

Grade 9	<h1 style="text-align: center;">SDG Challenge Curricular Connections</h1>
Grade 9 Science	<p><b>Science, Technology and Society (STS) and Knowledge</b></p> <p><b>Unit C: Environmental Chemistry</b></p> <ol style="list-style-type: none"> <li>Investigate and describe, in general terms, the role of different substances in the environment in supporting or harming humans and other living things <ul style="list-style-type: none"> <li>identify common organic and inorganic substances that are essential to the health and growth of humans and other living things, and illustrate the roles served by these substances</li> <li>describe, in general terms, the forms of organic matter synthesized by plants and animals, including carbohydrates, proteins and lipids</li> <li>describe and illustrate processes by which chemicals are introduced to the environment or their concentrations are changed</li> <li>describe the uptake of materials by living things through ingestion or absorption, and investigate and describe evidence that some materials are difficult for organisms to break down or eliminate</li> <li>identify questions that may need to be addressed in deciding what substances—in what amounts—can be safely released into the environment</li> </ul> </li> <li>Identify processes for measuring the quantity of different substances in the environment and for monitoring air and water quality <ul style="list-style-type: none"> <li>identify substrates and nutrient sources for living things within a variety of environments</li> <li>describe and illustrate the use of biological monitoring as one method for determining environmental quality</li> <li>identify chemical factors in an environment that might affect the health and distribution of living things in that environment</li> </ul> </li> <li>Analyze and evaluate mechanisms affecting the distribution of potentially harmful substances within an environment <ul style="list-style-type: none"> <li>investigate and evaluate potential risks resulting from consumer practices and industrial processes, and identify processes used in providing information and setting standards to manage these risks</li> <li>identify and evaluate information and evidence related to an issue in which environmental chemistry plays a major role</li> </ul> </li> </ol> <p><b>Skills (focus on research and inquiry skills to inform the decision-making process)</b></p> <p><b>Initiating and Planning</b></p> <ul style="list-style-type: none"> <li>identify science-related issues</li> <li>identify questions to investigate arising from science-related issues</li> <li>select appropriate methods and tools for collecting relevant data and information.</li> </ul> <p><b>Performing and Recording</b></p> <ul style="list-style-type: none"> <li>research information relevant to a given question, problem or issue</li> <li>identify information and data that are relevant to the issue</li> <li>select and integrate information from various print and electronic sources, or from several parts of the same source.</li> </ul> <p><b>Analyzing and Interpreting</b></p> <ul style="list-style-type: none"> <li>apply given criteria for evaluating evidence and sources of information</li> <li>identify new questions and problems that arise from what was learned</li> <li>identify and evaluate potential applications of findings.</li> </ul> <p><b>Communication and Teamwork</b></p> <ul style="list-style-type: none"> <li>work cooperatively with team members to develop and carry out a plan and troubleshoot problems as they arise</li> <li>defend a given position on an issue, based on findings</li> </ul>

	<ul style="list-style-type: none"> <li>• evaluate individual and group processes used in investigating an issue and in evaluating alternative decisions.</li> </ul> <p><b>Skills (focus on problem solving)</b></p> <p>Initiating and Planning</p> <ul style="list-style-type: none"> <li>• define practical problems</li> <li>• identify questions to investigate arising from practical problems</li> <li>• propose alternative solutions to a given practical problem, select one, and develop a plan</li> <li>• select appropriate methods and tools for collecting data and information and for solving problems.</li> </ul> <p>Performing and Recording</p> <ul style="list-style-type: none"> <li>• research information relevant to a given problem</li> <li>• construct and test prototype designs</li> <li>• use tools and apparatus safely.</li> </ul> <p>Analyzing and Interpreting</p> <ul style="list-style-type: none"> <li>• identify and troubleshoot problems, and refine the operation of prototype devices</li> <li>• evaluate designs and prototypes in terms of function, reliability, safety, efficient use of materials and impact on the environment</li> <li>• identify and evaluate potential applications of findings</li> <li>• identify new questions and problems that arise from what was learned.</li> </ul> <p>Communication and Teamwork</p> <ul style="list-style-type: none"> <li>• work cooperatively with team members to develop and carry out a plan and troubleshoot problems as they arise</li> <li>• recommend an approach to solving a given problem, based on findings</li> <li>• evaluate individual and group processes used in planning and carrying out problem-solving tasks.</li> </ul>
Grade 9 English	<p><b>1.1 Discover and Explore:</b> Express ideas and develop understanding</p> <ul style="list-style-type: none"> <li>• talk with others and experience a variety of oral, print and other media texts to explore, develop and justify own opinions and points of view</li> <li>• explore and explain how interactions with others and with oral, print and other media texts affect personal understandings</li> </ul> <p><b>1.2 Clarify and Extend</b> Consider the ideas of others</p> <ul style="list-style-type: none"> <li>• integrate own perspectives and interpretations with new understandings developed through discussing and through experiencing a variety of oral, print and other media texts</li> </ul> <p>Combine ideas</p> <ul style="list-style-type: none"> <li>• examine and re-examine ideas, information and experiences from different points of view to find patterns and see relationships</li> </ul> <p>Extend understanding</p> <ul style="list-style-type: none"> <li>• assess whether new information extends understanding by considering diverse opinions and exploring ambiguities</li> </ul> <p><b>2.1 Use Strategies and Cues</b> Use prior knowledge</p> <ul style="list-style-type: none"> <li>• use previous reading experiences, personal experiences and prior knowledge as a basis for reflecting on and interpreting ideas encountered in texts</li> </ul> <p><b>3.1 Plan and Focus</b> Focus Attention</p>

