

SUSTAINABLE MATERIALS IN OUTDOOR GEAR DESIGN

AN INVESTIGATION OF THE FUTURE OF ALTERNATIVE TEXTILES IN OUTDOOR GEAR DESIGN

ISAIAH TARWATER AND BYUNGSOO KIM
KANSAS STATE UNIVERSITY

PAPER ABSTRACT: Many of the materials and processes currently used in the production of softgoods in outdoor gear design are not sustainable and are harmful to the environment. The purpose of this study is to understand the current usage of materials and the production of waste in hopes of finding possible solutions through alternative materials and production methods. A literature review has been conducted to gauge current industry knowledge and possible emerging solutions related to materiality. This review has recognized the potential for new material development and application as well as the implementation of circular product lifecycle. Following the literature review, industry professionals were interviewed with a series of questions related to their personal experiences and opinions related to the softgoods industry. The results of the interviews indicate that participants are hopeful for the future of materiality in outdoor gear. Their responses center around potential solutions such as circular product life cycle, increased product durability, and reduced consumption of goods. The results from this study will be beneficial to professionals in the field of outdoor gear design and development. It should allow those involved with the production process to review and reconsider softgoods, their materiality, and their effects on the environment.

Keywords: softgoods, textile, sustainable, circular, waste.

1. INTRODUCTION

In the first few months of the lockdown triggered by COVID-19 pandemic in the spring of 2020, many Americans searched for an escape from their time spent inside. Many looked to outdoor sports and activities such as camping, hiking, and climbing due to their physical separation from others (Intel, 2021). Because of this rapid growth, the products of the outdoor gear industry, consisting of brands such as Patagonia and Columbia Outdoors, were seen all over the country. While this growth and time spent outside may seem harmless, many of the materials used in outdoor gear are not sustainable, meaning that if this consumption continues without a change in environmental habits, these garments could wreak havoc on our environment (Gale, 2016). However, the outdoor gear industry is working to quickly change this.

The outdoor gear industry, specifically softgoods, has long been at the forefront of innovation. Those who explore the outdoors are always in search of more. They strive to reach the highest peaks, the coldest tundra, and the hottest deserts. Historically these explorers have used clothing as their primary protection from the harsh environments around them. As a result of this demanding usage, outdoor adventurers have always been looking for the latest developments to keep the warmer, dryer, and moving faster. With the widespread introduction of synthetic textiles as a miracle material in the 1950s, adventure in the outdoors steadily became more accessible, affordable, durable, and safer (Jensen & Guthrie, 2006). However, having been given 70 years now to learn about the application of synthetic materials and their effects on the environment, designers have begun to realize that the materials used in outdoor gear are more environmentally harmful than could have previously been predicted.

According to Kirsi Niinimäki, a researcher on the environmental impacts of the fashion industry, as of 2016, 8 million tons of plastic end up in the world's oceans annually. 1.5 million tons of ocean plastic is the direct product of synthetic fabrics used in the clothes worn daily. The microplastics produced by these fibers are becoming increasingly found in the world around us. Microplastics resulting from outdoor clothing products have been found around the globe in some of the most remote places. More alarming is the amount of microplastics found in the foods consumed daily (Niinimäki et al., 2020). The plastics find their way into water supplies where they are consumed by fish or are found in the water used on crops. Microplastics resulting from this industry have become a staple of the average diet. It is estimated that the average American consumes over 52,000 plastic particles every year (De-La-Torre, 2020). Microplastics are smaller than 2.5 micrometers and can enter human cells that cause stress and inflammation. Breathing in these particles has been associated with a higher chance of dying from heart and lung diseases, as well as lung cancer (Dick, 2021). These particles collect in the body to unknown effects, as a direct result of the clothing manufacturing industry.

2. LITERATURE REVIEW

The purpose of this literature review is to understand the growing trend of sustainable material applications in the outdoor gear industry and how design can employ existing and developing solutions to be more environmentally active.

