

Operation Water Pollution Curriculum Connections

- ❖ Students learn about what water pollution is, what can be done about the problem and what they, personally, can do about the problem
- ❖ 11 Lesson Plans
- ❖ Applies to Grades 5 - 12
- ❖ Curriculum Connections Last Updated in the summer of 2014

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Alberta

Grade Five

Science

Curriculum Last Updated: 1996

Unit E: Wetland Ecosystem

- 9: Identify human actions that can threaten the abundance or survival of living things in wetland ecosystems (ex. adding pollutants)
- 11: Recognize that changes in part of an ecosystem have effects on the whole environment

Social Studies

Curriculum Last Updated: 2007

5.1: Physical Geography of Canada

- 5.1.1: Value Canada's physical geography and natural environment
- 5.1.3: Analyze how people in Canada interact with the environment

Grade Six

Social Studies

Curriculum Last Updated: 2007

6.1: Citizens Participating in Decision Making

- 6.1.6: Analyze how individuals, groups and associations within a community impact decision making of local and provincial governments

Grade Seven

Science

Curriculum Last Updated: 2014

Unit A: Interactions and Ecosystems

- 1: Investigate and describe relationships between humans and their environments, and identify related issues and scientific questions
- 3: Monitor a local environment, and assess the impacts of environmental factors on the growth, health and reproduction of organisms in that environment
- 4: Describe the relationships among knowledge, decisions and actions in maintaining life-supporting environments

Grade Eight

Science

Curriculum Last Updated: 2014

Unit E: Freshwater and Saltwater Systems (Social and Environmental Emphasis)

- 1: Describe the distribution and characteristics of water in local and global environments, and identify the significance of water supply and quality to the needs of humans and other living things
- 2: Investigate and interpret linkages among landforms, water and climate
- 3: Analyze factors affecting productivity and species distribution in marine and freshwater environments
- 4: Analyze human impacts on aquatic systems; and identify the roles of science and technology in addressing related questions, problems and issues

Grade Nine

Science

Curriculum Last Updated: 2014

Unit C: Environmental Chemistry

- 1: Investigate and describe, in general terms, the role of different substances in the environment in supporting or harming humans and other living things
- 2: Identify processes for measuring the quantity of different substances in the environment and for monitoring air and water quality
- 3: Analyze and evaluate mechanisms affecting the distribution of potentially harmful substances within an environment

Grade Ten

Science

Curriculum Last Updated: 2014

Unit D: Energy Flow in Global Systems (Social and Environmental Contexts Emphasis)

- 2: Analyze the relationships among net solar energy, global energy transfer processes—primarily radiation, convection and hydrologic cycle—and climate
- 4: Investigate and interpret the role of environmental factors on global energy transfer and climate change

Grade Eleven

Biology

Curriculum Last Updated: 2014

Unit A: Energy and Matter Exchange in the Biosphere

- 2: Explain the cycling of matter through the biosphere

Unit B: Ecosystems and Population Change

- 1: Explain that the biosphere is composed of ecosystems, each with distinctive biotic and abiotic characteristics

Chemistry

Curriculum Last Updated: 2014

Unit C: Matter as Solutions, Acids and Bases

- 1: Investigate solutions, describing their physical and chemical properties
- 2: Describe acidic and basic solutions qualitatively and quantitatively

Science

Curriculum Last Updated: 2014

Unit D: Changes in Living Systems

- 1: Analyze ecosystems and ecological succession in the local area and describe the relationships and interactions among subsystems and components
- 3: Analyze and describe the adaptation of organisms to their environments, factors limiting natural populations, and evolutionary change in an ecological context

Grade Twelve

Chemistry

Curriculum Last Updated: 2014

Unit D: Chemical Equilibrium Focusing on Acid-Base Systems

- 2: Determine quantitative relationships in simple equilibrium systems

Science

Curriculum Last Updated: 2014

Unit A: Living Systems Respond to Their Environment

- 2: Analyze the defense mechanisms used by the human body to protect itself from pathogens found in the external environment

Unit B: Chemistry and the Environment

- 1: Analyze the sources of acids and bases and their effects on the environment
- 2: Analyze the sources of organic compounds and their effects on the environment

British Columbia

Grade Five

Science

Curriculum Last Updated: 2005

Processes of Science

- Identify variables that can be changed in an experiment
- Evaluate the fairness of a given experiment
- Describe the steps in designing an experiment

Earth and Space Science

- Analyze how British Columbia's living and non-living resources are used
- Identify methods of extracting and processing British Columbia's resources
- Analyze how the Aboriginal concept of interconnectedness of the environment is reflected
- Responsibility for and caretaking of resources
- Describe potential environmental impacts of using British Columbia's living and non-living resources

Social Studies

Curriculum Last Updated: 2006

Skills and Processes of Social Studies

- A1: Apply critical thinking skills - including hypothesizing, comparing, imagining, inferring, identifying patterns, and summarizing - to a range of problems and issues
- A2: Use maps and timelines to locate, interpret, and represent major physical, political, and economic features of British Columbia and Canada

Economy and Technology

- D1: Analyze the relationship between the economic development of communities and their available resources

Human and Physical Environment

- E2: Describe the location of natural resources within British Columbia and Canada, including fish and marine resources, forests, minerals, and energy resources
- E3: Explain why sustainability is important

- E4: Analyze environmental effects of settlement in early British Columbia and Canada

Grade Six

Science

Curriculum Last Updated: 2005

Processes of Science

- Manipulate and control a number of variables in an experiment
- Apply solutions to a technical problem

