

THE UNIVERSITY OF SOUTHERN CALIFORNIA
Marshall School of Business
DSO 505 (16298) – Sustainable Supply Chains – Fall 2020

Time: Wednesdays, 2:00-5:00 pm (via Zoom)
Wednesdays, 6:30-9:30 pm (via Zoom)

Instructor: Dr. Greys SOŠIĆ

E-mail: sosic@marshall.usc.edu

Zoom office hours: W 5:00-6:00 pm, M 2:00-3:00 pm

COURSE SCOPE AND OBJECTIVES

Environmental issues and sustainability efforts can open many opportunities for businesses—product innovation can lead to first-mover advantage, environmental product differentiation can open new markets, green sourcing and waste reduction can reduce operating cost, and so on. At the same time, they can present significant challenges—for instance, governments and communities are imposing higher standards on pollution, resource exploitation, etc.

Upon successful completion of this course, students will be able to:

- Explain the sustainability challenges and opportunities facing supply chains today and master relevant vocabulary and tools;
- Describe the factors that are contributing to the adoption of sustainability strategies, such as legislations that are penalizing negative environmental and social impacts, and society's expectations of business in terms of health, human rights, and the environment;
- Demonstrate that supply chains today cannot be concerned only with creating shareholder value; their performance is also measured in terms of social, environmental and economic impact;
- Engage in introducing/adopting/expanding sustainability practices in their field of work.

The main topics covered in the course are:

- ❖ Sustainability concepts and frameworks
- ❖ Sustainable design of products
- ❖ Carbon footprint and lifecycle assessment
- ❖ Closed-loop supply chains
- ❖ Supplier management
- ❖ Facilities management
- ❖ Renewable energy
- ❖ Transportation decisions
- ❖ End-of-life management
- ❖ Strategic sustainability implementation.

The class format includes lectures, case discussions, and movie clips.

COURSE MATERIALS

Required: *Course Reader (CR)* – Package of cases and readings available at USC bookstore. In the syllabus, a number such as CR#5 refers to 5th article in sequence in the course reader.

Digital version of the course reader can be purchased at
www.universitycustompublishing.com

Handouts (HO): Handouts posted on the Blackboard.

Recommended:

- ❖ *Drawdown: The Most Comprehensive Plan Ever Proposed to Reverse Global Warming* edited by P. Hawken, Penguin Books, 2017.
 - ❖ *Climate Shock: The Economic Consequences of a Hotter Planet* by G. Wagner, M.L. Weitzman, Princeton University Press, 2015.
 - ❖ *This Changes Everything: Capitalism vs. The Climate* by N. Klein, Simon & Schuster, 2014.
 - ❖ *Cradle to Cradle: Remaking the Way We Make Things* by W. McDonough, M. Braungart, North Point Press, 2002.
 - ❖ *The Responsible Company* by Y. Chouinard and V. Stanley, Patagonia Books, 2012.
 - ❖ *Reinventing Fire: Bold Business Solutions for the New Energy Era*, by A. Lovins, Chelsea Green Publishing, 2011.
 - ❖ *Green to Gold: How Smart Companies Use Environmental Strategy to Innovate, Create Value, and Build Competitive Advantage* by D.C. Esty, A.S. Winston, Yale University Press, 2006.
 - ❖ *Earth, Inc.: Using Nature's Rules to Build Sustainable Profits*, G. Unruh, HBP, 2010.
 - ❖ *The Ecology of Commerce: A Declaration of Sustainability* by P. Hawken, Harper Paperbacks, 2010.
 - ❖ *Natural Capitalism* by P. Hawken, A. Lovins, L.H. Lovins, Little, Brown and Company, 2008.
- ... and many others... You can also look at a number of journals, such as *Science*, *Nature*, *Scientific American*, etc.

COURSE POLICIES

This class will be entirely online. Students should ensure that they can access all of the online tools via Blackboard prior to the start of classes.

The course covers both quantitative and qualitative materials, and uses cases for discussion of issues and illustration of approaches. We will use Excel as a modeling/solution finding tool when addressing several topics. Active participation in class is important throughout the course.