To better understand the research topic of sustainability of materials in softgoods design a search was initially conducted in the Kansas State University Library database and Google Scholar. Because this review's purpose was to better understand the current trends of the outdoor gear industry, the literature published between 2006-2022 was reviewed in this literature review. Keywords used to find articles of interest are as follows: softgoods, recycled textiles, fast fashion, textile pollution, and textile environmental impact. Once the literature found from the databases mentioned in the prior steps has been reviewed, the reference lists of the articles selected for review have been checked. The titles of the articles in the reference list pertinent to the research topic have been included for further review. As a result, three review articles, three empirical studies, three book chapters, two journal articles, and one market intelligence study related to the topic of interest were reviewed for this study. Please see the table below for the overview of the reviewed articles.

Authors	Purpose	Type of Source	Summary Points
De-la-Torre (2020)	To present a display of levels of microplastic exposure in Americans	Review Article	Due to the presence of microplastics in the world's oceans and water sources, microplastics with unknown effects have made their way into the food supply.
Ellams (2014)	To propose possible sustainable material alternatives	Review Article	Examples of sustainable fabrics such as Piñatex and Eucalyptus Lyocell were given. In addition, material benefits and application examples were given.
Gale (2016)	To propose possible negative effects accompanying current negative material trends	Journal Article	The outdoor gear industry is growing rapidly. Due to material usage and production methods used, this growth is potentially harmful to the environment. However, there are efforts to stop further harm.
Hasanbeigi & Price (2015)	To propose potential solutions to microplastic runoff at the production level	Journal Article	Most pollution from synthetic material usage is occurring at the production level. One solution to this currently being tested is microplastic filters at various steps of production.

Napper et al. (2020)	To present statistics involving the amounts of microplastics found on Earth	Empirical Study	Microplastics resulting from industry waste and general pollution can be found all over Earth's surface. In areas ranging from the peak of Mount Everest to the lowest point of the Mariana Trench there have been microplastics sampled.
Jensen & Guthrie (2006)	To present a history of synthetic material usage in softgoods	Book Chapter	Petroleum based textiles were originally introduced and have been used for decades to advance the physical properties and technologies of softgoods. Some of these properties include durability, warmth, affordability, etc.
Karell & Niinimäki (2020)	To understand the weight industrial design has on the reduction of impact	Empirical Study	Much of the environmental and social impact of a product can be reduced during the design phase. Better design awareness is crucial when considering the environmental 'weight' of a product.
Mintel (2021)	To understand the increase in production of outdoor gear	Market Intelligence Study	During the COVID-19 pandemic, there was a significant increase in Americans spending time outdoors. Because of this there was an increase in sales of outdoor goods.
Niinimäki et al. (2020)	To present statistics involving the amounts of microplastics found on Earth	Book Chapter	A significant portion of the microplastics found in the world's oceans are a result of the textiles and softgoods industries. These microplastics have begun to produce negative ecological impact.
Todor et al. (2018)	To understand additional benefits of new, environmentally friendly textiles	Empirical Study	New textiles are being developed to address the environmental impacts of previously used petro-textiles. The new materials offer additional benefits that allow them to compete with past synthetics.
Vethaak (2021)	To present a display of health hazards	Review Article	The regular respiratory exposure to airborne microplastics can cause

	from microplastic exposure		numerous severe, long-term, potentially deadly health effects.
Wilson (2021)	To present a history of various material usage in softgoods	Book Chapter	Compared to other material options, synthetic fabrics including polyester and nylon are relatively new. These materials were originally seen as a miracle with strong material benefits.