Life Science

- Demonstrate the appropriate use of tools to examine living things that cannot be seen with the naked eye
- Analyze how different organisms adapt to their environment

Social Studies

Curriculum Last Updated: 2006

Economy and Technology

- D3: Effects of technology on lifestyle and environment

Governance

- C1: Comparing federal government in Canada with other countries

Human and Physical Environment

- E1: Relationship between cultures and their environments
- E2: Factors affecting settlement patterns and population distribution

Grade Seven

Science

Curriculum Last Updated: 2005

Life Science

- Assess survival needs and interactions between organisms and the environment
- Assess the requirements for sustaining healthy local ecosystems
- Evaluate human impacts on local ecosystems

Physical Science

- Measure substances and solutions according to pH, solubility, and concentration

Grade Eight

Science

Curriculum Last Updated: 2006

A6: Demonstrate ethical, responsible, cooperative behaviour

- Demonstrate ethical behaviour, open-mindedness, and respect for the contributions of others; through learning about the inadequate drinking water in their surrounding areas

D1-3: Water systems on Earth

- Understanding water quality in and around students' communities

Grade Nine

Science

Curriculum Last Updated: 2006

A5: Demonstrate ethical, responsible, cooperative behaviour

- Great opportunity for students to begin to demonstrate ethical behaviour, open-mindedness, and respect for the contributions of others; through learning about the inadequate drinking water in their surrounding areas

Grade Ten

Science

Curriculum Last Updated: 2008

A5: Demonstrate ethical, responsible, cooperative behaviour

- Opportunity for students to begin to demonstrate ethical behaviour, open-mindedness, and respect for the contributions of others; through learning about the inadequate drinking water in their surrounding areas

B1: Explain the interaction of abiotic and biotic factors within an ecosystem

- Understand relationships between abiotic (water) and biotic (bacteria) elements within an ecosystem
- Identify some effects on living things within an ecosystem resulting from changes in abiotic factors (ex. water contamination)

B2: Assess the potential impacts of bioaccumulation

- Identify a variety of contaminants that can bioaccumulate
- How does this affect human health?

Grade Eleven

Biology

Curriculum Last Updated: 2006

A1: Demonstrate safe and correct technique for a variety of laboratory procedures

A2: Design an experiment using the scientific method.

- Formulate and carry out a repeatable, controlled procedure to test the hypothesis
- Observe, measure and record data
- Able to draw conclusions from results

A3: Interpret data from a variety of text and visual sources

- Using the data found throughout the lessons students will be able to make inferences and generalizations
- Draw and present conclusions

D1: Analyze the functional inter-relationships of organisms within an ecosystem

E2: Evaluate the effects of viruses on human health

- Define and give examples of viruses
- Give examples of ways to reduce the spread of viruses and bacteria in water

Chemistry

Curriculum Last Updated: 2006

A1: Demonstrate appropriate safety techniques and proper use of protective equipment

- Identify the safety and protective equipment available in the laboratory and describe how and when to use each piece of the kit
- Throughout the lessons, students will perform laboratory experiments in a safe manner

A3: Communicate results and data in clear and understandable forms

- Produce reports in the required format

- Draw appropriate connections between objectives and conclusions

B5: Select an appropriate way of separating the components of a mixture

Civic Studies

Curriculum Last Updated: 2005

Civic Deliberation

- Analyze the domestic and international effects of Canada's record with respect to issues and events in one or more of the following categories: environment, trade, foreign aid, human rights, peace and security

Earth Science

Curriculum Last Updated: 2006

C2: Assess the extraction and use of geological resources

- Identify environmental problems (ex. water contamination) related to development of a natural resource (such as water)
- Suggest strategies to conserve both material and energy resources

Grade Twelve

Biology

Curriculum Last Updated: 2006

A2: Design an experiment using the scientific method.

- Formulate and carry out a repeatable, controlled procedure to test the hypothesis
- Observe, measure and record data
- Draw conclusions from results

A3: Interpret data from a variety of text and visual sources

- Using the data found throughout the lessons students will be able to make inferences and generalizations
- Draw and present conclusions

B2: Describe the characteristics of water and its role in biological systems

- Describe the role of water and understand the chemicals it is treated with and for which contaminants and components it is tested

B3: Describe the role of acids, bases, and buffers in biological systems in the human body.

- Relate pH values to whether a solution is acidic or basic
- Differentiate among acids, bases, and buffers
- Describe the importance of pH to biological systems in the human body

Manitoba

Grade Six

Social Studies

Curriculum Last Updated: 2006

Cluster 4: Canada Today: Democracy, Diversity, and the Influence of the Past

- 6.4.4: Creating a Just Society

Grade Seven

Science

Curriculum Last Updated: 2000

Cluster One: Interactions within Ecosystems

- 7-1-05: Identify and describe positive and negative examples of human interventions that have an impact on ecological succession or the makeup of ecosystems
- 7-1-06: Identify environmental, social, and economic factors that should be considered in the management and preservation of ecosystems

Social Studies

Curriculum Last Updated: 2003

Cluster 2: Global Quality of Life

- 7-KC-002: Describe the impact of various factors on quality of life in Canada and elsewhere in the world
- 7-KG-037: Identify universal human rights and explain their importance.
- 7-KP-041: Explain the relationship between power and access to wealth and resources
- 7-KE-045: Give examples of the uneven distribution of wealth and resources in the world and describe the impact on individuals, communities, and nations