If you are located in a time zone where the synchronous class sessions or exams fall outside the window of 7 a.m. to 10 p.m. in your local time zone, please contact me. You will not be penalized for not attending the live Zoom class sessions. The Zoom sessions will be recorded and posted on Blackboard, and you will be responsible for watching the recorded sessions.

If you are watching live, you can share your comments with class and you should participate in PollEverywhere; if you watch the recordings, you can email me your thought before or after class. I will also consider participation in the Discussion board on the Blackboard.

ZOOM POLICIES

Zoom is the platform used for all online sessions and online office hours. A link and instructions to join the Zoom sessions will be posted in the Blackboard Course Pages. For more information about Zoom, go to: [Zoom Support Tutorials](#)

When logging in to Zoom, you should use your full name so that I can track your attendance. While logged in, your camera should be turned on. If there is a reason that prevents you from having your camera turned on, please let me know ahead of time. Your microphone should be turned off whenever you are not participating in class discussion. You should not share the class Zoom link and/or password with anyone to avoid Zoombombing.

During synchronous Zoom sessions, the following netiquette is expected, as if you were in a physical classroom.

Please do:

- Log into class early or promptly
- Arrange to attend class where there is a reliable internet connection and without distractions
- Dress respectfully. Video conference business meetings are and will be the norm, so practice your professional telepresence.
- If you use a virtual background, please keep it respectfully professional.
- Display both your first and last name during video conferencing and synchronous class meetings.
- Respectfully minimize distractions by muting and or turning off video if necessary and when appropriate.
- Engage in appropriate tone and language with instructors and classmates.

Please try not to:

- Engage in a simultaneous activity not related to the class.
- Interact with persons who are not part of the class during the class session.
- Leave frequently or not be on camera for extended periods of time.
- Have other persons or pets in view of the camera.

POLLING POLICIES

When logging in to PollEverywhere, please use your full name so that I can track your participation!

GRADING

Group case report (1)	15%
Individual short submissions (5 out of 8)	15 %
LBC assignment	10%
Emissions assignment	5%
Test	45%
Class participation	10%

GROUP CASE REPORT

Please form teams of up four persons within the first two weeks; you will be working in these teams for the group assignments. Use the “Group” option on the Blackboard to join one of the existing teams (do not create new ones as you will not be able to see the assignments!).

The case is to be discussed within your team and you will submit (as a team) a written report. This Syllabus provides some suggested questions that you should address in your analysis. Each team is required to submit a report on one case study (Patagonia in week 6). Case write-up should be at most 4 pages and single-spaced (11 or 12 point font), with appendices attached (not included in the number of pages). It should be submitted on-line through the Blackboard.

When preparing your report, imagine that you, as a consultant, have to study an organization, to identify the main issues it faces, and to propose a set of recommendations. Your written report should begin with an executive summary, about half page long, summarizing the most important problems and your recommendations (think about it as the “elevator pitch”—you have to explain the main details of your report to an executive during the elevator ride). The rest of the report should be organized as follows:

1. Brief description of the company and its environment
2. Brief description of the problems and issues to be addressed (the questions in the syllabus related to the specific case should guide you in identifying those issues).
3. Recommendations and implementation plan.
4. Analysis that discusses why the recommendations will solve the problems identified.

You may choose to organize the report differently; however, please ensure that the above aspects are

covered and the report is well organized with clear section and sub-section headers. Please avoid repetition of case facts and long expositions (remember the page limit)! Consider what you believe are the most important factors (and why). General solutions to specific problems will get you little credit. Creativity in analysis and suggestions that are grounded in case facts will be given high credit. Please state any assumptions made clearly.

GROUP ASSIGNMENT EVALUATION

Team assignments provide a valuable learning experience—how to work effectively and efficiently in groups, learning from others, and honing your ability to communicate to others. Although your team's grade depends on each member's efforts, some students can be tempted to let others carry their load. In order to provide an incentive for all students to make maximum contributions to the study group, you will be asked to grade each team member's contributions. Your group grades will be adjusted to obtain an individual grade based on feedback about performance provided by other members of the group (see the group assessment forms posted on the Blackboard). If you do not submit your group assessment form, it is assumed that you have assigned a rating of 100% to all your group members. The forms can be submitted in person or via e-mail, but no later than the exam date.