2.1 THE IMPACT OF DESIGNERS ON THE ENVIRONMENTAL IMPACT OF OUTDOOR GEAR

During the lifecycle of any product, designers are often at the product's conception stage. They lay down the plans for the styles, materials, and general design of a product. Because of this early involvement and structuring, designers often have the largest effect on what products make it to market and their attributes like materiality. It is estimated that as much as "80% of the environmental and social impacts of a product, incurred throughout its whole life cycle' could be influenced already in the product design and development phase" (Karell & Niinimäki, 2020). Designers have the responsibility to create environmentally friendly and responsible designs. They are behind the helm, dictating the future of material usage and waste worldwide. It is extremely important that designers are properly educated on the importance of green design. However, it is even more important that the companies that employ designers have environmentally friendly design in mind.

2.2 THE IMPACT OF MATERIAL USAGE ON THE ENVIRONMENTAL IMPACT OF OUTDOOR GEAR

The current usage of harmful materials and inefficient material usage in the outdoor gear industry is unsustainable in the long term and is hypocritical of the messages touted by outdoor gear manufacturers. Synthetic materials such as nylon and polyester are commonly used in softgoods used in outdoor activity. Their moisture wicking material traits and ability to insulate even when wet makes these materials a natural choice for clothes worn in potentially intense environments. These synthetic materials are a relatively new technology when compared to the timeline of textiles in history. While humans have been growing, developing, and wearing cotton since as early as 5000 BCE, polyester has only been used in clothing applications since the early 1950s (Wilson, 2021). When these synthetic materials were first introduced to the market they were seen as a miracle. Polyester could be worn and washed for hundreds of cycles without any fading or wear and tear.

Designers have learned the miracle of synthetic fabrics has come at a cost to the environment. During the production and manufacture of these fibers, microplastics smaller than easily noticed by the human eye are washed away in runoff. These microplastic fibers make their way through the water system. Even worse, as synthetic goods degrade with long-term use, microplastics are washed down the drain with each cycle. Every time synthetic softgoods are produced, worn, or washed they contribute to the spread of microplastics around the globe. Plastics resulting from synthetic fibers have been found on the peak, the lowest point of the Mariana Trench, and in the foods grown and consumed by people around

the world (Napper et al., 2020). It is estimated that 35 percent of the microplastics found in the oceans originate from synthetic materials found in clothing which is no surprise knowing that over 800,000 plastic fibers are released into the water every time a fleece jacket is washed.

2.3 EXISTING SOLUTIONS TO THE MATERIAL PROBLEMS OF SYNTHETIC GOODS

Though the effects of synthetic fibers on the planet may seem bleak, there is a conscious effort being made by outdoor clothing companies and environmental agencies to reduce these negative effects. At this point in time, there are a few different methods of approach being applied in hopes of improving the state of humanity's microplastic production. The main schools of thought are reeducation of consumers, reapplication of alternative materials, and restructuring of the manufacturing methods of synthetic textiles.

Stronger Consumer Education: Because of the modern abilities of materials, such as polyester, nylon, acrylic, etc., many consumers are not fully aware of the capabilities and needs of the goods produced with synthetic fabrics. Due to treatments available for synthetic fibers during production, capabilities such as being antimicrobial, stain and wrinkle resistant, and quick drying allow garments made with these materials to go longer between washes. It is a common belief and practice in many consumerist first world countries that clothing needs to be washed immediately after a wear cycle. However, with these modern marvel materials, this is not always the case. By potentially avoiding wash cycles of these goods, the amount of microplastic runoff in a garment's lifespan can be reduced.

Environmentally friendly material: As new petrochemical-based fabrics were being developed in the clothing boom of the 1950s, a similar development boom is happening in the outdoor gear and fashion industries today. New, environmentally friendly materials are being developed every year using materials ranging from processed food scraps to existing recycled garments. Example of promising textiles derived from plant matter include Piñatex and Eucalyptus Lyocell (Ellams, 2014), both of which use common waste at the commercial and consumer levels in advanced production techniques to produce high grade, technical fabrics. Many of these new materials are being rapidly developed to specifically address the environmental issues of current synthetics, and have many of the same traits (durability, antimicrobial, stain resistance) with the bonus of being environmentally friendly (Todor et al., 2018). By focusing on the most basic level of garment microplastic production, the outdoor gear industry can address the runoff problem before it ever reaches the consumer level.

