



ELEMENTARY LESSON – INNOVATIVE & SUSTAINABLE PACKAGING

Companion to Video Managing Forest for Multi-Use

MANAGING FORESTS FOR MULTI-USE FOREST PRODUCTS IN OUR DAILY LIVES

Innovative & Sustainable Packaging

Developed By: Gina Smith, LEAF – Wisconsin’s K-12 Forestry Education Program

Target Grade Level: K-5

Intended for Elementary Students

- For K-2 students, go through the reading material from Activity 1 as a whole class in more of a discussion format. Have them complete Activity 2 but modify the table to better meet their needs. Put more focus on having them explain what they see when they test the products than write about it.

Appropriate for Middle School and High School with modifications in Extending the Lesson

Science Categories

Forestry, Properties of Wood and Paper, Wood Products, Sustainability

Time Frame 1.5 – 2 hours

- Introduction: 10 minutes
- Activity 1: 30-45 minutes
- Activity 2: 30-45 minutes
- Conclusion: 15 minutes

Materials

- Forest Products in our Daily Lives – Classroom Video (Importance of Paper)
- Activity 1 Student Sheet: Innovative & Sustainable Packaging_Jigsaw Reading
- Activity 2 Student Sheet: Innovative & Sustainable Packaging Testing Materials
- Assessment of Learning Student Sheet: Innovative & Sustainable Packaging Assessment

Key Words

- biodegradable, carbon dioxide, cellulose, closed loop system, fibers, forest product, innovative, nanocellulose, nonrenewable, pulp, recyclable, renewable, sustainable, sustainable forest



Learning Objectives

Students will be able to:

- Define sustainability and what the forest product industry is doing to make sustainable products.
- Examine the properties and purpose of different types of paper/wood used in sustainable packaging.
- Explain how sustainable forest products can replace unsustainable plastic products used daily.

Activity Summary

This lesson will start out by having students participate in a jigsaw reading activity where students learn about sustainable paper packaging, why it is sustainable and how replacing plastic packaging with sustainable paper packaging is good for the planet. In activity 2, students examine the properties of packaging materials to determine the pros and cons of each material and recommendations on how the material could be improved. The lesson concludes with an opportunity for students to write about a product that is made from plastic that can also be made from trees and how making the product from trees instead of plastic would be good for the planet.

Vocabulary

- **Biodegradable:** can be broken down/decomposed by nature and not have a harmful impact on the environment
- **Carbon dioxide:** a gas molecule made of oxygen and carbon found in earth's atmosphere. Carbon dioxide is released by breathing and absorbed by trees
- **Cellulose:** the main substance/fiber in plant cells that help it remain stiff and strong
- **Close-looped system:** circular system of producing products where there is no waste, the product is recycled, returned to original materials or returned to the environment as biodegradable waste
- **Fibers:** thin threads of a substance used to make paper, cloth, rope
- **Forest product:** any material that comes from the forest and is used or consumed such as lumber, paper, or nuts
- **Innovative:** new idea, method, device
- **Nanocellulose:** tiny/microscopic material made from cellulose that is 1,000 times thinner than a human hair.
- **Nonrenewable:** resource that cannot be replenished or renewed in a short period of time (i.e. fossil fuel)
- **Pulp:** soft mass of cellulose fibers made from breaking down trees; used to make paper and other products
- **Recyclable:** taking materials that are ready to be thrown away and changing them into reusable materials
- **Renewable:** a resource that cannot be used up or can be replaced within a human life span (i.e. water, trees)
- **Sustainable:** using resources in a way that they can be used for a long time without causing too



- much harm to the environment
- Sustainable forest: forests where new trees are planted to replace trees that are cut down; efforts are made to protect rivers, soils, habitats and ecosystems

Background Information

The reading materials included in this lesson provide a lot of background information. Please be sure to review all reading materials prior to completing this lesson with your students.

Additional background information about #forestproud and sustainable forest products as Forest Climate Solutions (Material below used with permission from: *Packaging innovations help us shift from plastic to planet by Society of American Foresters, #forestproud 29 May 2024.*)

The Society of American Foresters is a nonprofit organization that promotes the science, education and practice of forestry. Through their #forestproud initiative, they hope to help people understand how forests, forest management and forest products play important roles in shaping the future of our climate. There are four major ways that sustainable forest products, like packaging innovations, contribute to forest climate solutions.