Cluster 4: Human Impact in Europe or the Americas

- 7-VL-009: Be willing to take actions to help sustain the natural environment in Canada and the world

Grade Eight

Social Studies

Curriculum Last Updated: 2003

Cluster 1: Understanding Societies Past and Present

- 8-VL-008: Appreciate the importance of sustaining the natural environment for future societies

Science

Curriculum Last Updated: 2000

Cluster 4: Water Systems

- 8-4-14: Identify sources of drinking water and describe methods for obtaining water in areas where supply is limited
- 8-4-15: Explain how and why water may need to be treated for use by humans
- 8-4-16: Compare the wastewater disposal system within their communities to one used elsewhere
- 8-4-17: Identify substances that may pollute water, related environmental and societal impacts of pollution, and ways to reduce or eliminate effects of pollution
- 8-4-18: Identify environmental, social, and economic factors that should be considered in the management of water resources
- 8-4-19: Use the design process to develop a system to solve a water-related problem

Grade Nine

Social Studies

Curriculum Last Updated: 2007

Cluster 1: Diversity and Pluralism in Canada

- 9.1.2: Human Rights

Cluster 2: Democracy and Governance

- 9.2.3: Building a Just Society
- 9.2.4: Citizen Participation

Cluster 4: Canada - Opportunities and Challenges

- 9.4.1: A Changing Nation
- 9.4.3L Social Justice in Canada

Grade Ten

Social Studies

Curriculum Last Updated: 2006

Cluster 2: Natural Resources

- 2.2: Diverse Perspectives

Science

Curriculum Last Updated: 2001

Cluster 1: Dynamics of Ecosystems

- S2-1-10: Investigate how human activities affect an ecosystem and use the decision-making process to propose a course of action to enhance its sustainability

Cluster 4: Weather Dynamics

- S2-4-06: Investigate the social, economic, and environmental impacts of a recent severe weather event
- S2-4-07: Investigate and evaluate evidence that climate change occurs naturally and can be influenced by human activities

Grade Eleven

Chemistry

Curriculum Last Updated: 2006

Topic 4: Solutions

- C11-4-06: Construct, from experimental data, a solubility curve of a pure substance in water
- C11-4-19: Describe the process of treating a water supply, identifying the allowable concentrations of metallic and organic species in water suitable for consumption

Grade Twelve

Chemistry

Curriculum Last Updated: 2013

Topic 5: Acids and Bases

- C12-5-06 Solve problems involving pH

New Brunswick

Grade Seven

Science

Curriculum Last Updated: 2002

Unit 1: Interactions within Ecosystems

- 306-3: Describe interactions between biotic and abiotic factors in an ecosystem
- 306-4: Identify signs of ecological succession in a local ecosystem

Social Studies

Curriculum Last Updated: 2005

Unit 1: Introduction

- 7.1.1: Explore the general concept of empowerment

Unit 2: Economic Empowerment

- 7.2.2: Investigate the various ways economic systems empower or disempowered people
- 7.2.3: Analyze trends that could impact future economic empowerment

Unit 3: Political Empowerment

- 7.3.1: Evaluate the conditions of everyday life for diverse peoples living in British North America in the mid-1800s, including Aboriginal peoples, African-Canadians and Acadians

Unit 4: Cultural Empowerment

- 7.4.3: Analyze the degree of empowerment and disempowerment for Aboriginal peoples in present day Atlantic Canada

Grade Nine

Science

Curriculum Last Updated: 2002

Unit 2: Physical Science: Atoms and Elements

- 307-12: Investigate materials and describe them in terms of their properties
- 307-13: Describe changes in the properties of materials that result from some common chemical reactions

Social Studies

Curriculum Last Updated: 2006

Unit 4: Citizenship

- 9.4.1: Take age-appropriate actions that demonstrate the rights and responsibilities of citizenship

Grade Ten

Science

Curriculum Last Updated: 2002

Unit 1: Life Science: Sustainability of Ecosystems

- 318-1: Illustrate the cycling of matter through biotic and abiotic components of an ecosystem by tracking carbon, nitrogen, and oxygen
- 318-6: Explain how biodiversity of an ecosystem contributes to its sustainability
- 331-6: Analyze the impact of external factors on an ecosystem

Grade Eleven

Biology 111/112

Curriculum Last Updated: 2008

Unit 2: Biodiversity

- 331-6: Analyze the impact of external factors on an ecosystem

Unit 3: Maintaining Dynamic Equilibrium

- 314-1: Identify chemical elements that are commonly found in living systems
- 314-2: Identify the role of compounds, such as water, found in living systems
- 314-3: Identify and describe the structure and function of important biochemical compounds, including carbohydrates, proteins and lipids

Environmental Science 120

Curriculum Last Updated: 2012

Unit 1: An Overview of Environmental Science

- Explore and communicate current understanding of local, regional and global environmental issues
- Identify links between personal behavior and local, regional and global environmental issues
- Identify ways to measure environmentally sustainable behaviours, and describe links to economic and social factors
- Become aware of the range of issues arising from overpopulation and human activity
- Explore one or a few local or regional issues with respect to the impact on the environment, and on history, economics and social systems
- Practice research and presentation skills including experimenting to test environmental impact, identifying and accessing various organizations for information and expertise, and considering the legislation which impacts on environmental issues.
- Explore how technology is used to gather and communicate information, and to address the issues