- synthesize ideas and information from a variety of sources to develop own opinions, points of view and general impressions

Plan to gather information

- select information sources that will provide effective support, convincing argument or unique perspectives

### **3.2 Select and Process**

Use a variety of sources

- obtain information reflecting multiple perspectives from a variety of sources, such as expository essays, graphs, diagrams, online catalogues, periodical indices, film libraries, electronic databases and the Internet, when conducting research

Access information

- expand and use a variety of tools and text features, such as organizational patterns of texts, page layouts, font styles and sizes, colour and voiceovers, to access information
- distinguish between primary and secondary sources, and determine the usefulness of each for research purposes
- follow up on cited references to locate additional information

### **3.3 Organize, Record and Evaluate**

Organize information

- organize ideas and information by developing and selecting appropriate categories and organizational structures
- balance all sections of oral, print and other media texts and ensure sentences, paragraphs and key ideas are linked throughout
- develop coherence by relating all key ideas to the overall purpose of the oral, print or other media text

Record information

- use own words to summarize and record information in a variety of forms; paraphrase and/or quote relevant facts and opinions; reference sources
- select and record ideas and information that will support an opinion or point of view, appeal to the audience, and suit the tone and length of the chosen form of oral, print or other media text
- choose specific vocabulary, and use conventions accurately and effectively to enhance credibility

Evaluate information

- evaluate usefulness, relevance and completeness of gathered information; address information gaps
- reflect on new understanding and its value to self and others

### **3.4 Share and Review**

Share ideas and information

- communicate ideas and information in a variety of oral, print and other media texts, such as media scripts, multimedia presentations, panel discussions and articles
- integrate appropriate visual, print and/or other media to reinforce overall impression or point of view and engage the audience

Review research process

- reflect on the research process, identifying areas of strength and ways to improve further research activities

### **4.1 Enhance and Improve**

Revise and edit

- revise to ensure effective introductions, consistent points of view, effective transitions between ideas and appropriate conclusions
- revise to enhance effective transitions between ideas and maintain a consistent organizational pattern

#### **4.3 Present and Share**

Present information

- select, organize and present information to appeal to the interests and background knowledge of various readers or audiences

Enhance presentation

- clarify and support ideas or opinions with details, visuals or media technique

Use effective oral and visual communication

- identify and use explicit techniques to arouse and maintain interest and to convince the audience

#### **4.1 Enhance and Improve**

Revise and edit

- choose appropriate types of evidence and strategies to clarify ideas and information, and to convince various readers and audiences

#### **4.3 Present and Share**

Present information

- present ideas and opinions confidently, but without dominating the discussion, during small group activities and short, whole class sessions

Enhance presentation

- choose appropriate types of evidence and strategies to clarify ideas and information, and to convince various readers and audiences

Use effective oral and visual communication

- integrate a variety of media and display techniques, as appropriate, to enhance the appeal, accuracy and persuasiveness of presentations

#### **5.2 Work within a Group**

Cooperate with others

- contribute to group efforts to reach consensus or conclusions, by engaging in dialogue to understand the ideas and viewpoints of others
- discuss and choose ways to coordinate the abilities and interests of individual group members to achieve group goals

Work in groups

- generate and access ideas in a group, and use a variety of methods to focus and clarify topics for research or investigations x share responsibility for the completion of team projects by establishing clear purpose and procedures for solving problems, monitoring progress and making modifications to meet stated objectives

Evaluate group process

- establish and use criteria to evaluate group process and personal contributions; set goals and make plans for improvement