1. **Carbon.** All trees capture and store carbon dioxide (CO₂) from the atmosphere as they grow. They absorb CO₂ during a process called photosynthesis. They also release oxygen (O₂) into the atmosphere during this process. The carbon captured by trees during photosynthesis is stored in the tree's cells. The carbon stays in the cells when the tree is cut down and made into forest products. Also, when new trees are planted to replace the trees that were cut down, more carbon dioxide is captured by the growing tree.
2. **Cellulose.** Cellulose is the building block of plant cells and trees. It keeps trees and other plants standing as they grow taller. Cellulose nanocrystals are tiny – one millionth the size of the head of a pin – but also very strong. (Think about the stringy bits in celery, but very, very small.) Tiny cellulose nanocrystals are full of stored carbon – keeping it out of the atmosphere. In addition, because cellulose nanocrystals come from nature, they are easy to add to other materials to make those materials stronger and better.
3. **Fiber.** Wood fiber and pulp can be reused 5-7 times before it breaks down so much that it cannot be used again. This is a great example of sustainability! But even after it can no longer be used as in wood/paper fiber products, the sustainable cycle continues. The well-used fibers can be broken down into cellulose and used at the microscopic level.
4. **Markets.** Having a strong market for forest products means that a lot of people buy things made from trees. A strong market helps forest landowners. Cutting, harvesting and selling some wood can give landowners the money they need to keep their forest as a forest and not sell the land to people who want to build on it. It helps landowners do what is needed to keep the forest healthy, purchase trees and meet other goals they have for their forest like creating habitats for wildlife or reducing wildfire.



Learning Procedure

Introduction: Forest Products in our Daily Lives – Classroom Video (Importance of Paper)

- Watch full classroom video on Sustainable Paper Packaging
 - Ask students to share what they learned from the video

Activity 1: #forestproud Packaging – Jigsaw Reading

Pass out the Activity 1 - #forestproud Packaging – Jigsaw Reading materials to every student. Explain to students that the readings they are using during this activity come from an article written by the Society of American Foresters as part of the #forestproud program. Tell students that members of SAF want people to know how sustainable forest products are made and how using them instead of products made from other materials, like plastic, can help the earth.

Read the **Whole Class Reading** from *Packaging innovations to help us shift from plastic to planet together*. Pause to discuss new vocabulary words and concepts or review what they already know about the words and ideas in the whole class reading. When you finish reading, tell students that they are going to be assigned 2-3 sustainable paper packaging products to read about. You may choose to have students begin this activity reading independently or with a partner.

- Assign each student/pair one of the Group Readings
 - Cardboard Boxes and Sylvacurls
 - Food & Beverage Products
 - Clothing & Technology Packaging
- Explain that the goal is to learn about the products, the products they can replace and how the paper packaging products are more sustainable than the plastic products
- Tell them to record the information about their products on the Activity 1 student sheet

When students have completed reading and recording information about the products from their reading, ask them to form a larger group with people who read/learned about the other products. They should take turns sharing what they learned and recording information about the other products.

When all groups are finished, lead a class discussion about the products. Focus the discussion on the following Learning Objectives of this lesson:

- Define sustainability and what the forest product industry is doing to make sustainable products.
- Explain how sustainable forest products can replace unsustainable plastic products used daily.

Activity 2: Testing Sustainable Packaging Materials

Preparation:

Gather at least one example of as many of the following forest product materials as possible. Consider finding examples of the plastic products they replace also. While it would be ideal to gather enough samples to provide a sample of each product for every group to examine/test, the activity is written to have each group examine the properties of 1 product, become an expert on it and share what they learn with the other groups. Types of products and links are included to help you identify the materials



you should gather. You are not limited to these materials, and it is ok if you cannot find all materials. Plan ahead – many of these materials are common. Co-workers and parents may be able to help you gather them.

