Examples of concepts in typical chemistry curriculum where chemical identity is relevant

Nomenclature – In chemistry, nomenclature is used to reveal information about the identity of a substance. In order to properly assign nomenclature, students must first understand how to classify substances. For example, a substance must be first identified as ionic or molecular before it can be named.

Mixtures vs. Pure substances – Most of the matter we encounter is part of a mixture, and students in chemistry must first understand the differences between mixtures and pure substances in order to properly assign chemical identity. Mixtures are made of multiple substances with unique chemical identities. Because each substance has at least one unique property, substance properties can be utilized to separate and identify the components.

Solubility – When asking questions of solubility, students need to classify substances (e.g. ionic vs. molecular) in order to determine whether a substance will dissolve in another substance, and to what extent.

Intermolecular Forces – To determine the types of intermolecular forces that can exist between substances on a molecular level, students must understand the chemical identity of a substance and be able to think in general terms about how the composition and structure (which are related to chemical identity) lead to the types of interactions that may exist between molecules.

Acid-base reactions – When considering reactions, students must be able to classify substances as acids or bases, or neither, in order to determine types of reactions and whether or not they may occur.

Redox reactions – Chemical identity is involved when identifying oxidizing agents and reducing agents in order to decide what kinds of reactions might be possible with particular reagents.