



Standard #: SC.912.P.8.10

This document was generated on CPALMS - www.cpalms.org

Describe oxidation-reduction reactions in living and non-living systems.

General Information

Subject Area: Science

Grade: 912

Body of Knowledge: Physical Science

Idea: Level 2: Basic Application of Skills & Concepts

Standard: [Matter](#) -

Date Adopted or Revised: 02/08

A. A working definition of matter is that it takes up space, has mass, and has measurable properties. Matter is comprised of atomic, subatomic, and elementary particles.

B. Electrons are key to defining chemical and some physical properties, reactivity, and molecular structures. Repeating (periodic) patterns of physical and chemical properties occur among elements that define groups of elements with similar properties. The periodic table displays the repeating patterns, which are related to the atom's outermost electrons. Atoms bond with each other to form compounds.

C. In a chemical reaction, one or more reactants are transformed into one or more new products. Many factors shape the nature of products and the rates of reaction.

D. Carbon-based compounds are building-blocks of known life forms on earth and numerous useful natural and synthetic products.

Content Complexity Rating: [Level 2: Basic Application of Skills & Concepts](#) - [More Information](#)

Date of Last Rating: 05/08

Status: State Board Approved

Related Courses

Course Number	Course Title
2000330:	Biology 2 Honors (Specifically in versions: 2014 - 2015, 2015 - 2018, 2018 - 2022 (current), 2022 and beyond)
2003350:	Chemistry 1 Honors (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2003360:	Chemistry 2 Honors (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2002490:	Forensic Sciences 2 (Specifically in versions: 2014 - 2015, 2015 - 2017, 2017 - 2022 (current), 2022 and beyond)
2002440:	Integrated Science 3 (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2002450:	Integrated Science 3 Honors (Specifically in versions: 2014 - 2015, 2015 - 2022 (current), 2022 and beyond)
2002445:	Integrated Science 3 for Credit Recovery (Specifically in versions: 2014 - 2015, 2015 - 2020 (course terminated))
7920040:	Fundamental Integrated Science 3 (Specifically in versions: 2013 - 2015, 2015 - 2017 (course terminated))

Related Access Points

Access Points Number	Access Points Title
SC.912.P.8.In.2:	Compare characteristics of physical and chemical changes of matter.
SC.912.P.8.Su.2:	Identify examples of physical and chemical changes.
SC.912.P.8.Pa.2:	Recognize a common chemical change, such as cooking, burning, rusting, or decaying.

Related Resources

Lesson Plans

Name	Description
Voltaic Cells:	In this lesson, students will learn about how batteries produce electrical power. Students will learn how a voltaic cell is designed and be able to identify the important characteristics of a cell as well as calculate cell potential.
Redox Reactions:	In this lesson, students will be introduced to the concept of oxidation-reduction reactions. Students will learn how to identify the oxidized/reduced species and determine whether a reaction is redox or not. Students will investigate this concept as it pertains to chemical processes in living things (photosynthesis, respiration, etc).

Perspectives Video: Expert

Name	Description
Recognizing Redox Reactions:	Chemistry is pretty sweet. Also tasty if you understand oxidation and reduction reactions, but it may take a little MacGyvering. Download the CPALMS Perspectives video student note taking guide .

Perspectives Video: Professional/Enthusiast

Name	Description
Making Charcoal:	Get sooted up and join a collier as he discusses charcoal production at historic Mission San Luis. Download the CPALMS Perspectives video student note taking guide .

Perspectives Video: Teaching Ideas

Name	Description
Halogens, Halides, and Redox Reactions:	A National Board Certified Teacher and Presidential Awardee for outstanding math and science teaching demonstrates a hands-on laboratory activity series to see which halogen/halide combinations will result in redox reactions. Download the CPALMS Perspectives video student note taking guide .
The Briggs-Rauscher Reaction is a Redox Reaction in Action!:	Orange. Blue. Wait, orange. No, wait, blue. Chemistry! Download the CPALMS Perspectives video student note taking guide .

Text Resources

Name	Description
Oxidation-Reduction Reactions -- Real-Life Implications:	This informational text resource is intended to support reading in the content area. Oxidation-reduction reactions are one of the main types of reactions students are taught in chemistry class, but what are some real-life examples of this often awe-inspiring reaction? This article looks at the science behind some real-life oxidation-reduction reactions, including explosions (in cars and trains), space shuttle fuel, and many uses of metals. The importance of these reactions in limiting systems is also covered.
Artistic Chemistry: A Beautiful Collaboration:	This informational text resource is intended to support reading in the content area. Chemistry can be an important part of creating art. This article discusses two examples of this: the presence of redox reactions in making Raku pottery, and the use of cleaning agents when creating stained glass. The process of making both types of art is described, along with the chemical reactions involved.

Tutorials

Name	Description
Oxidation and Reduction Review From Biological Point-of-View:	This Khan Academy video explains oxidation and reduction reactions from a biological point of view.
Oxidation and Reduction in Cellular Respiration:	This video explains oxidation and reduction in cellular respiration.

Student Resources

Perspectives Video: Expert

Name	Description
Recognizing Redox Reactions:	Chemistry is pretty sweet. Also tasty if you understand oxidation and reduction reactions, but it may take a little MacGyvering. Download the CPALMS Perspectives video student note taking guide .

Perspectives Video: Professional/Enthusiast

Name	Description
Making Charcoal:	Get sooted up and join a collier as he discusses charcoal production at historic Mission San Luis. Download the CPALMS Perspectives video student note taking guide .

Tutorials

Name	Description
Oxidation and Reduction Review From Biological Point-of-View:	This Khan Academy video explains oxidation and reduction reactions from a biological point of view.
Oxidation and Reduction in Cellular Respiration:	This video explains oxidation and reduction in cellular respiration.

Parent Resources

Perspectives Video: Expert

Name	Description
Recognizing Redox Reactions:	Chemistry is pretty sweet. Also tasty if you understand oxidation and reduction reactions, but it may take a little MacGyvering. Download the CPALMS Perspectives video student note taking guide .

Perspectives Video: Professional/Enthusiast

Name	Description
Making Charcoal:	Get sooted up and join a collier as he discusses charcoal production at historic Mission San Luis. Download the CPALMS Perspectives video student note taking guide .

Perspectives Video: Teaching Ideas

Name	Description
Halogens, Halides, and Redox Reactions:	A National Board Certified Teacher and Presidential Awardee for outstanding math and science teaching demonstrates a hands-on laboratory activity series to see which halogen/halide combinations will result in redox reactions. Download the CPALMS Perspectives video student note taking guide .
The Briggs-Rauscher Reaction is a Redox Reaction in Action!:	Orange. Blue. Wait, orange. No, wait, blue. Chemistry! Download the CPALMS Perspectives video student note taking guide .