Forest Product Packaging Materials

- Cardboard box
- Paper padded mailer (like used by Amazon) <https://www.aboutamazon.com/news/sustainability/the-big-ideas-and-tiny-details-behind-amazons-new-recyclable-mailer>
- Unpadded paper mailer <https://www.gppackaging.com/mailers/>
- Void Fill Paper (paper filler made from long sheets of kraft paper) <https://www.ranpak.com/solutions/void-fill/>
- Kraft Paper Transport Sleeves <https://www.seamanpaper.com/products/slivv>
- Sylvacurl <https://www.sylvacurl.com/>
- Crinkle Paper <https://packaginghub.com/blog/what-is-crinkle-paper/>
- Spiral Paper Void Fill <https://www.seamanpaper.com/spiropack>
- Paper Transport Bags <https://www.seamanpaper.com/products/vela-bags>
- Paper Stretch Wrap <https://www.seamanpaper.com/products/seastretch>
- Fiber-based packaging tape <https://www.ahlstrom.com/campaigns/mastertape-pack-crepe/>
- Containerboards and paperboard <https://www.afandpa.org/paper-wood-products/packaging>
- Paper bags/shipping sacks <https://www.afandpa.org/paper-wood-products/packaging>
- Paperboard canister <https://www.graphicpkg.com/products/boardio-paperboard-canister/>
- Sustainable food packaging i.e. Paperlock food packaging <https://paperpeopleusa.com/why-paper/>
- Sustainable pet food packaging i.e. PawPrint <https://www.ahlstrom.com/products/food-packaging-baking-and-cooking-solutions/food-packaging-papers/petfood-packaging-papers/>



Plastic Packaging Materials *(item replacing it)*

- Padded envelope with bubble-wrap (Paper padded mailer)
- Plastic mailers (unpadded paper mailer)



- Bubble wrap (Void Fill Paper, Kraft Paper Transport Sleeves)
- Packing peanuts (crinkle paper, sylvia curl)
- Plastic bags (paper transport bags)
- Plastic film/wrap (paper stretch wrap)
- Packaging Tape/duct tape (fiber-based packaging tape)
- Plastic shipping bags (containerboard and paperboard; paper bags/shipping sacks)
- Plastic/metal canister (paperboard canister)
- Plastic food packaging (sustainable food packaging; Paperlock)
- Plastic, treated pet food packaging (sustainable pet food packaging; PawPrint)

Instructions: Testing Sustainable Packaging Materials

Pass out copies of Activity 2 Student Sheet *Innovative and Sustainable Products_ Testing Materials* to each student. Have students work in groups of 3-5 students. Give each group a sustainable paper packaging product to test. Tell students their job is to examine 1 example of a sustainable paper packaging material, determine what it is supposed to do (its job), come up with tests to see how well it does its job, and share their results. If you gathered comparable plastic products, give these out to students as well and tell them they can use them to see how the paper products compare to the plastic products. Go over steps 1-5 from the student sheet and describe where students need to record information for each step in their tables (only rows/columns that have spaces for students to input answers are numbered).

1. Examine your sustainable packaging product. Describe the product and its purpose (What job is it supposed to do?). Record the information in the table. (row 1)
2. What properties does the product need to have to do its job well? Write down the 3 most important properties in the table. (column 1, rows 2, 3, and 4)
3. Think about how you could test these properties. Write down how you will test these properties in the table. (column 2, rows 2, 3, and 4)
4. Test the sustainable packaging product to see how well it does its job. Record results in the table. (column 3, rows 2, 3, and 4)
5. What are the pros and cons of the product? What would you do to make it better? Why should people use this product instead of a plastic one? Write these answers in the table. (rows 5-8). Remind students that Pros are the good things about the product and Cons are the things that could be better. Encourage students to think about what they read about products made from sustainable paper packaging and products made from plastic as they record their answers.



Once all groups have finished work, tell them that they need to share their results with their classmates. Tell them that they will get 2 minutes to share about their products so they need to determine the most important things they think their classmates need to know. Allow them a few minutes to prepare for the presentation.

Have all groups share about their products. If time permits, allow students to ask questions after each presentation.

Conclusion: Assessment

Have students complete the Written Assessment of Learning Writing Prompt independently. *Write about another product (not used for packaging) that is made from plastic that can also be made from trees.*

- What is the product?
- What is the job of the product?
- What properties of trees, wood, cardboard, or paper make it good to use instead of plastic for its job?
- How is making the product from trees instead of plastic good for our planet?

Tell students that they can use what they learned from the reading and product testing activities to help them answer the questions. Tell them they should write at least one sentence per point in the prompt. Remind them to use capital letters, end marks and commas correctly. Tell them they should also do their best to spell words correctly.

Extending the Lesson (Optional)

ELEMENTARY SCHOOL RECOMMENDATIONS

The following LEAF lessons may be used to extend learning about forest products.

LEAF 2nd-3rd Grade Forestry Lesson Guide, Lesson 4: Forests Are Important to Me!