INDIVIDUAL SHORT SUBMISSIONS

In addition to the case for which you are required to submit group report, we will be discussing other cases and articles. You should be prepared for class discussion, and this Syllabus provides some suggested questions that you should address. For the individual submissions, follow the link on the Blackboard and enter the required information before the class. The objective of the short submission is to ensure that you prepare the case. For that reason, no late submissions will be accepted.

Unlike the assignments discussed in previous sections, which are meant to be solved in teams, this section discusses individual submissions, which means that you have to prepare them on your own. You can talk about the assignments with your colleagues or me, but you have to prepare and submit them individually. If you use any material outside of that provided as part of the class (found on Internet, journal articles, etc.) make sure to reference it properly; see section on academic conduct for more details.

As long as your answer shows that you have given sufficient thought to the analysis, you will get full credit. Note that this in general requires answers that are longer than one sentence. Each submission is worth up to 3 points, and the maximum number of points you can obtain for individual submissions is 15. If your total exceeds 15 points, it can improve your participation grade (note that in this case, each additional submission does not increase your participation by 3 points).

INDIVIDUAL ASSIGNMENTS

There will be two individual assignments, one scheduled for week 5 (LBC) and one scheduled for week 6 (emissions). They are based on class exercises and should help you prepare for the exam questions. They are not meant to be solved in teams, you have to prepare them on your own.

EXAM

The exam is scheduled for week 7 (September 30). The questions will have several formats: multiple choice, true/false, and problems.

You will take the exam on the Blackboard; it will appear on the "Assignment" page. The class meeting at 2 pm will have the exam starting at 2 pm; the class meeting at 6:30 pm will have the exam starting at 7 pm. If you are located in a time zone where the exams fall outside the window of 7 a.m. to 10 p.m. in your local time zone, please contact me (at least two weeks prior to the exam date) so that we can arrange for an appropriate time for you to take the exam.

Once you start, you have to complete the exam in one two-hour sitting (no logout/login allowed). In case

you experience a computer malfunction or a power outage that logged you out of the exam, you should notify me immediately so that I can manually allow you to login again and finish the exam. If you fail to notify me immediately, you will not be able to complete the exam and only the part that was recorded will be graded.

If there are extenuating circumstances that prevent you from taking the test, you must discuss the reason with me before the time of the test. You will not be given a make-up test unless you obtain a permission from me in advance. In addition, you must be able to document the extenuating circumstance. If you miss the test due to a medical emergency that can be documented and verified, then a make-up test will be given. Otherwise, a grade of zero will be given for the missed test. Note that a make-up test cannot be taken before the actual test date!

GRADING

Graded work will be posted on the Blackboard. Disputes over graded material should be brought to my attention as soon as possible.

CLASS PARTICIPATION

Class participation requires that you do the assigned readings, analyze the cases based on the questions given and participate actively in class. I prefer substantive comments based on good analysis rather than brief, general comments that add little to the discussion and learning. Indicate you have something to say by clicking on the raised-hand icon. Be prepared to defend your suggestions or solutions!

At the same time, be aware that it's OK to ask a question that you think may be unsophisticated or uninformed. Being too shy to ask a question will only hurt your understanding of the material. You should feel that we are in a supportive and non-judgmental environment and there is no such thing as a bad question or bad response to a question. Consider also the following:

- Don't worry about impressing people; do not keep quiet not to out of concern for what others will think about what you say.
- Ask questions when you do not understand; do not assume you know what others are thinking.
- Ask for clarification if you are confused; ask clarifying questions if you do not understand a point raised.

I will use PollEverywhere to assess your understanding of the material. Your answers on PollEverywhere will count towards your participation. If you are attending class live, you are expected to participate in PollEverywhere. If you are just logged in and do not answer PollEverywhere questions, I will assume that you were not attending class.

If you are attending the class live, you can also comment in the chatroom.

If you are not physically attending but would like to show your preparation, please provide me with your analysis/comments through email. This may include material related to the topics covered in class from your work experience, from additional articles/videos that you have found, readings on the Blackboard, etc. You can also contact me through Skype, by arranging a time window that works for both you and me.

