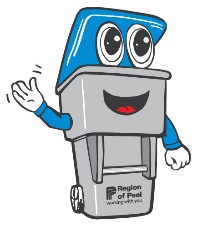
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| --- |
| Getting Informed on Recycling |
| Objective |
| This lesson helps students understand the issues around recycling. Five short videos highlight current waste issues, and suggested questions spark follow-up discussion for the class. By delving into how items are recycled, and challenges municipalities face in dealing with recyclable materials, students emerge with an understanding of why reducing and reusing are more powerful than recycling, and how to recycle correctly. |
| Preparation |
| The lesson focuses on the following teachable subjects:   * Business Studies * Canadian World Studies * Technology * Science * Social Science and Humanities   See Appendix 1 for detailed curriculum connections.  Resources Required:   * Why Recycle PowerPoint presentation * Peel School Waste Sorting Posters * Peel Recycle Right Fact Sheet * [Waste Sorting Games](https://peelregion.ca/environmental-education/waste.asp#waste) |
| Lesson outline |
| Part 1: How recycling supports sustainability  Guide students through the “Why Recycle” PowerPoint presentation, reading the audio aloud. Length: 4 to 5 minutes  Have students discuss the following questions in small groups:   * What did they think about the lifecycle of the aluminum can? Did anything surprise them? * What questions do students have about the environmental impacts of other types of packaging?   Part 2: The impact of incorrect recycling practices   * Show students the following videos: * *Recycling incorrectly can cost taxpayers big time* – CBC The National <http://www.cbc.ca/player/play/1204963395611/> Length: 4 minutes Release date: April 6, 2018 Summary: From not rinsing out containers, to throwing garbage into the recycling, contaminating your blue bin can do more harm than good. *\*See Appendix 2 for detailed summary.*   + Note: Please highlight to the class that black plastic IS currently recyclable in Peel. Black Styrofoam and coffee cup lids are NOT recyclable in Peel.   + *Accompanying article:* <http://www.cbc.ca/news/technology/recycling-contamination-1.4606893> * *Recycle Right in the Region of Peel* <https://www.youtube.com/watch?v=ayBv8GHeh0U> Length: 4 minutes Release date: April 14, 2014 Summary: This video shows how incorrect recycling practices cause issues at Peel’s waste recovery facility, and how to recycle correctly to ensure your recycling efforts aren’t wasted.      * Follow up discussion questions for students: * In Peel, 25% of the waste, measured by weight, tossed into recycling bins does not belong there. Why do you think recycling contamination is this high in Peel? * What do you think are the most significant recycling contaminants in Peel? (FYI: Black plastic is recyclable in Peel, so it is not a contaminant in Peel recycling systems.)   Answer:   * Recyclable containers contaminated with food * Ceramics (dishes) * Plastic toys * Textiles (clothing, fabrics) * Medical tubes and bags (IV bags, dialysis bags, etc.) * What are the negative outcomes of contamination in recycling?   Answers:   * + Contaminated recycling is very difficult to properly sort at the Region of Peel’s material recovery facility and can damage the machines that help to sort recyclables. For example, textiles and shredded paper get wrapped around the machinery, causing line stoppages and necessitating machine repairs.   + Contaminated recycling takes a tremendous amount of energy, resources, and labour to sort through. Sending garbage to landfill via the recycling bin uses more diesel gas and electricity for garbage to reach the same destination. For example, hard plastic toys and ceramics have to be manually removed at the Region of Peels’ material recovery facility. This means the conveyor line has to stop, making it more costly and time-consuming for recycling to be sorted.   + Contamination can damage other recyclables, lowering their value and making it difficult to sell them to offset the cost of recycling programs. Food and liquids in recycling bins and recyclable containers leak and soil paper and recyclable products. This reduces the quality of the recyclables and makes them difficult to market. In the past few years, it has become increasingly difficult to find buyers for dirty recyclables. They may end up so contaminated that they cannot be marketed and must be sent to landfill. Similarly, diapers leak on recyclable materials, making them unmarketable.   + Contaminated recycling can cause health and safety issues for people working at the Region of Peel’s material recovery facility. Medical tubes and bags should be properly disposed of at a community recycling centre, not placed in the recycling. If recyclable containers are not rinsed, they can become mouldy, impacting the air quality for the people who sort the recyclables. * List 5 items that you are unsure are recyclable, compostable, or garbage. Find out how to sort them correctly at home using Peel’s waste sorting tool at [peelregion.ca/waste](http://www.peelregion.ca/waste)   Note:   * As part of the institutional sector, school boards are responsible for organising their own waste collection services. As a courtesy, the Region of Peel collects recycling from schools. This means Peel’s Waste Sorting Tool is relevant for determining whether an item belongs in the recycling bin at school. * To determine how to correctly sort items at school that the Waste Sorting Tool determines as Organics, Garbage, or Community Recycling Centre, use the Peel School Waste Sorting Posters, or speak to your facility manager. Your school board may have a special program to divert this item from the garbage   Part 3: Is recycling enough?   1. Show students the following video:  * *Trying to recycle everything comes at a high cost* – CBC The National <http://www.cbc.ca/player/play/1229688387706/> Length: 2.5 minutes Release date: May 9, 2018   Summary: Trying to recycle everything — including hard-to-recycle items like coffee pods and cigarette butts — can come at a high cost. This video explores the pros and cons of programs like Terracycle that recycle items not recyclable in municipal programs. *\*See Appendix 2 for detailed summary.*   * *Accompanying article: ‘How to recycle the 'unrecyclable,' from cigarette butts to squeeze pouches’* at <http://www.cbc.ca/news/technology/how-to-recycle-the-unrecyclable-from-cigarette-butts-to-squeeze-pouches-1.4614971>  1. Follow up discussion questions for students:  * What are the pros and cons of collecting items for TerraCycle? * In the hierarchy of the 3R’s, why are reduce and reuse more effective and environmentally responsible than recycling?  1. Show students the following videos:  * *Without China, what's happening to the world's waste?* – CBC The National <https://www.youtube.com/watch?v=Z0m7xhxu4dQ> Length: 3 minutes Release date: March 28, 2018   Summary: Where is the world's waste going? With China ending its program to take in the world's dirty recycling, it has to go somewhere else. The National looks at what led to this change, and the Southeast Asian nations that may end up as the world's new recycling hub. *\*See Appendix 2 for detailed summary.*   * *Rethink the way you recycle* – CBC The National <http://www.cbc.ca/player/play/1196818499952> Length: 7 minutes Release date: March 28, 2018   Summary: This video explores why Canadian communities are at a turning point when it comes to recycling and exploring ways to do it better. Much of the reason is because of a decision by China to crack down on foreign waste. About half of the world's recyclables were being sent to China, but China stopped importing them. Now, many Canadian municipalities are stockpiling materials because they have nowhere to send them. *\*See Appendix 2 for detailed summary.*   * *Accompanying article:* *‘Canadian municipalities struggling to find place for recyclables after China restricts foreign waste’* <https://www.cbc.ca/news/technology/garbage-recycling-china-plastics-canada-1.4586602>  1. Have students discuss the following questions:  * Who is responsible for the waste from single-use recyclable plastics? * Can you now name additional reasons why reduce and reuse are more effective and environmentally responsible than recycling? * What types of single-use recyclable plastics do you often use? What actions could you take to reduce your use of single-use plastics?   Further reading:   * *‘Municipal solid waste: a shared responsibility’ –* Government of Canada <https://www.canada.ca/en/environment-climate-change/services/managing-reducing-waste/municipal-solid/shared-responsibility.html> * ‘*Waste management in Canada’ –* Government of Canada <https://www.canada.ca/en/environment-climate-change/services/managing-reducing-waste.html> |