- Students explore and graph their personal forest values. Using a checklist, they discover how many of the forest products they use are made right here in Wisconsin and map them. As a conclusion, students create a collage and write about why they value forests. <https://www.uwsp.edu/wp-content/uploads/2023/11/leaf-2-3-lesson-4-forests-are-important-to-me.pdf>

LEAF K-1st Grade Forestry Lesson Guide, Lesson 4: Forest Products Time Machine

- Students learn about historical uses of forest resources. Students begin by sharing ways we use the forest while playing a game of Hot Pine Cone. Next, the class explores forest resources used to create products of the past, while relating them to present-day goods. To conclude, students examine forest products and draw a picture of one they use every day. <https://www.uwsp.edu/wp-content/uploads/2023/11/leaf-k-1-lesson-4-forest-product-time-machine.pdf>

MIDDLE/HIGH SCHOOL RECOMMENDATIONS:

Complete the same activities in the elementary lesson but use the original #forestproud article and videos from the #forestproud website instead of the readings on the Activity 1 student sheets. <https://forestproud.org/2024/05/29/forestproud-unboxing-experience/>



LEAF 7th-8th Grade Forestry Lesson Guide, Lesson 4: Many Forests, Many Values, Many Reasons

- Games, story analysis, and brainstorming help students categorize and assess people's forest values. Groups answer questions about Wisconsin's past and present forest use to get an idea of how forests shape the economy, culture, society, and environment. Students have a chance to demonstrate creatively what they've learned about values by completing an independent or small-group project and presenting it in class. <https://www.uwsp.edu/wp-content/uploads/2023/11/leaf-7-8-lesson-5-many-forests-many-values-many-reasons.pdf>

LEAF 7th-8th Grade Forestry Lesson Guide, Lesson 6: Making Broader Connections

- Students make connections between forests of Wisconsin and forests worldwide. Students discover how forestry and forest products affect the economy, society, and environment of Wisconsin by tracing the life cycle of a forest product. <https://www.uwsp.edu/wp-content/uploads/2023/11/leaf-7-8-lesson-6-making-broader-connections.pdf>

LEAF 9th-12th Grade Forestry Lesson Guide, Lesson 5: Forest Science and Technology

- Students analyze the production of three construction materials — wood, concrete, and steel. Students create a life cycle analysis that illustrates the energy inputs and pollution outputs that occur during the production of each material. Students compare the renewability, longevity, and function of each material and quantify their overall environmental impact. Students describe how different forest management and production techniques can improve the environmental impacts of wood use. <https://www.uwsp.edu/wp-content/uploads/2023/11/leaf-9-12-lesson-5-forest-science-and-technology.pdf>

Related Links

- #forestproud – Rethinking our Carbon Future: <https://forestproud.org/rethinking-our-carbon-future/>
- #forestproud – Reconnecting People and Forests: <https://forestproud.org/reconnecting-people-and-forests/>
- #forestproud – Reimagining Our Cities: <https://forestproud.org/reimagining-our-cities/>

Student Pages

See additional documents that will need to be included:

- Activity 1: K-5_Innovative Sustainable Products_Activity 1_Jigsaw Reading
- Activity 2: K-5_Innovative Sustainable Products_Activity 2_Testing Materials
- Innovative Sustainable Products_Assessment

Standards

WISCONSIN STANDARDS FOR SCIENCE (Middle School)

- SCI.CC1.e-i Students identify similarities and differences in order to sort and classify natural objects and designed products.
- SCI.CC6.e-i Students understand different materials have different substructures, which can sometimes be observed, and different substructures have shapes and parts that serve functions.



- SCI.SEP1.A.e-i Students ask questions that specify qualitative relationships.
- SCI.SEP3. e-i Students collaboratively plan and conduct an investigation to produce data to serve as the basis for evidence, using fair tests. Students make observations and measurements.
- SCI.SEP4.e-i Students use observations to describe patterns or relationships in the natural and designed worlds in order to answer scientific questions and solve problems.
- SCI.SEP6.A.e-i Students use evidence and ideas in construction evidence-based accounts of natural phenomenon.
- SCI.SEP8.e-i Students use developmentally appropriate texts to obtain scientific and technical information. Students communicate information with others in oral or written formats.
- SCI.ESS2.E.e-i Living things can affect the physical characteristics of their environment.
- SCI.ESS3.A.e-i Energy and fuels humans use are derived from natural sources, and their use affects the environment. Some resources are renewable over time and others are not.
- SCI.ESS3.C.e-i Things people do can infect the environment but they can make choices to reduce their impact.
- SCI.ETS2.B.e-i Every human-made product is designed by applying some knowledge of the natural world and is built by using natural materials. Taking natural materials to make things impacts the environment.