I also encourage you to participate in the Discussion board on the Blackboard, where you can discuss the case readings, post additional relevant material (readings, videos, website links, etc.), start discussion with your colleagues, and so on. At the same time, just posting "You made a great point!" or similar type of comments will not contribute much to your participation grade.

GETTING HELP

If you have questions about any aspect of the course, you can always talk to me. If it is a quick question, you can contact me before or after the class, or during the break. If you need more time or privacy, you

can contact me during office hours. If you cannot make my office hours, you can email me and we can arrange for an alternative time.

TECHNOLOGY REQUIREMENTS

The following equipment and system requirements are recommended to successfully participate in this online course:

- Computer with webcam
- Earphones or headset
- Reliable (preferably high speed) Internet connection
- Current operating system for Windows or Mac
- Current browser
 - o Google Chrome
 - o Firefox
 - o Internet Explorer (not recommended)
 - o Safari (Mac)

For technical support please see:

- USC Systems (Blackboard, USC Login, MyUSC, USC Gmail, GoogleApps)
For assistance with your USC login or other USC systems, please call +1 (213) 740-5555 or email Consult@usc.edu. They are open Mon – Fri 9:30am – 5pm and weekends from 8am - 5pm (all Pacific time).
- Zoom Video Web Conferencing System (MarshallTALK)
For assistance using Zoom, go to Zoom Support Page. You may also call +1 (888) 799-9666 ext. 2. They are available 24/7.
- Marshall Systems (MyMarshall, Marshall Outlook email)
For assistance with Marshall systems you can call +1 (213) 740-3000 Mon-Fri 8am-6pm (Pacific), email HelpDesk@marshall.usc.edu, or use our self-help service portal as shown below. The portal allows you to get immediate assistance by searching for the information you need. You can also use it to chat with a technician or input a request. To access the service portal, follow these steps:
 - o On a computer or mobile device, go to MyMarshall Home Page and click the “Help” link on the upper right.
 - o Log in using your Marshall username and password.
(If you don’t know your Marshall login please follow the onscreen instructions pertaining to login issues)

If your computer does not have Microsoft Word, Office 365 package is available to you free of charge and allows you to install Word, Excel, PowerPoint, Outlook, OneNote, Publisher, and Access on up to 5 PCs or Macs and Office apps on other mobile devices including tablets. Office 365 also includes unlimited cloud storage on OneDrive. To download Office 365 log into your student (University) email through a web browser, choose Settings (top right corner), and select software. If you have further questions or need help with the software, please contact the USC ITS service portal.

ACADEMIC CONDUCT

Students are expected to make themselves aware of and abide by the University community’s standards of behavior as articulated in the Student Conduct Code. Plagiarism – presenting someone else’s ideas as your own, either verbatim or recast in your own words – is a serious academic offense with serious consequences. Please familiarize yourself with the discussion of plagiarism in *SCampus* in Part B, Section 11, “Behavior Violating University Standards” <https://policy.usc.edu/scampus-part-b/>. Other forms of academic dishonesty are equally unacceptable. See additional information in *SCampus* and university policies on scientific misconduct, <http://policy.usc.edu/scientific-misconduct>.

SUPPORT SYSTEMS

Counseling and Mental Health - (213) 740-9355 – 24/7 on call
studenthealth.usc.edu/counseling

Free and confidential mental health treatment for students, including short-term psychotherapy, group counseling, stress fitness workshops, and crisis intervention.

National Suicide Prevention Lifeline - 1 (800) 273-8255 – 24/7 on call
suicidepreventionlifeline.org

Free and confidential emotional support to people in suicidal crisis or emotional distress 24 hours a day, 7 days a week.

Relationship and Sexual Violence Prevention and Services (RSVP) - (213) 740-9355(WELL), press “0” after hours – 24/7 on call

studenthealth.usc.edu/sexual-assault

Free and confidential therapy services, workshops, and training for situations related to gender-based harm.

Campus Support & Intervention (CSI) - (213) 740-0411

<https://campussupport.usc.edu/>

A team of professionals here to assist students, faculty, and staff in navigating complex issues. Whether you are here seeking support for yourself or someone else, we are available to help you problem solve, understand options, and connect with resources. Please note that we are not an emergency resource and are not available 24/7.