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**Appendix 1: Curriculum Connections**

**This workshop enhances learning and/or provides context related to the following curriculum expectations:**

**Business Studies**

**Introduction to Business, Grade 9 or 10, Open**

Strand: Business Fundamentals

- demonstrate an understanding of how businesses respond to needs, wants, supply, and demand

- demonstrate an understanding of ethics and social responsibility in business

- explain how needs and wants create opportunities for business

- explain the concepts of ethics and social responsibility as they apply to business (e.g., environmental responsibility, fair trade)

**Marketing: Goods, Services, Events, Grade 11, College Preparation**

Strand: Trends in Marketing

- identify and describe various environmental, ethical, social, and legal issues that affect marketing activities

- describe ways in which marketing activities (e.g., packaging, labelling) have been influenced by increasing concern for the environment

- identify examples of businesses that include corporate social responsibility as a component of their marketing philosophy (e.g… engaging in responsible environmental practices)

**Marketing: Retail and Service, Grade 11, Workplace Preparation**

Strand: Trends in Retail and Service Marketing

- identify and describe various environmental, ethical, social, and legal issues that affect the retail and service industries;

- identify ways that federal, provincial, and municipal laws and regulations (e.g., concerning health and safety, environmental protection, product standards) can affect how retail and service businesses operate

- describe ways in which marketing activities (e.g., packaging, labelling) have been influenced by the environmental movement

Strand: Marketing Fundamentals

- summarize changes in lifestyles and consumer needs and wants over the past few decades and explain their impact on retail and service businesses (e.g., changing gender roles, consumer demand for fast food, use of portable communication and entertainment devices)

**Canadian and World Studies**

**Issues in Canadian Geography, Grade 9 Academic**

Strand: Managing Canada’s Resources and Industries

C1. The Sustainability of Resources: analyse impacts of resource policy, resource management, and consumer choices on resource sustainability in Canada

C1.1 describe strategies that industries and governments have implemented to increase the sustainability of Canada’s natural resources (e.g… community composting, recycling and recovery), and evaluate their effectiveness…

C1.4 analyse the roles and responsibilities of individuals in promoting the sustainable use of resources (e.g., managing one’s own ecological footprint, making responsible consumer choices, recycling, advocating sustainable resource-use policies and practices)

Strand: Liveable Communities

E2.1 assess the impact of urban growth on natural systems (e.g., impact of urban sprawl, vehicle use, and waste disposal on water and air quality)

**Issues in Canadian Geography, Grade 9 Applied**

Strand: Managing Canada’s Resources and Industries

C1. Managing Resources: assess the influence of personal choices and community actions on the use of natural resources in Canada

C1.3 analyse their personal use of natural resources. (Calculating their ecological footprint… measure their personal consumption of various resources directly, recording such variables as the length of time they run water or the type of vehicle they use and the distance they travel in it.)