Current Industry Solutions: One of the most cost-effective approaches to material sustainability begins with production at the textile factory level. Currently, many industrial factories are focused solely on profit as the bottom line of their business. However, there are a few existing solutions that could be easily implemented through individual factories or spread legal action that would limit the impact of synthetic fabrics without much change to the current cost or production time. One existing solution is microplastic filters and screens installed at various steps of the production process (Hasanbeigi & Price,

2015). These filters can be installed in wash tanks and textile cleaning areas and stop microplastics of production from hitching a ride with the factory's wastewater. Another approach at the production level is more reliant on the process of garment production itself, simply reducing material waste per garment. By creating designs and patterns that are more efficient with their fabric usage, and finding alternative uses for synthetic fabric offcuts, the amount of petrochemical waste per garment would be reduced.

2.4 DESIGN OPPORTUNITIES

The outlook for the future of humanity's production of microplastics and the unknown nature of the effects of microplastics on the environment, the food supply, and the human body is not good. The production of microplastics in the oceans has risen steadily for decades now with no end in sight. Plastic waste has been spotted in the most remote areas of the Earth, areas that should be untouched by human hands. Microplastic fibers originating from clothing goods have been found in human breast milk consumed by infants. While the effects of microplastics are still unknown, it is more important now than ever that designers focus on this problem that is affecting the entire human race. As designers, there is an obligation to create the best future possible in the ways designers are able. By addressing problems such as petrochemical material runoff, waste and inefficiency in the outdoor clothing industry, and excess usage of potentially harmful materials in effort to cut manufacturing costs, designers are practicing their moral obligation.

2.5 FINDINGS

After gathering the information explained in this literature review, it has been determined that there is a gap in investigational materials regarding potential future applications of non-traditional materials in outdoor gear softgoods. Softgoods companies with little waste or circular product development should be noted and their policies adopted industry wide. Future research of the subject of outdoor gear design should include advanced, in-depth analysis of current student projects as well as current market available products. Future research should also include surveys, user studies of outdoor activity enthusiasts with needs relating to environmentally friendly goods, and research into the durability of new plant-based textiles, or the effective application of modern technologies into petrochemical textiles. Potential applications of environmentally friendly materials should be centered around durability and a circular product cycle.

3. INTERVIEW

3.1 PURPOSE OF THE INTERVIEW

Softgoods design and production is currently one of the top contributors to global plastics pollution. The current techniques to mitigate these effects during and after the production process are not maintained at a safe or satisfactory level. The future of the design world as well as Earth's population are reliant on current techniques and regulations to minimize plastic pollution. Previous studies in the literature review have explored how designers affect the environmental impact of outdoor gear and identified

solutions for the material issues related to synthetic goods. However, there have been only a few recent studies that specifically investigate these topics from the viewpoint of design practitioners. This study is designed to evaluate the current pollution prevention measures in place in the field of outdoor gear design. By interviewing current and past designers with experience in the field, the study can analyze and determine possible future solutions. The research questions of this study are as follows: 1) What are the current major developments in industrial design regarding pollution? 2) How important is material efficiency in designing environmentally friendly products? and 3) What are the challenges of integrating environmentally friendly aspects into the design process?

3.2 METHODOLOGY

A set of semi-structured interviews were conducted virtually using the Zoom video calling application. These interviews allowed strong insight into the thoughts and opinions of industrial designers with varying levels of experience with soft goods design in consideration of plastics pollution and material waste. A thematic analysis was then conducted to analyze the interview findings and properly report the findings.

