

Processing Chemical Reactions

Saskatchewan	
Grade 5	
Properties and Changes of Material	
<u>Outcomes:</u> MC5.1 Investigate the characteristics and physical properties of materials in solid, liquid, and gaseous states of matter.	<u>Indicators:</u> (b) Classify materials in their environment as solids, liquids, or gases based on personal observation.
MC5.2 Investigate how reversible and non-reversible changes, including changes of state, alter materials.	(a) Pose and refine questions for investigation related to changes in materials. (c) Explore how characteristics and physical properties of materials may change when they interact with one another. (k) Follow established safety procedures for working with heating appliances and hot materials (e.g., switch hot plates off immediately after use, use tongs and insulated mitts for carrying hot materials and for tending a fire).

Grade 7

Mixtures and Solutions

Outcomes:

MS7.1 Distinguish between pure substances and mixtures (mechanical mixtures and solutions) using the particle model of matter.

Indicators:

(b) Describe the characteristics of pure substances, mechanical mixtures, and solutions.

(f) Create mechanical mixtures and solutions using common materials and compare the physical properties of the original materials and the resultant mixture or solution.

MS7.2 Investigate methods of separating the components of mechanical mixtures and solutions, and analyze the impact of industrial and agricultural applications of those methods.

(a) Describe methods used to separate the components of mechanical mixtures and solutions, including mechanical sorting, filtration, evaporation, distillation, magnetism, and chromatography.

(f) Use tools and apparatus (e.g., safety glasses, glassware, and Bunsen burners) safely when conducting investigations into methods of separating mixtures.

(g) Demonstrate knowledge of WHMIS standards by using proper techniques for handling and disposing of lab materials and following warning label symbols, including common household product symbols, when separating mixtures

(h) Describe the scientific principles underlying a past or present industrial technology designed to separate mixtures (e.g., petroleum refining, sewage treatment plant, recycling station, combine, and cream separator).

Grade 9

Atoms and Elements

Outcomes:

AE9.1 Distinguish between physical and chemical properties of common substances, including those found in household, commercial, industrial, and agricultural applications.

Indicators:

(g) Investigate changes in the properties of materials and identify those that are indicators of chemical changes (e.g., change in colour, change in odour, formation of a gas or precipitate, or the release or absorption of thermal energy).

(h) Use equipment, tools, and materials appropriately and safely when conducting investigations into physical and chemical properties of substances.

(j) Differentiate between physical and chemical properties of matter and physical and chemical changes in matter, based on observable evidence.

Grade 10

Career Investigation

Outcomes:

SCI10-CI1 Investigate career paths related to various branches and sub-branches of science.

Indicators:

(b) Explore the breadth of science-related work roles and who is engaged in those work roles in the community

Chemical Reactions

Outcomes:

SCI10-CR1 Explore the properties of chemical reactions, including the role of energy changes, and applications of acids and bases.

Indicators:

(d) Demonstrate knowledge of Workplace Hazardous Materials Information System (WHMIS 2015) standards by selecting and applying proper techniques for handling and disposing of lab materials and interpreting Safety Data Sheets (SDSs).

(h) Research practical examples of chemical reactions involving acids and bases, including neutralization reactions such as those involved in chemical spills, soda-acid fire extinguishers and antacids.

SCI10-CR2 Name and write formulas for common ionic and molecular chemical compounds, including acids and bases.

(h) Design and carry out investigations to determine the properties of acids and bases, including selecting and using appropriate instruments for safely collecting evidence.