Unit 2: Sustainable Development

- Recognize that humans are just one part of a complex system of living things, with an inordinate impact on the biosphere, often accelerated by the use of technology
- Explore how the development of technologies has affected land and water use
- Find examples of development that is sustainable and is not sustainable - ecologically, economically, socially, and culturally

Unit 3: Optional topics for Study (Air and Water Pollution)

- Describe examples of the effect of air and water pollution on human health and society, and on the natural environment
- Summarize the main types and sources of water pollution
 - distinguish between point sources and nonpoint sources
 - distinguish between primary and secondary pollutants
- Design and conduct an experiment to determine the presence and concentration of air or water pollutants
- Research and report on prevention and cleanup strategies to reduce air and water pollution

Newfoundland and Labrador

Grade Five

Social Studies

Curriculum Last Updated: 2012

- Environment affects people's ways of living and people, in turn, modify and change the environment
- The effect of geographic conditions on ways of living
- The basic needs of people are the same everywhere
- Conservation and utilization of natural resources
- Public issues affecting the local community
- Rights and duties of citizenship

Science

Curriculum Last Updated: 2002

Physical Science: Properties and Changes in Materials

- 300-10: Identify properties such as texture, hardness, colour, buoyancy, and solubility that allow materials to be distinguished from one another

Grade Six

Social Studies

Curriculum Last Updated: 2007

Unit 2: Environment and Culture

- 6.2.2 Assess the relationship between culture and environment in a selected cultural region
- 6.2.3 Compare the use of resources and sustainability practices between Canada and a selected country

Unit 5: World Issues

- 6.5.2 Examine selected examples of human rights issues around the world
- 6.5.3 Take age-appropriate actions to demonstrate an understanding of responsibilities as global citizens

Grade Seven

Science

Curriculum Last Updated: 2013

Unit 1: Interactions within Ecosystem

- 306-3: Describe interactions between biotic and abiotic factors in an ecosystem

Social Studies

Curriculum Last Updated: 2004

Unit 5: Societal Empowerment

- 7.5.1: Evaluate the conditions of everyday life for the peoples of Canada at the turn of the 20th century

Grade Eight

Science

Unit 2: Fluids

- 307-6: Compare the viscosity of various liquids
- 307-7: Describe factors that can modify the viscosity of a liquid
- 307-8: Describe the relationship between the mass, volume, and density of solids, liquids, and gases; using the particle theory of matter gaseous fluids are compressed or heated

Social Studies

Curriculum Last Updated: 2005

Unit 2: History as a Story of People

- 2.1: The student will be expected to demonstrate an understanding of the Aboriginal peoples who lived in Newfoundland and Labrador in the 19th Century
- 2.4: The student will be expected to demonstrate an understanding of the political context and challenges in Newfoundland and Labrador in the 19th century

Unit 5: History as a Story of the Past in the Present

- 5.1: The student will be expected to demonstrate an understanding of the role of history in shaping our current circumstances

Grade Nine

Social Studies

Curriculum Last Updated: 2012

Unit Six: Canada's Changing Identity: Creating a Preferred Future

- SCO 15 - The student will be expected to demonstrate an understanding of economic challenges and opportunities that may affect Canada's future

- SCO 16 - The student will be expected to demonstrate an understanding of political challenges and opportunities that may affect Canada's future
- SCO 17 - The student will be expected to demonstrate an understanding of social and cultural challenges and opportunities that may affect Canada's future

Secondary Grades

Canadian Geography 1202

Curriculum Last Updated: 1996

2.1 Understandings

- 2.1.4 Activities and issues related to how Canadians use resources on the land
- 2.1.5 Activities and issues related to how Canadians use resources in the ocean environment

Canadian History 1201

Curriculum Last Updated: 2011

Unit 7: Issues in Canada

- 7.0 The student will be expected to demonstrate an understanding of important contemporary issues in Canada
- 7.1 Aboriginal rights: legislation, women's rights, land claims, self-government

Chemistry 3202

Unit 1: From Kinetics to Equilibrium

- 323-3: Define the concept of equilibrium as it pertains to solutions
- 323-4: Explain solubility, using the concept of equilibrium
- 323-5: Explain how different factors affect solubility, using the concept of equilibrium

Unit 2: Acids and Bases

- 320-2: Predict products of acid-base reactions
- 320-4: Calculate the pH of an acid or a base given its concentration, and vice versa
- 320-7: Explain how acid-base indicators function
- ACC-5: State general examples of how our lives are affected by acid-base chemistry

Environmental Science 3205

Unit 1: Introduction to Environmental Science

- 1.03: Describe the Newfoundland and Labrador transition, from Aboriginals, European settlers, to present day, in terms of how they impacted the land
- 1.16: Recognize that environmental monitoring is an essential component of sustainability
- 1.19: Describe your community's impact on the environment
- 1.20: Describe environmental responsibility
- 1.21: Define eco-citizenship

Unit 4: Water Use and the Environment

- 4.02: Recognize that water is a finite resource
- 4.12: Identify physical, biological, and chemical impacts on water quality
- 4.13: Evaluate the impacts of human activities on the water resources
- 4.18: List the main sources of drinking water in Newfoundland and Labrador
- 4.19: Outline the risks involved in drinking untreated water
- 4.20: Identify the main components of the multi-barrier approach to ensure safe drinking water
- 4.21: Identify the phases of treating municipal water
- 4.22: Describe alternate methods of water treatment
- 4.23: List sources of wastewater
- 4.25: Describe the disposal and treatment methods for municipal and industrial effluent

