Textiles literally touch us every day, whether it is the clothing we wear, household linens, or furnishings. Product characteristics (e.g., durability, ease-of-care), style, color, and price are factors in a purchase. However, due to increased awareness of the significant environmental cost associated with textile manufacturing, some people are now also considering its environmental impacts. These impacts include depleting natural resources; energy and water consumption; greenhouse gases; environmental pollution; and use of toxic chemicals. The textile process is complex with the extent of environmental impacts dependent on many factors, including the source of textile fiber, purpose of the textile, environmental consciousness of the name brand, and country of manufacture.

The source of the textile fiber is usually natural or synthetic (manmade). Conventionally grown cotton, a common natural fiber, requires significant amounts of water, pesticide, and fertilizers to grow. The World Wildlife Foundation estimates it takes 20,000 liters of water (5,300 gallons) to produce one kilogram (2.2 pounds) of cotton, equivalent to a single t-shirt and a pair of jeans. In comparison hemp, another natural fiber, is easily cultivated, requires much less land and water, and little to no pesticides and fertilizers. Organically grown fibers cultivated without pesticides and fertilizer offer a more sustainable option for natural fibers. The Organic Trade Organization provides information on organic fibers and labeling at: http://www.ota.com/sites/default/files/indexed_files/What%20are%20Organic%20Fiber%20Products.pdf.

Polyester, a common manmade fiber, is extracted from petroleum. Viscose (Rayon), another manmade fiber, is derived from cellulose (e.g., trees, bamboo). Both require energy-intensive processing with toxic chemicals. According to the Natural Resources Defense Council (NRDC), polyester energy inputs and greenhouse gas emissions in polyester production are high (125 MJ/kg (54,000 BTU/lb) fiber vs. 100 MJ/kg (43,000 BTU/lb) of viscose).
Kristen Thomas Spotlight

Please join us in welcoming the Office of Sustainable Energy and Environmental Programs’ (OSEEP) newest team member, Kristen Thomas. Ms. Thomas comes to OSEEP with 16 years of experience working for various agencies and commands within the US Army including positions as Region Energy Manager at the Installation Management Command, Environmental Chief at Eighth US Army in Seoul, South Korea, Net Zero Water Program Manager at the Office of the Deputy Assistant Secretary of the Army for Energy and Sustainability, Environmental Analyst & Sustainability Consultant for SAIC at Headquarters Forces Command, and most recently as an environmental compliance program manager at the National Guard Bureau.

Kristen developed policy and provided professional training to Army personnel on how to create sustainable facilities and communities through strategic planning, goal setting and active stakeholder involvement. She was responsible for envisioning and originating strategic and operational level program guidance, directives, specifications, procedures and work methods to implement key environmental, energy, and sustainability regulations, Executive Orders and federal mandates for Army facilities and communities.

Kristen received a Bachelor of Science in Environmental Science & Chemistry from Mercer University as well as a Master of Science in Public Policy from Georgia Institute of Technology. She is also a LEED Accredited Professional for Building Design and Construction as well as a Certified Energy Manager.

Ms. Thomas’s work with the U.S. Army began in 2000 in the Environmental Branch at Headquarters Forces Command (FORSCOM) just following the Senior Environmental Leadership Conference (SELC), held March 2000, which mandated that Army installations establish an integrated environmental strategy, with a defined end state, tying objectives to resources, and engaging stakeholders at all levels, in order to indefinitely sustain the Army mission. She served on the Army team that was established to implement this daunting order which required a monumental paradigm shift to the culture of the Army and installation management. Kristen worked closely with installations and communities to develop and implement short and long-term goals and targets to ensure that they could accomplish their missions into the future all while ensuring the sustainability of their shared environmental resources. This initiative became known as the Army Installation Sustainability Program and the team was recognized with a White House “Closing the Circle Award” for Leadership in Federal Environmental Stewardship in 2003.