C1.4 develop a personal plan of action that supports the idea of stewardship of resources. Sample questions: “How might one’s personal beliefs influence one’s use of resources?” “What can you as an individual do to make better use of our natural resources? How can calculating your ecological footprint help you do this?”

C3.1 identify the natural resources needed to produce and distribute a product that is used in the everyday lives of people living in Canada (e.g., raw materials, resources used in production and transportation) Sample questions: “What are some of the natural resources that are used in making bread, a car, a cellphone, or other product, and where do they come from?” “Why might you want to know what natural resources a product contains and where they come from before purchasing it?”

Strand: Liveable Communities

E1.1 use a variety of measurements (e.g., ecological footprint, carbon footprint, water footprint) to compare the impact on the natural environment of people in Canada and people in other countries

E1.2 identify various ways in which communities in Canada dispose of their waste material (e.g., landfilling, composting, incineration, primary and secondary sewage treatment), and describe potential environmental impacts of these methods

E1.4 identify actions that individuals can take to live more sustainably, and explain the benefits for their local community

**Civics and Citizenship, Grade 10 Open**

Strand: Civic Awareness

B1.1 describe some civic issues of local, national, and/or global significance (e.g… the impact of consumer choices), and compare the perspectives of different groups on selected issues.

Strand: Civic Engagement and Action

C1.2 describe a variety of ways in which they could make a civic contribution at the local, national, and/or global level (e.g… by reducing the amount of solid waste they generate and by properly disposing of hazardous waste)

C1.3 explain how various actions can contribute to the common good at the local, national, and/ or global level Sample questions: “What impact can consumers’ choices have on the natural environment?

**Forces of Nature: Physical Processes and Disasters, Grade 11, University/College Preparation**

Strand: The Physical Environment: Sustainability and Stewardship

C1.2 assess the effectiveness of various processes used by resource-based industries to protect or rehabilitate the physical environment. Sample questions: “How can the environmental impacts of mining be reduced?” “Can we make our existing reserves of non-renewable resources last longer? In what ways would that benefit the environment?”

C1.4 describe strategies and practices that are used to protect local ecosystems and make them more sustainable (e.g… waste-reduction programs)

**Regional Geography, Grade 11, University/College Preparation**

Strand: Sustainability and Stewardship

C1.1 identify the main natural resources that are harvested/extracted in the region (e.g., water, wood, oil and/or gas, coal, minerals, fish, cotton, wheat, rice, livestock), and assess the sustainability of current rates of harvesting/extraction

C1.3 describe programs in the region that are intended to foster stewardship/sustainability with respect to natural resources (e.g., programs related to resource conservation… recycling and waste disposal), and assess their effectiveness

**Living in a Sustainable World, Grade 12 Workplace Preparation**

Strand: Sustainability of Natural Resources

C1.1 analyse selected responses by governments, industries, and/or non-governmental organizations to resource-related environmental concerns and assess the contribution of these actions to responsible and sustainable resource use and management. Sample questions: “What was the problem that led to this response?” “Was government regulation needed to support the response? Did non-governmental organizations play a role by influencing public opinion? How did the industry respond to the problem?” “What benefits did this response lead to, for the environment, the public, and the industry?”

C1.2 describe ways in which individuals can contribute to the sustainable use of natural resources (e.g., by buying, selling, or donating good-quality used products so that they may be reused; reducing personal consumption; recycling; buying fair-trade products; supporting environmental non-governmental organizations). Sample questions: “How does your consumer behaviour affect the consumption of natural resources? How would the demand for natural resources be affected if people bought only what they needed instead of what they wanted?”

C2.1 assess the environmental impact of a particular consumer product (e.g., cellphone, bicycle, car, golf club) over its life cycle, from the extraction of the resources needed to produce it, through its production and use, to its disposal.

Strand: Community Action

E1.2 evaluate the effectiveness of various public awareness campaigns and initiatives in promoting positive environmental change. Sample questions: “How much influence do you think various awareness initiatives have had on public opinion and on people’s behaviour?” “How influential have the media been in affecting public opinion about environmental concerns?” “What is the best way to encourage teenagers to live in a more environmentally friendly way?”

E2.1 calculate their ecological footprints and create a plan to reduce personal consumption and waste. Sample questions: “How does your ecological footprint compare with the Canadian average?” “What areas of consumption had the greatest effect on your footprint? How might you reduce this part of your footprint?”