WISCONSIN STANDARDS FOR SOCIAL STUDIES (Middle School)

- SS.Geog3.a.e-i Classify a provided set of resources as renewable or nonrenewable, and analyze the implications of both at the local, national, and global level.
- SS.Geog4.a.e-i Compare the positive and negative effects of human actions on our physical environment over time.
- SS.Geog5.b.e-i Examine how human actions modify the physical environment when using natural resources (renewable and nonrenewable).

WISCONSIN STANDARDS FOR ENVIRONMENTAL LITERACY AND SUSTAINABILITY

- ELS.EX3.B.m Examine the relationships among resource use, environmental quality, and human health and well-being.
- ELS.EX5.C.m Examine how historical and contemporary factors shape a sustainability issue.

WISCONSIN STANDARDS FOR ENGLISH LANGUAGE ARTS (Middle School 6-8)

- ELA.RF.3-5 Read grade-level text with purpose and understanding.
- ELA.R.3-5.1 Locate and refer to relevant details and evidence when explaining what a text says explicitly/implicitly and make logical inferences.
- ELA.R.3-5.2 Summarize texts.
- ELA.W.K-5.1 Compose reflective writing.
- ELA.W.K-5.2 Write informative texts. Use facts, definitions and details to develop points.
- ELA.W.K-5.7 Conduct short inquiry projects that build knowledge about a topic.
- ELA.W.K-5.9 Recall and use facts from information texts to support reflection and inquiry.



- ELA.SL.K-5.1 Engage effectively in a range of collaborative discussions with diverse partners on topics and texts, building on others' ideas and expressing one's thinking clearly.
- ELA.SL.K-5.2 Determine the main ideas and supporting details of a text read aloud.
- ELA.SL.K-5.4 Report on a topic or text with facts and relevant details, speaking clearly at an understandable pace.
- ELA.L.K-5.6 Appropriate use capitalization, commas, end punctuation and correct spelling.

Resources

- Society of American Foresters. (29 May 2024) a #forestproud unboxing experience, Packaging innovations help us shift from plastic to planet. Society of American Foresters. <https://forestproud.org/2024/05/29/forestproud-unboxing-experience/>.



WOOD PRODUCTS Managing Forests for Multi-Use

Activity 1 - #forestproud Packaging – Jigsaw Reading



PACKAGING INNOVATIONS HELP US SHIFT FROM PLASTIC TO PLANET

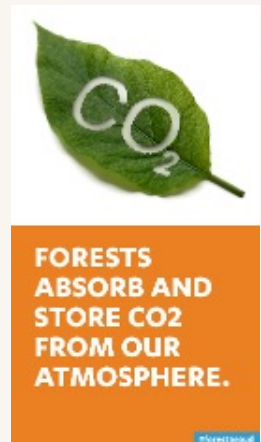
Society of American Foresters, #forestproud 29 May 2024

Adapted 13 Sept 2024 by Gina Smith – LEAF, Wisconsin's K-12 Forestry Education Program

WHOLE CLASS READING

Plastic is not good for our planet. But many things we need and use every day, like bottles, are made of plastic. Only a small amount of plastic gets recycled. Most of it ends up in the trash or as pollution. Plastic is made from oil – which took millions of years to make and cannot be replaced once it is used up. This makes it a **nonrenewable resource**. Using oil puts gases like **carbon dioxide** into the air. Too much carbon dioxide in the air can change Earth's climate and cause problems.

What if we could use something that can grow back, like trees, to make the things we need? Because trees can be replanted, they are a **renewable resource**. Things made from trees are better for the earth than plastic. They can be reused, **recycled** or even broken down by nature (**biodegraded**) when we are done with them. Trees also help because they take in carbon dioxide. It is stored in wood as the tree grows. When we make things from trees carbon stays in the wood, cardboard or paper. So, planting trees and making things from trees help protect Earth's climate and make us #forestproud!



Sustainable Paper Packaging

Companies that make paper and cardboard for packaging are working to keep our planet healthy and stop plastic pollution. A healthy planet needs healthy forests, so these companies make their products from trees grown in special forests called **sustainable forests**. In sustainable forests, new trees are planted to replace the ones that are cut down. People who work in sustainable forests also make sure they protect the rivers, soil and animal habitats (homes). This keeps the forests healthy now and for the future.





