Instructional Unit Title: Mixtures and Substances

Science 7th Grade

The teacher may lead a discussion introducing the Periodic Table so that students can understand that the Periodic Table is organized by patterns of properties.

The teacher may introduce matter and its classification so that students can classify items as an atom, element, compound, or molecule.

The teacher may use media (video or

simulation) involving various items

changing so that the students can

differentiate between physical and

chemical changes.

The teacher may introduce an "Adopt an Element" experience so that the students can research an element of their choice and investigate its physical and chemical characteristics. The teacher may lead a discussion around mixtures and substances so that the students can differentiate between homogeneous, heterogeneous, and pure substances.

The teacher may demonstrate various techniques and processes for water purification (filtration or other means) so that students can describe how to separate mixtures and determine the best method to use based on the type of mixture.



The teacher may introduce alternative filtration processes (e.g., a kidney, liver) so that students can apply their understanding of filtration to a different natural system. The teacher may introduce students to local mining operations and discuss minerals, metals, and environmental impacts so that students can understand that some minerals do not come in pure form but must be separated from an ore mixture. The teacher may create investigative scenarios involving unknown substances so that the students can determine the identity of the unknown substances based on the physical properties. The teacher may conduct demonstrations (filtration, solubility, magnetism, density) so that the student can build a conceptual understanding of physical properties of matter.

PERFORMANCE ASSESSMENT: You are a miner asked to explore the potential for a new mining site in the area. You will collect a sample (water and soil solution/ mixture) from your local river and conduct tests using at least four properties of matter in your determination of the composition of the sample. You will need to create a report of your analysis, including narrative, data tables, graphs, and percentages relative to the composite sample, to share with your local community (e.g., city council, mining company, EPA, water conservation agency).

This unit was authored by a team of Colorado educators. The unit is intended to support teachers, schools, and districts as they make their own local decisions around the best instructional plans and practices for all students. To see the entire instructional unit sample with possible learning experiences, resources, differentiation, and assessments visit <u>http://www.cde.state.co.us/standardsandinstruction/instructionalunitsamples</u>.