E2.4 analyse the impact of consumer behaviour on the environment (e.g., transportation choices, water and energy consumption, product choices). Sample questions: “How can a person’s shopping habits and choices affect the sustainability of natural resources?” “How would the consump­tion of resources change if people bought less of what they wanted but didn’t really need?” “Do businesses have a responsibility to promote and support more sustainable consumer behaviour? How can consumers encourage businesses to reduce the environmental impact of their prod­ucts?” “In what ways do businesses encourage recycling of their products?”

E3.2 assess the environmental impact of various methods of waste disposal (e.g., landfilling, incineration, recycling, composting, transporting to other communities). Sample questions: “Why should people not put hazardous waste, such as batteries and paint, in their garbage? What is the environmental impact of these materials when they are sent to a landfill? What kinds of waste should be considered hazardous?

**The Environment and Resource Management, Grade 12, University/College Preparation**

Strand: Sustainability and Stewardship of Natural Resources

C2.2 analyse the environmental impacts of various resource extraction activities (e.g., ecological impacts of clear-cutting and forest monocultures; habitat disruption from pipeline construction, and potential impacts of pipeline leakage on watersheds and climate; air and water pollution and destruction of natural landscapes resulting from mining), and assess options for making these activities more sustainable

C2.4 analyse the potential environmental impacts of a selected resource-related project or activity (e.g., dam construction, farming, groundwater extraction, water diversion, landfills, expansion of a conservation area, an oil sands project, a diamond mine), and assess the implications of these impacts for developing the project or managing the activity sustainably

Strand: Community Action

E1.1 analyse the role of governments in protecting the environment, locally, nationally, and globally. Sample questions: “Can solutions to environmental problems be achieved voluntarily, or do they require government legislation or encouragement?” “Governments can pass and enforce laws to reduce pollution, but what are some other important ways in which they can act to protect the environment? “What responsibilities does each of the three levels of government in Canada have for environmental protection?

E1.2 assess the contribution to environmental sustainability of selected locally implemented initiatives and personal choices (e.g., waste-reduction initiatives, such as recycling, municipal waste fees, bring-your-own-bag programs; awareness initiatives, such as Earth Hour and environment days). Sample questions: “What problems does this initiative address? What strategies does it apply to solve the problems? What results has it achieved?” “How can we encourage people to become more effective environmental stewards?”

E1.3 analyse a local, national, or global environmental issue and a range of possible solutions, and create an action plan to address the issue. *(E.g. How could you motivate students in your school to recycle correctly?)* Sample questions: “Can your action plan be implemented by one person, or does it require many people working together? What behaviours will people need to adopt or modify in order to make your action plan work?”

E2.3 analyse issues related to the treatment and disposal of urban waste (e.g… household garbage, toxic waste), and assess the advantages and disadvantages of various treatment and disposal options (e.g… recycling, composting, incineration, use of landfills for garbage; high-temperature incineration, use of secure landfills for toxic waste)

E3.1 assess the importance of behavioural and ethical factors (e.g., reducing consumption, changing personal activities to reduce one’s environmental impact, giving priority to values such as environ­mental sustainability and intergenerational equity in decision making) in reducing the human impact on the environment. Sample questions: “What are our basic survival needs? Are they the same for everyone? Why or why not? What do we need to enjoy a reasonable standard of living? Is this the same for everyone? Why or why not?” “How do we persuade people to adopt behaviours that reduce their personal impact on the environment? Is it possible to persuade people to support government policies that impose personal costs on them in the present in order to avoid environmental harm in the future?” “How will our personal decisions now affect the quality of life of our great-grandchildren?”

E3.3 calculate an ecological footprint for themselves or their class, based on their consumption of resources and production of waste, and compare it to the ecological footprints of people in other countries Sample questions: “What accounts for the differences between your footprint and those of people in some other countries?” “What area of consumption had the greatest effect on your footprint? How might you reduce this part of your footprint?

**World Geography: Urban Patterns and Population Issues, Grade 12, University/College Preparation**

Strand: Sustainability and Stewardship

C1.2 assess the effectiveness of various solutions to environmental problems caused by human activities that affect areas of settlement. Sample questions: “What strategies have been employed to cope with increased volumes of waste? What are their advantages and disadvantages?” “Why would communities either import or export waste?”

C2.1 analyse the roles and responsibilities of individuals, corporations, and governments in ensuring the sustainability of communities. Sample questions: “What incentives do you know about that work to increase individual participation in green waste management programs?” “Should a corporation be willing to incur costs related to environmental protection that put it at a disadvantage to its competitors? Do governments have a responsibility to create a level playing field with respect to the environmental obligations of businesses?”

C2.3 describe actions that individuals can take to contribute to the sustainability of their own communities Sample questions: “How is community sustainability linked to personal behaviour? What can you do to increase awareness of these links in your community?” “What can you and other individuals do to reduce your personal contributions to waste generation, energy consumption, and water and air pollution?” “What could you and your fellow students do to make our school ‘greener’?”