Asked about her vision for integrating sustainability requirements across the Department Kristen responded, “I hope to share my experience in sustainability planning, energy management, and environmental stewardship with the Department of Commerce community and continue to build a sustainable culture into all facets of the Department. I’d like to actively facilitate a “cradle to cradle” approach to resources and implement meaningful and integrated policies and procedures that are useful and forward-reaching.”

At home Kristen incorporates sustainability by choosing to buy environmentally friendly products, purchasing low-emitting/hybrid cars for her family and utilizing mass transit whenever possible. She also has taken many steps to improve her home’s energy efficiency and water conservation.

In her free time Kristen enjoys spending time with her family, traveling, camping, kayaking, yoga, dance, and bike riding. She is also a big supporter of the hometown Washington Nationals so she has some real Natitude.

Welcome Kristen!
Safer Choice: Look for the Label

The Safer Choice label is an Environmental Protection Agency (EPA) Program aimed at helping “consumers, businesses, and purchasers find products that perform well and are safer for human health and the environment” (https://www.epa.gov/saferchoice). The program was formerly known as Design for the Environment (DfE) but has recently been re-branded, updated and included as a sustainable acquisition requirement in Executive Order (EO) 13693, Federal Sustainability in the Next Decade.

There are over 2,000 products that carry the label. The types of products on which you may see the label include many categories of cleaners, athletic field paints, pet care products, odor removers, floor care products, and many more. EPA ensures, through annual audits, that the products that carry the label pass performance standards, are more sustainably packaged, meet pH standards to reduce eye and skin irritation, have lower volatile organic compounds (VOCs) to reduce indoor air pollution, and meet strict criteria for ingredients, including carcinogenicity, reproductive/developmental toxicity, toxicity to aquatic life, and persistence in the environment.

Being required under EO 13693 means that the Department of Commerce must purchase Safer Choice products over similar products and must specify Safer Choice products in applicable service contracts, such as janitorial contracts. The Department’s performance on sustainable acquisition is tracked through the Office of Management and Budget’s Sustainability Scorecard process.

If you are a purchase card holder or someone who works on contracts that may require Safer Choice products, the best resource for you to check for Safer Choice and all sustainable acquisition requirements is the Green Procurement Compilation at https://sftool.gov/greenprocurement. This tool allows you to search by the category of product or service you are procuring and determine if any of the sustainable acquisition requirements apply. If you are interested in switching out some of your home products for Safer Choice products, the EPA’s Safer Choice website allows you to search for specific products based on their purpose (e.g. laundry detergent). Let’s all work together to demand these safer products for our workplaces, homes and communities, signaling suppliers to bring more of them to market and making them the norm instead of the exception.

United Nations and Sustainable Development

On the very first day of 2016, the United Nations (UN) officially began its implementation of the 2030 Agenda for Sustainable Development. This agenda is a transformative plan of action that is based on a total of 17 Sustainable Development Goals that address the planet’s urgent challenges for climate action, ensure sustainable social and economic progress, gender equality, and respect for the rights of all. The agenda is considered to be a road map for the people of the planet that will build of the successes of the previous Millennium Development Goals established in 2000. The United Nations recognizes the need to integrate and balance three dimensions of sustainable development-economic, social, and environmental-in a global sense. The United Nations aims to implement the agenda with an accurate evaluation of where the world stands now, to establish a baseline with a sense of opportunity and purpose. That is why the UN has created The Sustainable Development Goals Report which presents an overview of the 17 goals (see Table 1) using data that is currently available to highlight where the most significant gaps and challenges occur in order to prioritize focus to achieve significant improvement in all areas.

Some initial data analysis has shown that on our planet, one in every eight people live in extreme poverty. The UN defines extreme poverty as, “a condition characterized by severe deprivation of basic human needs, including food, safe drinking water, sanitation facilities, health, shelter, education and information.” Some other statistics include, nearly 800 million people suffer from hunger, a quarter of the world’s children under 5 have unrecorded births, 1.1 billion people live without electricity, and the scarcity of water has affected over 2 billion. This highlights how important a coordinated global effort to generate and gather data will be in supplying reliable data that will allow for follow-up and progress reporting.