Science 1206

Unit 1 Life Science: Sustainability of Ecosystems

- 318-1: Illustrate the cycling of matter through biotic and abiotic components of an ecosystem by tracking carbon, nitrogen, and oxygen
- 331-6: Analyze the impact of external factors on an ecosystem

Northwest Territories

See Alberta's Curriculum

The Northwest Territories currently makes use of the Alberta curriculum materials

Nova Scotia

Grade Five

Social Studies

Curriculum Last Updated: 2012

Citizenship, Power, and Governance

- A: Demonstrate an understanding of the rights and responsibilities of citizenship and the origins, functions, and sources of power, authority, and governance

Interdependence

- D: Demonstrate an understanding of the interdependent relationship among individuals, societies, and the environment—locally, nationally, and globally—and the implications for a sustainable future

People, Place, and Environment

- E: Demonstrate an understanding of the interactions among people, places, and the environment

Grade Six

Social Studies

Curriculum Last Updated: 2012

Citizenship, Power, and Governance

- A: Demonstrate an understanding of the rights and responsibilities of citizenship and the origins, functions, and sources of power, authority, and governance

Interdependence

- D: Demonstrate an understanding of the interdependent relationship among individuals, societies, and the environment—locally, nationally, and globally—and the implications for a sustainable future

People, Place, and Environment

- E: Demonstrate an understanding of the interactions among people, places, and the environment

Grade Seven

Science

Curriculum Last Updated: 2012

Physical Science: Mixtures and Solutions

Mixtures

- 209-6, 307-2: Examine and separate the components of a variety of mixtures, safely using materials in a laboratory

Concentration of Solutions

- 208-1, 210-9: Perform and solve testable questions about solutions' concentrations
- 210-16-109-4: Identify questions and use a technology for collecting data

Mixtures, Solutions, and the Environment

- 112-7, 113-1: Identify and explain examples of mixtures and solutions that have an impact on development in science, technology, and environment
- 111-5: Describe the science underlying particular technologies designed to explore natural phenomena, extend human capabilities, or solve practical problems

Life Science: Interactions within Ecosystems

Components of an Ecosystem

- 208-2, 208-3, 210-1: Identify questions, investigate, and record collected data on the ecosystem's components using materials effectively
- 306-3: Describe interactions between biotic and abiotic factors in an ecosystem
- 304-1, 109-1, 109-12: Distinguish and explain how biological classification reflects the diversity of life on Earth, using specific terms and characteristics

Action

- 113-11, 211-5, 113-10: Defend a proposal to protect a habitat and provide examples of various issues that can be addressed in multiple ways
- 112-4, 112-8, 209-5: Research individuals/groups in Canada that focus on the environment, using various print and electronic sources

Social Studies

Curriculum Last Updated: 2012

Unit One: Introduction

- 7.1.1: Explore the general concept of empowerment

Unit Two: Economic Empowerment

- 7.2.2: Investigate the various ways economic systems empower or disempowered people
- 7.2.3: Analyze trends that could impact future economic empowerment

Unit Three: Political Empowerment

- 7.3.2: Analyze how the struggle for responsible government was an issue of political empowerment and disempowerment

Unit Four: Cultural Empowerment

- 7.4.3: Analyze the degree of empowerment and disempowerment for Aboriginal peoples in present day Atlantic Canada during this period

Grade Eight

Science

Curriculum Last Updated: 2012

Physical Science: Fluids

Forces in Fluids

- 111-1, 113-2: Provide examples and a course of action of how science and technology affect personal and community needs

Social Studies

Curriculum Last Updated: 2012

Unit Four: Citizenship

- 8.4.1: Take age-appropriate actions that demonstrate the rights and responsibilities of citizenship (local, national, and global)
- 8.4.3: Demonstrate an understanding of the structure and operation of government in Canada under a federal system

Grade Nine

Science

Curriculum Last Updated: 2012

Atoms and Elements

Physical and Chemical Changes

- 209-7, 111-6, 210-11: Perform experiments, collect evidence, report findings, and demonstrate a knowledge of WHMIS standards in the laboratory
- 307-12: Investigate materials and describe them in terms of their physical properties
- 307-13: Describe changes in the properties of materials that result from some common chemical reactions

Periodic Table

- 210-1, 210-2: Use the periodic table as a classification system and compile data about its structure
- 112-3, 112-8: Explain and provide examples of how society's needs for chemistry incorporate science, technology, and environment

Social Studies

Curriculum Last Updated: 2012

Theme One: Physical Setting

- 9.1.4: Link human activity to the natural resources of the Atlantic region

Theme Five: Interdependence

- 9.5.1: Explore his/her concept of world view and explain the factors that influence and are influenced by it
- 9.5.3: Access the individual qualities and attributes Atlantic Canadians need to become contributing members of the global community
- 9.5.4: Demonstrate an understanding that the future well-being of Atlantic Canada involves co-operation with the national and global communities

Grade Ten

Science

Curriculum Last Updated: 2012

Life Science: Sustainability of Ecosystems

- 114-1: Question and analyze how a paradigm shift in sustainability can change society's views
- 318-2, 318-5: Distinguish between biotic and abiotic factors, determining the impact on the consumers at all trophic levels due to bioaccumulation, variability, and diversity
- 214-1, 318-6: Describe how the classification involved in the biodiversity of an ecosystem is responsible for its sustainability
- 212-4, 214-3, 331-6: Predict and analyze the impact of external factors on the sustainability of an ecosystem, using a variety of formats
- 213-7, 215-1, 318-4: Diagnose and report the ecosystem's response to short-term stress and long-term change