Strand: Systems - Interdependence of Ecumenes

D3.3 analyse impacts of consumerism in developed countries on ecumenes in developing countries (e.g., economic growth and job creation, increased resource consumption and pollution, migration to cities and the rise of informal settlements, greater potential for exploitation of labour as a result of demand for low-cost production). Sample questions: “What responsibility do corporations that contract manufacturing work to factories in developing countries have to protect natural environments and workers’ rights in these countries?

**World Issues: A Geographic Analysis, Grade 12, College Preparation**

Strand: Resource Use and Sustainability

C1.2 explain the role of governments and the local community in promoting and achieving sustainability, and identify ways in which individuals can encourage sustainability initiatives by governments and organizations in the community

C2.1 analyse environmental, economic, social, and political impacts related to the use of selected natural resources at the local, national, and global level

C2.3 describe criteria and strategies that consumers can use to determine whether resources used in the goods they consume have been extracted, processed, and produced sustainably Sample questions: “What criteria must a product meet in order to be labelled fair trade? How might these criteria influence your purchases?” “How can you determine whether the clothing or electronics you purchase have been ethically and/or sustainably produced?”

C1.1 identify opportunities for personal stewardship and involvement in sustainability initiatives at a local, national, and international level, and assess the environmental, economic, social, and political implications of their choices Sample questions: “What can you, as an individual, do to reduce water use, energy consumption, air pollution, and waste? What environmental and economic effects would these actions have?

**World Issues: A Geographic Analysis, Grade 12, University Preparation**

Strand: Interactions and Interdependence: Globalization

D2.3 assess the responsibility of consumers for moderating economic, social, and environmental impacts associated with globalization, and describe ways in which this could be done (e.g., informing themselves about how products are made and disposed of…) *Should consumers be concerned about how the products they buy are made, and how they are disposed of?*

Strand: Sustainability and Stewardship

C1.2 analyse the roles and responsibilities of international organizations, governments, and companies with respect to the protection of the natural environment. Sample questions: “What can governments do to protect the environment?” “What legal and moral obligations do companies have with respect to the environment? Why are some companies better stewards of the environment than others? Why is it good for a company to be seen to be environmentally responsible?”

C1.4 analyse the effectiveness of policies, programs, and initiatives in various countries in enhancing sustainability (e.g., polluter-pay policies, eco-fees, carbon taxes, emission trading, zero-population-growth initiatives). Sample questions: “How have domestic waste management programs, such as recycling, evolved in your community, and what have the environmental benefits been?”

C1.5 assess the effectiveness of local sustainability initiatives in building sustainable communities

**Making Personal Economic Choices, Grade 12, Workplace Preparation**

Strand: Economic Fundamentals

C4.3 explain why various stakeholders might have different views of the costs and benefits of a project affecting the local natural environment

**Science**

**Science, Grade 9, Academic**

Strand: Biology - Sustainable Ecosystems

B1 assess the impact of human activities on the sustainability of terrestrial and/or aquatic ecosystems, and evaluate the effectiveness of courses of action intended to remedy or mitigate negative impacts

B1.1 assess, on the basis of research, the impact of a factor related to human activity that threatens the sustainability of a terrestrial or aquatic ecosystem

B1.2 evaluate the effectiveness of government initiatives in Canada (federal, provincial, municipal), and/or the efforts of societal groups or non-governmental organizations, such as Aboriginal communities, environmental groups, or student organizations, with respect to an environmental issue that affects the sustainability of terrestrial or aquatic ecosystems (e.g... recycling programs). Sample issue: Landfill sites can have negative effects on adjacent ecosystems, attracting pests, leaching toxic chemicals, and producing greenhouse gases. Municipal recycling and composting programs divert garbage, reducing the need for new landfill sites...

B2 investigate factors related to human activity that affect terrestrial and aquatic ecosystems, and explain how they affect the sustainability of these ecosystems

Strand: Chemistry: Atoms, Elements, and Compounds

C1 assess social, environmental, and economic impacts of the use of common elements and compounds, with reference to their physical and chemical properties

C1.1 assess the usefulness of and/or the hazards associated with common elements or compounds in terms of their physical and chemical properties. *E.g. aluminum*

C1.2 assess social, environmental, and economic impacts of the use of common elements or compounds *E.g. aluminum*

**Science, Grade 9, Applied**

Strand: Biology - Sustainable Ecosystems and Human Activity

B1. analyse the impact of human activity on terrestrial or aquatic ecosystems, and assess the effectiveness of selected initiatives related to environmental sustainability;

B1.2 assess the effectiveness of a local initiative of personal interest that seeks to ensure the sustainability of a terrestrial or aquatic ecosystem and explain why the initiative is important to the sustainability of the ecosystem

B2. investigate some factors related to human activity that affect terrestrial or aquatic ecosystems, and describe the consequences that these factors have for the sustainability of these ecosystems

Strand: Chemistry - Exploring Matter

C1.2 assess the social and environmental impact of the production or use of a common element or simple compound. Sample questions: What are the social benefits and environmental costs of mining or refining metals such as nickel, iron, or gold? What is the environmental impact of the widespread use of plastics?