3.3 DATA COLLECTION

The participants for the series of interviews were recruited directly using the following criteria: 1) industrial design professionals with 6+ months experience and 2) designers with experience regarding softgoods design or pollution and waste consideration. The interview participants were recruited via email based on their experiences in the field. Interview questions such as 1) "Do you see any major developments currently in the industrial design field regarding pollution?", 2) "In your opinion, how important is the consideration of material efficiency regarding the environment?", 3) "Do you actively consider material efficiency and usage at any stage of the design process?", were asked of the participants by the interviewer. The interview plan was reviewed and approved by the Institutional Review Board (IRB) at Kansas State University (IRB protocol number: 11591).

3.4 DATA ANALYSIS

Data for the study was collected through qualitative interview responses from the participants. In order to further organize and sort the participant's interview responses, a thematic analysis was performed. Multiple major themes were recognized as a result of the analysis: Circular Product Life Cycle, Reduced Waste Through Reduced Consumption, Positive Independent Brand Initiatives for Consumers.

3.5 RESULTS

PA 1 is an industrial design professional with 4+ years of experience in the softgoods industry. PA 2 has experience in softgoods design and is also currently a professor at the Fashion department at the author's university with a doctorate in fashion/apparel design. PA 3 is a footwear designer interested in pollution and waste consideration.

Ideal Circular Product Life Cycle: PA 1 focuses on the realistic approach to the ideal of the circular product life cycle. They look at what they can affect directly with their designs in the current moment

instead of focusing on the ideal scenario. In contrast, PA 2 believes in a reworking of the system from the ground up. If their environmentally friendly designs are then being shipped using wasteful methods or are produced unethically, then all good done by the environmentally friendly design has been offset. They propose working in small scale, local sectors with native materials and short distances of travel for delivery. PA 3 believes in implementation of a circular life cycle whenever possible. In their opinion, even if the implementation is not perfect, any chance of biodegradable or repurposed softgoods will help the environment.

Reduced Waste Through Reduced Consumption: PA 1 reports their core mantra of sustainable production practices as “the only way to truly stop waste is to stop the production of unnecessary goods”. They refer to the use of durable, compostable materials such as hemp and wool, used in designs that are made to last. PA 2 suggests durability in a similar way with focus on the reuse of materials and repurposing of old soft goods. PA 3 recommends a route of production efficiency and reduced waste as an alternative to reduced consumption. They suggest that the sale of softgoods will not dwindle in the current economy. Instead of focusing on consuming less, they recommend making this consumption more ethical.

3.6 SUMMARY

Participants appreciate the concept of environmentally sustainable design but dislike the current state of goods being sold under the guise of ‘green washing’. These falsified campaigns, whether purposefully or ignorantly misleading, greatly detract from the mission of legitimate green businesses. Participants consider multiple green steps during their design process such as consciousness of material in early design stages, attention to the percentage of waste for each product produced and putting the amount of waste from the production of goods into a visible amount to contemplate, in contrast to presenting opportunities for environmentally friendly outdoor gear production include clarity of waste and materiality from manufacturer to consumer, open communication, and conscious focus on waste throughout the design process, and reworking of the production methods and materials used by major companies to lessen their environmental impacts on a large scale.

3.7 FINDINGS

The interview results are reflected by reviewing the literature review results. Below is the connection between the literature review and interview results.

The Impact of Designers on Environmental Impact: The literature review emphasizes the significant influence that designers have on the environmental impact of outdoor gear through their decisions on materials and product design, influencing up to 80% of the environmental and social impacts of a product throughout its lifecycle. The interview results further discuss the responsibility of designers in creating environmentally friendly designs and the need for proper education and awareness among designers and the companies that employ them.

Solutions to Material Problems: The literature review presents various solutions to mitigate the negative effects of synthetic goods, including stronger consumer education on proper garment care, the development of environmentally friendly materials, and implementing sustainable practices at the production level. The interview results further discuss strategies such as implementing microplastic filters in production processes and reducing material waste through more efficient design and the ethical use of the materials in production.