Grade Eleven

Chemistry

Curriculum Last Updated: 2012

Stoichiometry

Calculations and Chemical Equations

- 214-13: Identify practical problems that involve technology where equations were used
- 213-3: Use instruments effectively and accurately for collecting data
- 215-1: Communicate questions, ideas, and intentions, and receive, interpret, understand, support, and respond to the ideas of others

Applications of Stoichiometry

- 214-12: Explain how data support or refute the hypotheses or prediction of chemical reactions
- 117-2: Analyze society's influence on science and technology

Grade Twelve

Geology

Curriculum Last Updated: 2012

Deposition

- 118-9: Propose a course of action on social issues related to science and technology, taking into account human and environmental needs
- 215-5: Develop, present and defend a position or course of action based on findings

Nunavut

See Alberta's Curriculum

Nunavut currently makes use of the Alberta curriculum materials

Ontario

Grade Seven

Geography

Curriculum Last Updated: 2013

Strand B. Natural Resources around the World: Use and Sustainability

- B1: Analyze aspects of the extraction/harvesting and use of natural resources in different regions of the world, and assess ways of preserving these resources
- B2: Use the geographic inquiry process to investigate issues related to the impact of the extraction/harvesting and/or use of natural resources around the world from a geographic perspective
- B3: Demonstrate an understanding of the sources and use of different types of natural resources and of some of the effects of the extraction/harvesting and use of these resources

Science

Curriculum Last Updated: 2007

Understanding Life Systems: Interactions in the Environment

- 1: Assess the impacts of human activities and technologies on the environment, and evaluate ways of controlling these impacts
- 2: Investigate interactions within the environment, and identify factors that affect the balance between different components of an ecosystem
- 3: Demonstrate an understanding of interactions between and among biotic and abiotic elements in the environment

Understanding Matter and Energy: Pure Substances and Mixtures

- 1: Evaluate the social and environmental impacts of the use and disposal of pure substances and mixtures

Grade Eight

Science

Curriculum Last Updated: 2007

Understanding Structures and Mechanisms: Systems in Action

- 1: Assess the personal, social, and/or environmental impacts of a system, and evaluate improvements to a system and/or alternative ways of meeting the same needs

Understanding Matter and Energy: Fluids

- 1: Analyze how the properties of fluids are used in various technologies, and assess the impact of these technologies on society and the environment
- 2: Investigate the properties of fluids
- 3: Demonstrate an understanding of the properties and uses of fluids

Understanding Earth and Space Systems: Water Systems

- 1: Assess the impact of human activities and technologies on the sustainability of water resources
- 2: Investigate factors that affect local water quality
- 3: Demonstrate an understanding of the characteristics of the earth's water systems and the influence of water systems on a specific region

Grade Nine

Geography

Curriculum Last Updated: 2013

Strand B. Interactions in the Physical Environment

- B1: The Physical Environment and Human Activities: analyze various interactions between physical processes, phenomena, and events and human activities in Canada
- B2: Interrelationships between Physical Systems, Processes, and Events: analyze characteristics of various physical processes, phenomena, and events affecting Canada and their interrelationship with global physical systems
- B3: The Characteristics of Canada's Natural Environment: describe various characteristics of the natural environment and the spatial distribution of physical features in Canada, and explain the role of physical processes, phenomena, and events in shaping them

Strand E. Liveable Communities

- E1: The Sustainability of Human Systems: analyze issues relating to the sustainability of human systems in Canada
- E2: Impacts of Urban Growth: analyze impacts of urban growth in Canada
- E3: Characteristics of Land Use in Canada: analyze characteristics of land use in various Canadian communities, and explain how some factors influence land-use patterns

Grade Ten

Science

Curriculum Last Updated: 2008

C. Chemistry: Chemical Reactions

- C1: Analyze a variety of safety and environmental issues associated with chemical reactions, including the ways in which chemical reactions can be applied to address environmental challenges

D. Earth and Space Science: Climate Change

- D2: Investigate various natural and human factors that influence Earth's climate and climate change
- D3: Demonstrate an understanding of natural and human factors, including the greenhouse effect, that influence Earth's climate and contribute to climate change

Grade Eleven

Biology

Curriculum Last Updated: 2008

B. Diversity of Living Things

- B1: Analyze the effects of various human activities on the diversity of living things

Chemistry

Curriculum Last Updated: 2008

E. Solutions and Solubility

- E1: Analyze the origins and effects of water pollution, and a variety of economic, social, and environmental issues related to drinking water
- E2: Investigate qualitative and quantitative properties of solutions, and solve related problems
- E3: Demonstrate an understanding of qualitative and quantitative properties of solutions

Environmental Science

Curriculum Last Updated: 2008

B. Scientific Solutions to Contemporary Environmental Challenges

- B1. Analyze social and economic issues related to an environmental challenge, and how societal needs influence scientific endeavors related to the environment

- B2: Investigate a range of perspectives that have contributed to scientific knowledge about the environment, and how scientific knowledge and procedures are applied to address contemporary environmental problems

Geography

Curriculum Last Updated: 2005

Human-Environment Interactions

- Analyze the causes and effects of human-environment interactions in various ecological zones of the Americas
- Evaluate the environmental and economic consequences for the Americas of natural hazards and climatic variations

Global Connections

- Evaluate the impact of the global economy on the environment and peoples of the Americas
- Analyze how the nations of the Americas interact to promote or defend their political, economic, environmental, and social interests