**Environmental Science, Grade 11 University/College**

Strand: Scientific Solutions to Contemporary Environmental Challenges

B3.1 identify some major contemporary environmental challenges, and explain their causes and effects

B3.5 describe a variety of human activities that have led to environmental problems (e.g.. waste disposal) and/or contributed to their solution (e.g… programs to reduce, reuse, and recycle)

Strand: Reducing and Managing Waste

E1 analyse economic, political, and environmental considerations affecting waste management strategies

E1.1 analyse, on the basis of research, the impact of economic and political considerations on the development of waste management practices or strategies. Sample questions: What are the costs of recycling compared to the costs of using landfill sites or incinerating garbage? Why do municipal recycling programs recycle only a limited number of items?

E2. investigate the effectiveness of various waste management practices

E2.3 use a research process to investigate the waste generated throughout the life cycle of a product (e.g., the waste associated with all the materials and energy that go into the development and disposal of a computer or a running shoe)

E2.4 plan and conduct a waste audit within their school, and propose a plan of action for waste reduction based on their findings (e.g., review the school’s policy regarding paper and plastic recycling, monitor actual practices, and propose strategies to improve them)

E2.5 investigate a local, regional, national, or global waste management practice (e.g.,local practices such as recycling or charging for residential and/or commercial garbage bags; shipping garbage to landfill sites in another region), and communicate their findings

E3. demonstrate an understanding of the nature and types of waste and strategies for its management

E3.2 explain some current waste remediation practices used with substances or products that are not environmentally friendly (e.g., “Toxic Taxi” for pick-up of household hazardous waste; the recycling of plastic to make furniture and “lumber”)

**Environmental Science, Grade 11, Workplace Preparation**

Strand: Human Impact on the Environment

B1 analyse selected current environmental problems in terms of the role human activities have played in creating or perpetuating them, and propose possible solutions to one such problem

B2.5 plan and conduct a waste audit of their home or school

Strand: Natural Resource Science and Management

E1 assess the environmental impact of the harvesting and/or extraction of resources, including ways of reducing this impact, and analyse threats to the sustainability of natural resources

E1.1 assess the environmental impact of industrial practices related to the extracting or harvesting of natural resources, and describe ways in which that impact can be monitored and minimized

F2.5 design and report on a plan for reusing, recycling, reducing the volume of, or disposing of a hazardous material found in the workplace (e.g., disposing of batteries, reusing motor or cooking oils for a different purpose)

F3.1 describe some of the ways in which implementation of the 4Rs (reduce, reuse, recycle, and recover) in the workplace protects the environment (e.g., by reducing the production of garbage and recycling materials for daily use), and explain the meaning of different symbols used to promote these strategies

**Biology, Grade 12, University Preparation**

Strand: Population Dynamics

F1.2 analyse the relationships between population growth, personal consumption, technological development, and our ecological footprint, and assess the effectiveness of some Canadian initiatives intended to assist expanding populations

**Social Sciences and Humanities**

**Equity, Diversity, and Social Justice, Grade 11 Workplace Preparation**

Strand: Foundations

B3.2 demonstrate an understanding of the effects of individual actions that are grounded in environmental awareness (e.g., taking public transportation helps reduce air pollution, shopping at thrift stores helps reduce the depletion of resources used to create products, recycling lessens the amount of garbage going into landfill sites)

B3.3 explain how the media and popular culture can help create awareness of equity, social justice, and environmental issues (e.g., through Internet campaigns, social marketing, documentaries and other films; by publicizing positive role models)

**Exploring Family Studies, Grade 9 or 10 Open**

Strand: Exercising Responsibility

D3. Consumer Awareness: describe and demonstrate responsible consumer practices.

D2.4 explain how families can fulfil their functions and meet their needs while reducing their impact on the environment (e.g., by recycling and reusing goods, composting, shopping for second-hand clothing or household items, reducing consumption, using forms of transportation other than a car whenever possible)

**Food and Nutrition, Grade 9 or 10 Open**

Strand: Local and Global Foods

D2.2 assess programs and practices that reduce the impact of food production and consumption on the environment (e.g., recycling programs, organic farming, food co-ops, community gardens)

D2.3 outline environmentally responsible food-related strategies that can be used in the home (e.g… packing lunches in reusable containers, using reusable shopping bags, buying in bulk, recycling…)

**Housing and Home Design, Grade 11 Open**

Strand: Creating and Maintaining Living Spaces

C1.2 describe how the increased recognition of the need for resource conservation can affect decisions related to living spaces, and identify ways in which householders can conserve energy, water, and other resources (e.g… by recycling and composting)

D3.2 describe strategies for maintaining a healthy home environment (e.g… using proper waste disposal and recycling procedures…)