Design Opportunities and Moral Obligations: The literature review stresses the importance for designers to address the problems associated with petrochemical material runoff, waste, and excessive usage of potentially harmful materials. It highlights the need for designers to focus on fulfill their moral obligation in promoting environmental sustainability. The interview results reflect this sentiment, with professionals discussing their approaches to circular product life cycles, reducing waste through reduced consumption, and promoting ethical production practices.

4. DISCUSSION

This study investigates the increasing adoption of sustainable materials in the outdoor gear industry and emphasizes the crucial role of design in advancing environmental sustainability. The study highlights the significant influence that designers have on the environmental impact of outdoor gear through their material and product design choices. Considering the adverse effects of synthetic materials on human health, it is vital for industrial designers to prioritize this issue.

Moving forward, future studies should analyze the direct pollution of current materials most used in the outdoor gear design field. These materials and their alternatives could be directly compared to monitor their effects on the environment throughout their lifecycle. Studies should include a wide array of materials currently used as well as materials currently in development in order to gauge their potential positive effects through application. Studies should not separate natural materials from the petro-textile counter parts during the studies to directly observe their pollutive qualities in comparison to each other. Future soft goods should consider the durability as well as the reutilization or biodegradability of materials used in their production.

The next step is to identify specific design opportunities for industrial designers in the outdoor gear industry through a comprehensive survey. By conducting a survey among industrial designers and professionals in the field, valuable insights can be gathered regarding their perspectives, experiences, and innovative ideas related to environmental sustainability in design. The survey will aim to explore their current practices, challenges faced, and potential design opportunities they perceive. This primary research method will complement the literature review and interview results, providing a broader and more diverse range of perspectives. By incorporating the survey findings into the analysis, the next study

will present a comprehensive understanding of the design opportunities available to industrial designers in promoting environmental sustainability in the outdoor gear industry.

5. CONCLUSION

Primary results from the interviews conducted and the literature review conducted show the dangers of the waste and pollution produced by current outdoor gear industries, focusing specifically on softgoods. If left unchecked the current pollution and waste of industry could be detrimental to the environment and the materiality of the produced goods could hold the answer. Potential material related solutions relate to durability of materials used, end of life protocol for used outdoor gear, circular product life cycle, and efficient use of materials during production. Interview results from industry professionals show a high consciousness for material usage in current softgoods design with high hopes for the future of the industry and the environment. Product opportunities should focus on the application of newly developed materials by major brands and potential changes in design styles to emphasize the importance of material life cycle and durability in current products.

6. REFERENCES

- De-la-Torre, G. E. (2020). Microplastics: an emerging threat to food security and human health. *Journal of food science and technology*, 57(5), 1601-1608.
- Ellams, D.L., Christie, R.M. and Robertson, S. (2014), An approach to sustainable coloration of lyocell fabrics by screen printing using extracts of leaves and bark from eucalyptus. *Coloration Technol*, 130: 48-53. <https://doi.org/10.1111/cote.12056>
- Gale. Outdoor gear could be harmful. (2016, February 1). just-style.com. <https://link-gale.com.er.lib.kstate.edu/apps/doc/A463762503/GBIB?u=ksu&sid=bookmark-GBIB&xid=b5735323>
- Hasanbeigi, A., & Price, L. (2015). A technical review of emerging technologies for energy and water efficiency and pollution reduction in the textile industry. *Journal of Cleaner Production*, 95, 30-44.
- I.E. Napper et al. *Reaching New heights in plastic pollution — preliminary findings of microplastics on Mount Everest. One Earth*. Published online November 20, 2020. doi: 10.1016/j.oneear.2020.10.020.
- Jensen, C. R., & Guthrie, S. (2006). Outdoor recreation in America. *Human Kinetics*.
- Karell, E., & Niinimäki, K. (2020). A Mixed-Method Study of Design Practices and Designers' Roles in Sustainable-Minded Clothing Companies. *Sustainability*, 12(11), 4680. <https://doi.org/10.3390/su12114680>
- Mintel. (2021). Outdoor Vacation Activities [Review of Outdoor Vacation Activities]. *Mintel*. <https://reports-mintel-com.er.lib.kstate.edu/display/1065563/?fromSearch=%3Ffreetext%3DCamping%26resultPosition%3D17>
- Niinimäki, K., Peters, G., Dahlbo, H., Perry, P., Rissanen, T., & Gwilt, A. (2020). The environmental price of fast fashion. *Nature Reviews Earth & Environment*, 1(4), 189-200.
- Todor, M. P., Bulei, C., Heput, T., & Kiss, I. (2018). Researches on the development of new composite materials complete/partially biodegradable using natural textile fibers of new vegetable origin and those recovered from textile waste. In *IOP Conference Series: Materials Science and Engineering* (Vol. 294, No. 1, p. 012021). IOP Publishing.
- Vethaak, Legler, Microplastics and human health. *Science* 371,672-674 (2021).
- Wilson, K. (2021). A history of textiles. Routledge.