Grade Twelve

Canadian and World Studies

Curriculum Last Updated: 2005

The Environment and Resource Management: Human-Environment Interactions

- Explain significant short-term and long-term effects of human activity on the natural environment
- Analyze and evaluate interrelationships among the environment, the economy, and society
- Analyze patterns of resource availability and use

The Environment and Resource Management: Global Connections

- Analyze environmental and resource management issues and explain their global implications
- Explain how population growth affects the sustainability of global ecosystems
- Evaluate the effectiveness of the efforts of the international community to deal with environmental and resource management issues

Chemistry

Curriculum Last Updated: 2008

B. Organic Chemistry

- B1: Assess the social and environmental impact of organic compounds used in everyday life, and propose a course of action to reduce the use of compounds that are harmful to human health and the environment

Prince Edward Island

Grade Seven

Social Studies

Curriculum Last Updated: 2006

Unit 2: Economic Empowerment

- 7.2.1: Analyze how commodities that lead to economic empowerment have changed
- 7.2.2: Investigate the various ways economic systems empower or disempowering people
- 7.2.3: Analyze trends that could impact future economic empowerment

Unit 3: Societal Empowerment

- 7.5.1: Evaluate the conditions of everyday life for the peoples of Canada at the turn of the 20th century

Unit 4: Cultural Empowerment

- 7.4.3: Analyze the degree of empowerment and disempowerment for Aboriginal peoples in present-day Atlantic Canada during this period

Science

Curriculum Last Updated: 2010

Life Science: Interactions within Ecosystem

- 306-3: Describe interactions between biotic and abiotic factors in an ecosystem
- 306-4: Identify signs of ecological succession in a local ecosystem

Physical Science: Mixtures and Solutions

- 307-2: Identify and separate the components of mixtures

Grade Eight

Social Studies

Curriculum Last Updated: 2006

Citizenship

- 8.4.1: Take age appropriate actions that demonstrate the rights and responsibilities of citizenship (local, national and global)
- 8.4.2: Demonstrate an understanding of how citizenship has evolved over time

- 8.4.3: Demonstrate an understanding of the structure and operation of government in Canada under a federal system

Grade Nine

Science

Curriculum Last Updated: 2010

Physical Science: Atoms and Elements

- 307-12: Investigate materials and describe them in terms of their physical properties
- 307-13: Describe changes in the properties of materials that result from some common chemical reactions

Grade Ten

Canadian Studies 401A

Curriculum Last Updated: 2007

Canada's Place in the World

- *GCO*: Students will be expected to demonstrate an understanding of the interactions among people, places, and the environment

Science 421A

Curriculum Last Updated: 2005

Life Science: Sustainability of Ecosystems

- 318-1: Illustrate the cycling of matter through biotic and abiotic components of an ecosystem by tracking carbon, nitrogen, and oxygen
- 331-6: Analyze the impact of external factors on an ecosystem
- 318-6: Explain how biodiversity of an ecosystem contributes to its sustainability

Grade Eleven

Geography 531A

Curriculum Last Updated: 2011

Unit 2: Physical Patterns of the World

- 2.4: Explain the significance of water as a renewable resource

Grade Twelve

Environmental Science 621A

Curriculum Last Updated: 2011

Ecological Principles

- 3.5: Illustrate the cycling of matter through biotic and abiotic components of an ecosystem
- 3.6: Conduct an experiment to measure abiotic factors of an ecosystem

Natural Resources

- 5.8: Demonstrate an understanding of sustainable water use at local, national, and global levels
- 5.9: Evaluate the significance of water resources for international relations

Environmental Challenges and Successes

- 6.10: Summarize the main types, sources and effects of water pollution
- 6.11: Explain strategies that reduce air and water pollution
- 6.12: Conduct an experiment to determine water pollutants
- 6.13: Identify the types of solid domestic waste
- 6.14: Evaluate pollution management strategies from solid domestic waste on Prince Edward Island
- 6.15: Propose a course of action on a social issue related to waste management, taking into account human, economic, and environmental needs

Quebec

Elementary Grades

Science and Technology

Curriculum Last Updated: 2001

Elementary Cycle One

- Earth and Space: Water in all its forms

Elementary Cycle Two and Three

- Earth and Space: Matter
 - Properties and characteristics of matter on Earth
 - Transformation of matter
- Living Things: Systems and Interactions
 - Interactions between living organisms and their environment
 - Interaction between humans and their environment

Secondary Grades

Physical Science (Physical Environment)

Curriculum Last Updated: 1987

- Gain knowledge of certain physical phenomena in the environment, and consequently, learn about the properties of matter
- Develop certain skills necessary for scientific experiments
- Develop certain attitudes regarding the scientific method, such as a critical sense and a taste for research

Personal and Social Science

Curriculum Last Updated: 1989

- To enable the student to identify in his/her everyday experience various aspects of life: health, interpersonal relationships, life in society, sexuality, and consumption.
- To enable the student to clarify his/her concepts, values, and actions in these various areas of his/her development
- To enable the student to have a better understanding of the social dimension of his/her personality so that he/she may have a rewarding relationship with society
- To enable the student to discover and appreciate the unique character of each human being so that he/she may learn respect for others
- To enable the student to understand his/her rights and responsibilities as a citizen and the necessity for generally accepted standards in a democratic society

Saskatchewan

Grade Five

Social Studies

Curriculum Last Updated: 2010

Resources and Wealth (RW)