**Raising Healthy Children, Grade 11 Open**

Strand: Child-Rearing Around the World

D2.4 describe ways in which a parent can act as a positive role model for children (e.g., by modelling environmental responsibility, showing respect and care for others, having a positive body image)

Strand: Personal and Social Responsibilities of Parents

C1.8 describe ways in which parents can reduce the environmental impact of raising children (e.g., using cloth diapers, breastfeeding, using homemade baby food, using public transit, choosing a fuel-efficient vehicle)

**Working With Infants and Young Children, Grade 11 College Preparation**

Strand: Addressing Social Challenges

E1.5 describe strategies that could be used in early learning programs to reduce their environmental impact (e.g., using cloth diapers, recycling craft materials, planting a vegetable garden, using reusable cutlery and dishes)

**Personal Life Management, Grade 12 Open**

Strand: Daily Living Skills

C3.2 describe the basic responsibilities involved in maintaining a safe and functional home environment (e.g… recycling, reducing waste)

Strand: Personal and Social Responsibilities

D3.1 describe strategies for making responsible consumer decisions when living independently (e.g., prioritizing needs and wants, comparison shopping, reading warranties and contracts, considering the environmental impact of purchases, reading information labels)

D3.2 identify internal and external factors that influence spending decisions (e.g., personal preferences, convenience, cultural values, status-related motives, advertising, product cost and availability, environmental impact, considerations related to labour and exploitation issues)

**Technological Education**

**Exploring Technologies, Grade 9, Open**

Strand: Technology, the Environment, and Society

C1.1 describe how various technologies (e.g… resource extraction) affect the environment, and identify important environmental considerations associated with different areas of technology (e.g., how to increase opportunities for recycling, conservation, use of sustainable methods or materials)

C2.3 describe economic, ecological, social, and safety considerations facing consumers when they make choices between particular products or services (e.g., natural versus synthetic materials, renewable versus non-renewable resources; inexpensive products created in developing countries versus more costly products created domestically; higher-priced products with additional safety features versus less costly products without them)

**Green Industries, Grade 10, Open**

Strand: Technology, The Environment, and Society

C1.2 identify best management practices, environmentally sustainable practices, and technologies that can be used to reduce the harmful effects of green industry operations (e.g., composting, recycling, use of renewable energy sources, land retirement, minimal use of fertilizers and pesticides).

**Hospitality and Tourism, Grade 10, Open**

Strand: Industry Practices, the Environment, and Society

C1.3 describe and apply appropriate conservation measures (e.g., reduce, reuse, recycle)

**Manufacturing Technology, Grade 10, Open**

Strand: Technology, The Environment, and Society

C1. demonstrate an understanding of ways in which the manufacturing industry affects the environment.

C1.1 identify ways in which manufacturing affects the environment today (e.g., through the demand for raw materials, creation of greenhouse gases, disposal of waste materials), and predict how the effects will change in the future."

C1.2 explain the importance of “reduce, reuse, and recycle” and life cycle assessment (LCA) when designing, manufacturing, and marketing a product.

C1.4 explain the need for environmental stewardship and describe how the manufacturing industry can act in an environmentally responsible way (e.g., by harvesting raw materials in a sustainable manner, using energy from renewable sources, making products that can be recycled, ensuring ethical treatment of people affected by manufacturing activities).

**Hospitality and Tourism, Grade 11, College Preparation**

Strand: Industry Practices, the Environment, and Society

C1. demonstrate an understanding of factors that affect the relationship between the tourism industry and the environment;

C1.1 explain the need for environmentally friendly waste management in the various sectors of the tourism industry (e.g., with regard to disposal of cooking oil and garbage, recycling of plastic and glass, composting of organic waste);

C1.2 define environmental sustainability as it applies to the various sectors of the tourism industry (e.g… reusing and/or recycling waste products);

C1.4 assess the ecological footprint of an event or activity.

**Hospitality and Tourism, Grade 11, Workplace Preparation**

Strand: Industry Practices, the Environment, and Society

C1. demonstrate an understanding of ways in which various practices of the food and beverage services sector of the tourism industry affect the environment;

C1.1 describe environmentally friendly disposal procedures for waste food products and food packaging (e.g., composting, recycling);

C1.2 create a plan to implement an environmentally friendly disposal procedure for waste food products and/or food packaging (e.g., a plan to set up a composting or recycling program in the school cafeteria, a plan to encourage the use of biodegradable containers for take-out food);

C1.4 assess the ecological footprint of an event or activity.

**Manufacturing Engineering Technology, Grade 11, University/College Preparation**

Strand: Technology, The Environment, and Society

C1. demonstrate an understanding of ways in which the manufacturing industry affects the environment.

