex issues surrounding sustainable textiles.

Sources: "Environmental Hazards of the Textile Industry," Environmental Update #24, published by the Hazardous Substance Research Centers/ South & Southwest Outreach Program, June 2006; Business Week, June 5, 2005.