- RW5.1: Explain the importance of sustainable management of the environment to Canada's future

Grade Six

Science

Curriculum Last Updated: 2009

Life Science: Diversity of Living Things (DL)

- DL6.1: Recognize, describe, and appreciate the diversity of living things in local and other ecosystems, and explore related careers

Social Studies

Curriculum Last Updated: 2009

Interactions and Interdependence of Nations

- IN6.3: Develop an understanding that global interdependence impacts individual daily life in Canada and a selection of countries bordering the Atlantic Ocean

Dynamic Relationships

- DR6.1: Analyze the impact of the diversity of natural environments on the ways of life in Canada and a selection of countries bordering the Atlantic Ocean
- DR6.2: Analyze ways in which the land affects human settlement patterns and social organization, and ways in which human habitation affects land

Resources and Wealth

- RW6.1: Examine and analyze factors that contribute to quality of life, including material and non-material factors
- RW6.2: Contribute to initiating and guiding change in local and global communities regarding environmental, social, and economic sustainability

Grade Seven

Science

Curriculum Last Updated: 2009

Life Science: Interactions within Ecosystems (IE)

- IE7.3: Evaluate biogeochemical cycles (water, carbon, and nitrogen) as representations of energy flow and the cycling of matter through ecosystems
- IE7.4: Analyze how ecosystems change in response to natural and human influences, and propose actions to reduce the impact of human behaviour on a specific ecosystem

Social Studies

Curriculum Last Updated: 2009

Dynamic Relationships

- DR7.2: Appraise the impact of human habitation on the natural environment in Canada, and in a selection of Pacific Rim and northern circumpolar countries
- DR7.3: Analyze the relationship between current and historical events and the physical and social environments in Pacific and northern Canada and in a selection of Pacific Rim and circumpolar countries

Resources and Wealth

- RW7.2: Investigate the influence of resources upon economic conditions of peoples in circumpolar and Pacific Rim countries

Grade Eight

Science

Curriculum Last Updated: 2009

Earth and Space Science: Water Systems on Earth (WS)

- WS8.1: Analyze the impact of natural and human-induced changes to the characteristics and distribution of water in local, regional, and national ecosystems

Social Studies

Curriculum Last Updated: 2009

Resources and Wealth

- RW8.1: Analyze the social and environmental consequences of living in the Canadian mixed market economy based on consumerism

- RW8.2: Assess the implications of personal consumer choices
- RW8.3: Critique the approaches of Canada and Canadians to environmental stewardship and sustainability

Grade Nine

Social Studies

Curriculum Last Updated: 2009

Dynamic Relationships

- DR9.3: Assess the relationship of the natural environment in the development of a society

Resources and Wealth

- RW9.1: Compare differing perspectives regarding the acquisition and distribution of resources and wealth in the societies studied

Grade Ten

Science

Curriculum Last Updated: 2005

Life Science: Sustainability of Ecosystems

- SE1: Explore cultural perspectives on sustainability
- SE4: Identify cycles, change, and stability in ecosystems
- SE5: Investigate human impact on ecosystems

Grade Eleven

Biology

Curriculum Last Updated: 1992

Unit 1: Introduction to Biology

- 1.2: Exhibit a curiosity about life and the conditions which support life
- 1.3: Appreciate the nature of scientific investigations and the findings of science
- 1.4: Recognize the relationship between what is studied in biology and daily life
- 2: Analyze a variety of ecosystems

Chemistry

Curriculum Last Updated: 1992

Chemical Reactions

- Appreciate the importance of chemical reactions

- Use a wide range of language experiences to develop understanding about molecules and their reactions
- Develop an understanding of how knowledge is created, evaluated, refined and changed within chemistry

Optional: Consumer Chemistry

- Describe and discuss the impact of the chemical industry on society
- Develop a contemporary view of chemical technology and its influence on our lives

Native Studies

Curriculum Last Updated: 1992

Unit Three: Social Justice Case Studies and Readings

- Develop an understanding and increased awareness of the social justice issues and realities of Indigenous peoples in Canada and internationally
- Become aware of specific situations of social injustice, historical and current

Social Studies

Curriculum Last Updated: 1994

Unit One: Human Rights

- Know that human rights are those rights that an individual is entitled to simply because she or he is human
- Know that a human rights claim by an individual or group imposes a set of responsibilities and obligations which other individuals and groups must honour
- Know that human rights are more than "demands for rights", they involve a moral entitlement to the right in question which other people in society collectively have decided they will honour
- Know that human rights are universal and as such apply to all people regardless of nationality, race, religion, political beliefs, age or gender

Unit Three: Environment

- Know that the environment is a complex system of interacting, interdependent, living and non-living parts, with the whole environment being greater than the sum of each part
- Know that resources are those parts of the environment considered valuable because they meet human needs

Grade Twelve

Native Studies

Curriculum Last Updated: 1997

Unit One: Aboriginal and Treaty Rights

- Understand the factors of diversity of Aboriginal nations of Canada
- Understand the basis of Aboriginal rights
- Understand the basis of Treaty rights
- Understand the interpretation and basis for interpretation of Aboriginal and treaty rights

Unit Four: Economic Development

- Understand how cultural factors influence a people's relationship to the environment and economic development
- Understand the technical, social and cultural implications associated with economic development projects
- Understand that a range of perspectives exists regarding development
- Appreciate the impact of development of natural resources on Aboriginal peoples

Yukon

See British Columbia

The British Columbia program of studies forms the basis of the Yukon curriculum