C1.1 analyse the effects that various manufacturing activities have on the environment (e.g., the effects of waste disposal…)

**Hospitality and Tourism, Grade 12, College Preparation**

Strand: Industry Practices, the Environment, and Society

C1. demonstrate an understanding of factors that affect the relationship between the tourism industry and the environment;

C1.1 explain why the tourism industry has a responsibility to protect the environment and encourage the sustainable use of natural resources (e.g., by reducing, reusing, and recycling waste…);

**Hospitality and Tourism, Grade 12, Workplace Preparation**

Strand: Industry Practices, the Environment, and Society

C1. demonstrate an understanding of how various practices connected with the tourism industry in general and the food and beverage services sector specifically affect the environment, and how these effects can be reduced

C1.2 describe how the food and beverage services sector can both protect the environment and encourage the sustainable use of natural resources

**Manufacturing Engineering Technology, Grade 12, University/College Preparation**

Strand: Technology, The Environment, and Society

C1. demonstrate an understanding of ways in which the manufacturing industry affects the environment, and make informed decisions based on this understanding

C1.1 identify potentially harmful consequences of manufacturing activities for the environment (e.g., waste disposal, greenhouse gas emissions, water and energy consumption, the depletion of non-renewable resources), and formulate alternatives to reduce the severity of these consequences

**Manufacturing Technology, Grade 12, College Preparation**

Strand: Technology, The Environment, and Society

C1.2 explain how the three Rs (reduce, reuse, recycle) can minimize the effect the manufacturing industry has on the environment

**Appendix 2: detailed video summaries**

Don’t have time to pre-watch each video? Included below are detailed summaries of each video recommended within this lesson plan.

***Recycling incorrectly can cost taxpayers big time –* CBC The National**

**Length:** 4 minutes **Release date:** April 6, 2018

**Summary:** This video shows contamination rates across Canada, explains what contamination is, interviews City of Toronto staff and shows their MRF explaining why contamination is an issue and how much it costs taxpayers, shows residents playing ‘Recyclable or not’ game, highlights online sorting tools.

**Glossary:**

* contaminants – a polluting substance that makes something inpure – In this case, items that do not belong in the recycling

Definition from Oxford Dictionary (2018) <https://en.oxforddictionaries.com/>

***Trying to recycle everything comes at a high cost –* CBC The National**

**Length:** 2.5 minutes **Release date:** May 9, 2018

**Summary:** This video highlights how squeeze pouches, coffee pods, candy wrappers, and cigarettes that are not recyclable in city programs can be sent to Terracycle. Companies pay Terracycle to recycle these products but will only pay for a certain quantity to be recycled. Services like Terracycle may end up giving residents the impression that everything is recyclable when these products are not cost-effective to recycle in large quantities (less than 5% are recycled). The video points to reducing and reusing as better solutions than recycling. A teacher encourages students to pack wasteless lunches instead of bringing individually packaged items.

**Glossary:**

* mixed plastics – typically refers to lower grade plastic items that are more difficult to correctly sort at a Material Recovery Facility and subsequently recycle

***Without China, what's happening to the world's waste?* – CBC The National**

**Length:** 3 minutes **Release date:** March 28, 2018

**Summary:** A 2016 documentary, Plastic China, showed how small-scale plastic recycling was taking place, with children burning the plastic and determining from the smell what type of plastic it was. It is believed that China’s president saw this movie and was horrified about how plastic was being recycled in China. China has decided to largely close its doors to the world’s waste. China’s manufacturers may now have to create or buy new plastic instead of using recycling plastic. Ships bringing recyclable plastic that are abiding by the rules are being turned away in confusion, with their contents ending up in landfills or burned. The US is now sending plastics to southeast Asia, to countries like Thailand and Malaysia. 90 to 95% of the plastic in the ocean is coming from ten rivers in the world, with eight of these rivers in Asia. Importing more plastics to these nations may cause this issue to increase.

***Rethink the way you recycle* – CBC The National**

**Length:** 7 minutes **Release date:** March 28, 2018

**Summary:** Instead of glass, cans and newspaper, our blue boxes are now full of plastic that is expensive and difficult to recycle. China used to be the biggest importer of recyclables but in January begin restricting imports of foreign waste. China was taking over half the world’s plastic with over 20,000 tonnes arriving every day. Recycling within China was causing issues to human health and the environment. For example, electronics were recycled without a way to properly dispose of the waste, leading to soil and water heavy metal contamination, and lead poisoning of children. The import limits are affecting China’s industries that use post-consumer plastic as inputs to their system. Here in Canada, many municipalities are stock-piling materials because they have nowhere to send it. Municipalities are looking for other markets for their plastics. Other actions under consideration include plastic bag bans, or processing plastics in-province with costs charged back to industry.

**Glossary:**

* electronic waste or e-waste – discarded electronic appliances such as mobile phones, computers, and televisions1
* global e-garbage – collective worldwide quantity of electronic waste
* foreign bans – restrictions on certain materials or products imported from other countries
* foreign waste – waste that has been exported from one country to another
* stockpiling – to accumulate a large quantity of good or materials1

1Definitions from Oxford Dictionary (2018): <https://en.oxforddictionaries.com/>