Paper packaging companies do other things to help the planet too. Paper and cardboard are made from wood **pulp**, which comes from trees. The trees are cut into small wood chips that are mixed with water and cooked into pulp. The pulp is soft with tiny thread-like pieces called **cellulose fibers**. These fibers are very strong so cardboard and paper are also strong. When products made from cardboard and paper are not being used anymore, they can be recycled back into pulp. The pulp is used to make new products. By using pulp from recycled paper and cardboard as many times as possible, companies save trees.

Paper packaging companies are trying to make less trash. They can recycle cardboard and paper into pulp 5 to 7 times to make new things. When the pulp can't be recycled anymore, it is broken down into tiny pieces called **nanocellulose**. Nanocellulose is really small - 10,000 times smaller than a human hair! It is also really strong. Because it is so strong it is added to other materials to make them stronger. This keeps the old wood pulp from becoming trash.

Last of all, no oil is used to make cardboard and paper packing materials. Oil is used to make bubble wrap and other plastic packing materials. By using packing materials from trees instead of oil, companies are fighting plastic pollution and keeping extra carbon dioxide out of the air. Paper packaging companies are doing many things to help keep our planet and forests healthy.

GROUP 1 READING – CARDBOARD BOXES AND SYLVACURLS

Become an expert about packaging products that come from trees and make us #forestproud! Read about the products below and use the information to fill in the table on your student sheet.

Cardboard boxes.

Cardboard boxes are solid, rugged, durable, and full of carbon. Cardboard is the most used material for packaging because it comes from trees, can be recycled and does not hurt the planet. More cardboard and paper are recycled than all other things (plastic, glass, steel and aluminum) combined. Cardboard boxes aren't the only #forestproud packing materials. There are a lot of new wood-based products that can be used inside the box.



SYLVACURL PHOTO BY ERICA HOUSKEEPER

Sylvacurls – inside the box.

Jim and Mary-Ellen Lovinsky live in Vermont and make *Sylvacurl*. *Sylvacurl* is made from poplar trees. Jim and Mary-Ellen use poplar trees that were cut from **sustainable forests** near their home. Poplar trees are perfect for making wood curls because poplar trees grow very fast, they are lightweight, they are a natural color, and they smell good.



Sylvacurls are a cool product because they are made in a **closed loop system**. A closed loop system does not make any trash. Sawdust is the only other thing that comes from carving poplar trees into *Sylvacurls*. The sawdust does not become trash though. Jim and Mary-Ellen use the sawdust for animal beds on their farm. When the sawdust can't be used for beds anymore, Jim and Mary-Ellen put it in their gardens. The sawdust gets broken down in the garden (**biodegrades**) without harming the soil.

When people open their packages and find *Sylvacurls* inside, they see information on how to reuse the curls. They learn that the curls can be used as animal bedding, to start fires, or in their own gardens. Since there is no trash from making the *Sylvacurls* or using the *Sylvacurls*, they are the perfect example of a closed loop system.

Sylvacurls can be used instead of bubble wrap and Styrofoam peanuts that are made from oil. This is good for the earth because bubble wrap and Styrofoam are not usually reused or recycled and making bubble wrap and Styrofoam adds carbon dioxide to the air.

GROUP 2 READING – FOOD & BEVERAGE PRODUCTS

Become an expert about packaging products that come from trees and make us #forestproud! Read about the products below and use the information to fill in the table on your student sheet.

Beverage Rings

CanCollar is a paper product made by WestRock that holds 6 cans together. The cardboard rings are made from a mix of wood fibers. Some fibers come from trees that were cut down in **sustainable forests**. Other fibers come from recycled cardboard. *CanCollars* can be recycled with other paper and cardboard. They can be used instead of plastic rings that are made from oil in a way that adds carbon dioxide to the air. Plastic rings cannot be recycled in most communities.



IMAGE PROVIDED BY ATLANTA BREWING COMPANY / SAF

Mentos and more.

Boardio is a bottle made from paper. It was first used for Mentos gum. It is made by Graphic Packaging and can hold candy, snacks, coffee, mixes and other powders. *Boardio* bottles are made in many different shapes and sizes. Because *Boardio* is made from paper, it can be recycled with other paper and cardboard. *Boardio* bottles can be used instead of plastic bottles that are made from oil. Since many plastic bottles don't get recycled, using *Boardio* bottles cuts down on trash and plastic pollution.