The 17 Goals apply to every society and every class from rich to poor. It is important that all nations build the Sustainable Development Goal’s into their national plans and policies in order to achieve them. Although the first Report is a good starting point, it is only the tip of the iceberg to seize the opportunities presented to us and fulfill the pledge of the 2030 Agenda.
Textiles cont’d...

Polyester fiber can also be extracted from recycled items, such as recycled plastic bottles and polyester fabrics/clothing, offering a more sustainable option. Some companies now use a combination of fabric scraps from the manufacturing process and recycled bottles to create polyester fibers. The NRDC provides a summary of environmental impacts of common fibers at [https://www.nrdc.org/resources/clean-design-apparel-manufacturing-and-pollution](https://www.nrdc.org/resources/clean-design-apparel-manufacturing-and-pollution).

To complicate the analysis, textiles are often made of a combination of fibers. Once extracted, the fiber undergoes multistep chemical and nonchemical processes before becoming the finished textile. These processes can include scouring to remove impurities and enhance absorption; beaching; dying and printing; treatment to enhance characteristics (e.g., flame retardant; wrinkle-free or resistant; waterproof or water-resistant, anti-static, anti-stain, anti-odor, etc.). Some additives may wash out when laundered. Many of these processes require harmful chemicals, such as heavy metals, dyes, formaldehyde, chlorine compounds, acids, bases, solvents, oxidizing and reducing agents, and biocides. These processes use significant amounts of water and energy, and if uncontrolled pollute the environment. Some companies are moving toward using closed loop systems and digital printing in the manufacturing process, which reduces the environmental impact. To regulate harmful discharges from the textile industry, the Environmental Protection Agency (EPA) regulates the textile industry under the Clean Water Act (40 CFR 410, Textile Mills Effluent Guidelines) and the Clean Air Act (40 Coating, and Dyeing of Fabrics and Other Textiles). In addition, the EPA regulates hazardous waste generated from textile operations under the Resource Conservation and Recovery Act. Textiles processed in countries without stringent regulations or ineffective enforcement of regulations can result in significant environmental pollution and unsafe and unhealthy conditions for textile workers and the surrounding community. These conditions include uncontrolled discharges of untreated wastewater and air emissions, foamy and discolored water in waterways, particulate-laden air, and negative impacts on food sources (farming and fishing).

Once manufactured, the textile is packaged, transported for distribution and sale, and used until it reaches the end of its life. These phases of the lifecycle also have environmental impacts. The EPA estimates that from 2000 to 2013, textiles discarded as municipal solid waste (MSW) increased 36% from 8.2M tons (16.4 billion pounds) to 12.8M tons (25.6 billion pounds) and accounted for 7.7% of MSW disposed in 2013.

The complexity of the lifecycle of the textiles, as well as personal considerations in purchasing a textile product, can make trying to balance personal needs with sustainability seem daunting. Though not necessarily addressing all possible environmental and human impacts of the textile process, some certifications are available to indicate whether sustainable practices were a part of the production process. These certifications include USDA certified organic, Global Organic Textile Standard (GOTS), Fair Trade Certified™, Oeko-Tex®, and B Corps.

Donating to charity, converting worn clothes to rags or for other uses, or selling on consignment rather than disposing in the trash keeps textiles out of landfills. Some companies provide services to help consumers find sustainable options for their products once the consumer no longer needs or wants the product. The EPA estimates the benefit derived from the diversion of 2.3M tons of textiles in 2013 from landfills was equivalent to reducing greenhouse gases by 5.8M metric tons of carbon dioxide equivalent or taking 1.2 million cars off the road. Though these actions may not take the items out of the landfill permanently, they maximize use. Due to the nature the textile industry, there will most likely always be some impacts associated with creating textiles and associated products; however, consumer actions can help decrease these impacts.

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