7. APPENDIX

A. INTERVIEW QUESTIONS

- What kind of experience do you have in the industrial design field?
- In what specific field of industrial design are you currently employed?
- What role does your current job encompass?
- Do you consider yourself to be a “green designer”? What does environmentally friendly design mean to you?
- Does your company use any unique or environmentally friendly materials in their currently available designs?
- In your opinion, what does the future of softgoods design look like regarding environmental impact?
- Are there any brands you look at or admire due to their materials or environmentally friendly efforts?
- What are your thoughts on the use of alternative materials (recycled textiles, plant-based textiles, new technologies)?
- What potential negatives do you see with these materials?
- Do you see any major developments currently in the industrial design field regarding pollution?
- In your opinion, how important is the consideration of material efficiency regarding the environment?
- Do you actively consider material efficiency and usage at any stage of the design process?
- What challenges do you face when integrating environmentally friendly aspects into the design process? What are your future goals for your designs and their consciousness of the environment?

B. RECRUITING CONTACT

Dear [Name]:

I am conducting a research study on the environmental effects of outdoor gear design. Participation will take 30 to 45 minutes. If you are interested, please return contact with dates and times in the next few weeks that you are available to meet either in person or over Zoom. There are no known risks involved in this research and interview questions are flexible around your comfort and consent. If you have any questions, please let me know.

C. IRB APPROVAL LETTER



TO: Byungsoo Kim
Interior Arch & Indus Design

Proposal Number: IRB-11591

FROM: Lisa Rubin, Chair
Committee on Research Involving Human Subjects

DATE: 03/17/2023

RE: Proposal Entitled, "Softgoods Design: A Path towards Sustainability in Outdoor Gear for Environmentally Conscious Sport Enthusiasts."

The Committee on Research Involving Human Subjects / Institutional Review Board (IRB) for Kansas State University has reviewed the proposal identified above and has determined that it is EXEMPT from further IRB review. This exemption applies only to the proposal - as written - and currently on file with the IRB. Any change potentially affecting human subjects must be approved by the IRB prior to implementation and may disqualify the proposal from exemption.

Based upon information provided to the IRB, this activity is exempt under the criteria set forth in the Federal Policy for the Protection of Human Subjects, **45 CFR §104(d), category:Exempt Category 2 Subsection ii.**

Certain research is exempt from the requirements of HHS/OHRP regulations. A determination that research is exempt does not imply that investigators have no ethical responsibilities to subjects in such research; it means only that the regulatory requirements related to IRB review, informed consent, and assurance of compliance do not apply to the research.

Any unanticipated problems involving risk to subjects or to others must be reported immediately to the Chair of the Committee on Research Involving Human Subjects, the University Research Compliance Office, and if the subjects are KSU students, to the Director of the Student Health Center.

Electronically signed by Lisa Rubin on 03/17/2023 11:41 AM ET

203 Fairchild Hall, Manhattan, KS 66502 | (785) 532-3224 | fax: (785) 532-3278