IMAGE PROVIDED BY GRAPHIC PACKAGING / SAF



Pet food.

PawPrint Sustainable Pet Food Packaging is made by Ahlstrom. A lot of pet food bags are made from plastic or materials that use harmful coatings, like PFAS. The coatings keep grease inside the bag and the pet food safe. *PawPrint Packaging* is a new way to package pet food that doesn't use harmful coatings. The pet food bags are made from wood fibers. They keep grease in, keep food safe and can be recycled or composted when they are empty.

These products are all good for the earth because they come from a renewable resource (trees), they can be recycled or will biodegrade, and they do not add carbon dioxide to the air.



IMAGE PROVIDED BY AHLSTROM / SAF

GROUP 3 READING – CLOTHING AND TECHNOLOGY PACKAGING

Become an expert about packaging products that come from trees and make us #forestproud! Read about the products below and use the information to fill in the table on your student sheet.

Clothing.

Vela™ bags are see-through paper bags made by Seaman Paper. They are used to package clothes and other items for shipping. The bags are durable and hold up in all types of weather. *Vela™* bags are made from a renewable resource, trees, that are cut from **sustainable forests**. The bags can be recycled with other paper and cardboard. *Vela™* bags can be used instead of plastic bags. Plastic bags are not easy to recycle and are made from oil in a way that adds carbon dioxide to the air.



IMAGE PROVIDED BY SEAMAN PAPER / SAF





Technology and more.

Fibrease and *Papira* are foams that are made from wood. They are made by Stora Enso. *Fibrease* and *Papira* foams protect items and keep them at certain temperatures during shipping. Because *Fibrease* and *Papira* foams are made from wood, they can be recycled. *Fibrease* and *Papira* can be used instead of Styrofoam which is made from oil and cannot be recycled.

These products are good for the earth because they come from a renewable resource (trees), they can be recycled or will biodegrade, and they do not add carbon dioxide to the air.



IMAGE FROM STORA ENSO / SAF





1. Work with a partner/group to complete the table for the packaging products you read about.
2. Partner with another group who read about different packaging products than you did.
3. Take turns sharing what you learned and recording information about the other products.
4. Answer the question below the table.

#forestproud Packaging

Sustainable Packaging Material	Describe the product	What plastic product does it replace?	What makes the paper packaging product more sustainable than the plastic product?
Cardboard box			
Sylvacurls			
CanCollar			
Bordio			
PawPrint			
Vela bags			
Fibrease & Papira			

How can the paper packaging products you read about keep our planet healthy for the future?



WOOD YOU BELIEVE? INNOVATIVE & SUSTAINABLE PACKAGING

Activity 2 - #forestproud Packaging - Testing Sustainable Packaging Materials

Goal: Describe what your sustainable packaging material is supposed to do (its job), come up with tests to see how well it does its job and share your results.

1. Examine your sustainable packaging product. Describe the product and its purpose (What job is it supposed to do?). Record the information in the table.
2. What properties does the product need to have to do its job well? Write down the 3 most important properties in the table.
3. Think about how you could test these properties. Write down how you will test these properties in the table.
4. Test the sustainable packaging product to see how well it does its job. Record results in the table.
5. What are the pros and cons of the product? What would you do to make it better? Why should people use this product instead of a plastic one? Write these answers in the table.

Sustainable Packaging Product	Product Description	Product Purpose (Job)
Properties	How to Test this Property	Results of Testing
1.		
2.		



Properties	How to Test this Property	Results of Testing
3.		
<p>Pros What does the product do well?</p>		
<p>Cons What problems does this product have?</p>		
<p>How could you make this product better?</p>		
<p>What plastic product does this replace?</p> <p>Why should people use this product instead of the plastic one?</p>		



WOOD YOU BELIEVE? INNOVATIVE & SUSTAINABLE PACKAGING

Written Assessment of Learning



WRITING PROMPT:

Write about another product (not used for packaging) that is been made from plastic that can also be made from trees.

- What is the product?
- What is the job of the product?
- What properties of trees, wood, cardboard, or paper make it good to use instead of plastic for its job?
- How is making the product from trees instead of plastic is good for our planet?

You can use information from the reading and product testing activities to help you answer the question. You should write at least one sentence per point (at least 4 sentences). Make sure you use capital letters, end marks, and commas correctly. Do your best to spell words correctly.