Office of Equity and Diversity (OED)- (213) 740-5086 | Title IX – (213) 821-8298

equity.usc.edu, titleix.usc.edu

Information about how to get help or help someone affected by harassment or discrimination, rights of protected classes, reporting options, and additional resources for students, faculty, staff, visitors, and applicants. The university prohibits discrimination or harassment based on the following *protected characteristics*: race, color, national origin, ancestry, religion, sex, gender, gender identity, gender expression, sexual orientation, age, physical disability, medical condition, mental disability, marital status, pregnancy, veteran status, genetic information, and any other characteristic which may be specified in applicable laws and governmental regulations. The university also prohibits sexual assault, non-consensual sexual contact, sexual misconduct, intimate partner violence, stalking, malicious dissuasion, retaliation, and violation of interim measures.

Reporting Incidents of Bias or Harassment - (213) 740-5086 or (213) 821-8298

usc-advocate.symplicity.com/care_report

Avenue to report incidents of bias, hate crimes, and microaggressions to the Office of Equity and Diversity |Title IX for appropriate investigation, supportive measures, and response.

The Office of Disability Services and Programs - (213) 740-0776

dsp.usc.edu

Support and accommodations for students with disabilities. Services include assistance in providing readers/notetakers/interpreters, special accommodations for test taking needs, assistance with architectural barriers, assistive technology, and support for individual needs.

USC Support and Advocacy - (213) 821-4710

uscса.usc.edu

Assists students and families in resolving complex personal, financial, and academic issues adversely affecting their success as a student.

Diversity at USC - (213) 740-2101

diversity.usc.edu

Information on events, programs and training, the Provost's Diversity and Inclusion Council, Diversity Liaisons for each academic school, chronology, participation, and various resources for students.

USC Emergency - UPC: (213) 740-4321, HSC: (323) 442-1000 - 24/7 on call

dps.usc.edu, emergency.usc.edu

Emergency assistance and avenue to report a crime. Latest updates regarding safety, including ways in which instruction will be continued if an officially declared emergency makes travel to campus infeasible.

USC Department of Public Safety - UPC: (213) 740-6000, HSC: (323) 442-120 - 24/7 on call

dps.usc.edu

Non-emergency assistance or information.

STUDENTS WITH DISABILITIES

USC is committed to making reasonable accommodations to assist individuals with disabilities in reaching their academic potential. If you have a disability which may impact your performance, attendance, or grades in this course and require accommodations, you must first register with the Office of Disability Services and Programs (www.usc.edu/disability). DSP provides certification for students with disabilities and helps arrange the relevant accommodations. Any student requesting academic accommodations based on a disability is required to register with Disability Services and Programs (DSP) each semester. A letter of verification for approved accommodations can be obtained from DSP. Please be sure the letter is delivered to me (or to your TA) as early in the semester as possible. DSP is located in GFS (Grace Ford Salvatori Hall) 120 and is open 8:30 a.m.-5:00 p.m., Monday through Friday. The phone number for DSP is (213) 740-0776. Email: ability@usc.edu.

STATEMENT ON TECHNOLOGY USE

Please note that communication devices such as cell phones, smart phones, tablets, etc. capable of sending and/or receiving electronic communication and all entertainment devices are to be turned off and kept off throughout the class session. Receiving or sending communication or entertainment during class disrupts the learning environment and is rude to those around you.

Course plan at a glance (tentative)

Week	Topic	Readings	Submission
1	Introduction - Sustainable supply chains		
2	Measuring carbon footprint	Future-proof your climate strategy (CR#1) Tragedy of Commons HO Hand dryer HO	Short #1 – Future-proof your climate strategy (q.1)
3	Measuring carbon footprint Design and planning	Leather Brief Co HO Levi Strauss (CR#2)	Short #2 – Levi Strauss (q.1)
4	Sourcing Operations	SC Transparency (CR#3) Starbucks (CR#4) Coda Coffee (CR#5)	Short #3 – SC transparency (q.1,3) Short #4 – Starbucks (q.2) Short #5– Coda Coffee (q.2)
5	Operations End-of-life management	Green Logistics (CR#6) Cook Composites (CR#7)	LBC 2 Short #6 – Green Logistics (q.2) Short #7 – Cook Composites (q.1)
6	Bringing it together	Patagonia (CR#8) Wal-Mart (CR#9)	Emissions Short #8 – Wal-Mart (q.2) Group #1 - Patagonia

Detailed course plan

Week 1 Introduction-- Sustainable supply chains

Week 2 Measuring carbon footprint

Readings:

- *Future-Proof Your Climate Strategy* (HBR May-June 2019)

Discussion Questions:

1. What risks can climate-change policies pose to companies' strategies and returns? How can internal carbon pricing help in dealing with those risks?

- *Streamlined Life Cycle Assessment Study* (Environmental Resources Management)

Discussion Questions:

1. What is the purpose of the LCA?
2. What are the different stages involved in the LCA?

Week 3 Measuring carbon footprint; Design and planning

Readings:

- *Leather Brief Co.*

Discussion Questions:

1. By using the data in the accompanying spreadsheet, calculate the total GHG emissions in LBC's supply chain.
 - For facilities, take into account direct carbon emissions and electricity-related emissions
 - For own transportation vehicles, take into account total fuel and its emission factor
 - For outsourced transportation, take into account total weight, distance, and corresponding emission factor
2. Identify each emission component by its scope
3. Which organizational boundary do you believe is most appropriate for the Leather Brief Co.? Why?
4. Does this calculation give a complete picture of LBC's carbon footprint? Why? How would you describe this LCA assessment?

- *Levi Strauss & Co.: Driving Adoption of Green Chemistry* (Berkeley case #B5867)

Discussion Questions:

1. *What internal and external factors is LS&Co. responding to with the Screened Chemistry Program? How is this program different from other chemical management strategies within the textile industry?*
2. How can LS&Co. advance its screened chemistry approach? Who are the key partners? What are the largest barriers to the adoption of LS&Co.'s Screened Chemistry approach? Is there a role for business, NGOs, and governments outside of the apparel industry?
3. Who should bear the responsibility and cost for screening chemistries? Who stands to gain from having chemicals screened for safety? Are there ways to share this cost?
4. What leverage does ZDHC have on the apparel industry? Is ZDHC the best avenue for LS&Co. to advance its Screened Chemistry Program?

Week 4 Sourcing; Operations**Readings:**

- *What Supply Chain Transparency Really Means* (HBR #H053FW)
Discussion Questions:
 1. *What is supply chain transparency and why is it important?*
 2. *Why is transition to supply chain transparency slow?*
 3. *What steps can a company take to become more transparent?*
 4. *What are the benefits of supply chain transparency?*
- *Starbucks Corporation: Building a Sustainable Supply Chain* (Stanford case #GS-54)
Discussion Questions:
 1. *What are the main issues that Starbucks faced with its supply base in 2005? How did it approach this problem?*
 2. *What are the main benefits from C.A.F.E. for Starbucks? For the farmers?*
 3. *What are the main challenges in implementation of C.A.F.E.?*
 4. *How are sustainability-related sourcing issues faced by Starbucks different from those faced by, say, Apple or GM?*
- *Coda Coffee and bext360 Supply Chain: Machine Vision, AI, IoT, and Blockchain* (Thunderbird case #TB0539)
Discussion Questions:
 1. *What are the benefits and limitations of FairTrade certification to business owners like Tommy and Tim Thwaites?*
 2. *How does bext360's SaaS solution ensure transparency? What are the key strengths and limitations?*
 3. *How can Coda sell the value of their partnership with bext360 to their wholesale and retail customers?*

Week 5 Operations; End-of-life management**Assignment:** LBC part 2

In the original LBC case, we did not consider the environmental impact of leather.

Assume that each bag has on average dimensions 16in*12in*4in, and that its belt is 60 in long and 2 in wide. The leather goes on the outer side of the bag and on both sides of the belt. In addition, assume that each bag weighs on average 3 lb.

- a) Using the data about outbound volume shipped in tons, find the number of bags that LBC produced.
- b) Using the data about the bag dimensions, find the amount of leather used.
- c) It is estimated that manufacturing 1m² of leather causes emissions of 127 kg CO₂. Find the emissions that are generated due to leather used in LBC's bags.
- d) Which scope are these emissions?
- e) How would you describe LBS's LCA strategy if they add emissions due to leather use?
- f) Compare LBC's footprint with our calculation in class. What can you say about it?

Readings:

- *Delivering on the Promise of Green Logistics*
Discussion Questions:
 1. *How can collaboration on logistics help reduce your supply chain emissions?*
 2. *Describe one example of collaboration on logistics and its benefits*
- *Cook Composites and Polymers Co.* (HBS #9-608-055)
Discussion Questions:
CCP faces three options for addressing its rinse styrene waste stream:

- (a) Continue business as usual, sending its rinse styrene to cement kilns;
 - (b) Sell its rinse styrene on a waste exchange; or
 - (c) Proceed with developing the concrete coating that uses its rinse styrene (BPS).
1. What criteria should Mike Gromacki consider when deciding whether to pursue the waste exchange or the concrete-coating by-product? If you were Mike, what would you recommend to management to address its rinse styrene waste stream?
 2. Compared to business as usual, how would selling rinse styrene to a waste exchange or producing the concrete coating by-product affect the production of gel coats?
 3. Compared to business as usual, what are the financial implications of selling rinse styrene to a waste exchange or of producing the concrete coating by-product?
 4. Compared to business as usual, how would you evaluate the relative environmental impact of producing the concrete coating by-product? When considering carbon dioxide (CO₂) emissions, consider the impacts system-wide (that is, not just at CCP’s factory). What tradeoffs are involved? For each pound of rinse styrene diverted from cement kilns to create concrete coatings, by how much do CO₂ emissions rise or fall? Assume that CCP’s sales of concrete coatings would substitute for sales by other concrete coating producers (that is, CCP’s sales would not alter the total sales quantity in the concrete coatings market).
 5. Which option would you chose?

Week 6 Bringing it together

Assignment: Emissions

Omniglobal Co. is the main producer of polycarbonix (PCB), the newest compound that is being promoted as “plastic for 21st century”. During the production of PCB, another product, LCG, may be created as a byproduct. If this option is chosen, 1.2 lb of CO₂ emission is created for every lb of LCG produced. LCG can be used in manufacturing of polymer pentabex (5BX). Regular manufacturing of 1 lb of 5BX generates 3 lb of CO₂. When LCG is used in 5BX manufacturing, 0.50 lb of LCG is required to make 1 lb of 5BX, and CO₂ emissions from 5BX production are reduced by 20%. What is the change in emissions if 1 lb of LCG is created and used in 5BX manufacturing? Show all your work for full credit.

Readings:

- *Patagonia: Closing the Loop on Packaging Pollution* (Berkeley Haas case #B5933)

Discussion Questions:

1. Why would companies such as Patagonia want to offer all of their apparel and food products in packaging that is reusable, biodegradable, renewable, or easily recyclable by 2025? What approach might they take to achieve this goal? What is stopping them from achieving that goal? How might they deal with those obstacles?
2. If you were Patagonia, which issue would you start with and why?
3. What are the key stakeholders across Patagonia’s supply chain? What are the key interests or desired outcomes of each stakeholder? Which stakeholders are most important and why?
Please create a table as the one outlined below to answer this part of the question:

Stakeholder group	Interested in the impact on:				
	Interest 1	Desired outcome 2	Desired outcome 3	Interest 4	..
Stakeholder 1	X	X			
Stakeholder 2	X		X	X	
...		X	X		

4. How would you re-design the packaging supply chain to be more research-driven, more capable of scaling solutions quickly and more focused on lessening the environmental impact of single-use packaging? Solutions may include new materials, technologies, and supply chain-related innovations.

Greening Walmart: Progress and Controversy (HBS case 9-316-042)

Discussion Questions:

1. Given the fact that Wal-Mart's customers generally are unwilling to pay a premium for environmentally friendly products, how is the company deriving business value from its sustainability strategy?
2. *Wal-Mart's sustainability strategy has generally been very profitable. However, two initiatives that Wal-Mart pursued benefit the environment, but decrease Wal-Mart's profits—holding recycling/take-back events as part of its e-waste project, and reducing its prices on CFLs and foregoing incandescent light bulb sales. How would you justify pursuing them?*
3. How did Wal-Mart green strategy evolve over time? Why? What can other companies learn from this?

➤ **Case study report on Patagonia due at the beginning of class**