

Name _____

What is the Law of Conservation of Mass, and How Does It Apply to Chemical Reactions?

Open-Ended Response Answer Key

1. The observation of the container still containing 100 grams of material after the reaction supports the Law of Conservation of Mass. At the atomic level, this means that the same number of atoms of each type is present before and after the reaction. The atoms rearranged to form new molecules or compounds, maintaining the overall mass.
2. An essential scenario is wastewater treatment, where chemicals are added to remove contaminants from water. Understanding the conservation of mass ensures that the added chemicals react with contaminants, leading to the formation of harmless products while maintaining the total mass of the system.
3. Applying the Law of Conservation of Mass in waste management reduces the environmental impact by minimizing waste generation and ensuring efficient resource use. For example, recycling materials like paper, glass, and metal conserves resources and reduces landfill waste.
4. As a chemist studying a new chemical reaction, I would use the Law of Conservation of Mass to measure the mass of reactants and products before and after the reaction. This would help verify if the reaction follows the law, providing valuable insights into the reaction mechanism and stoichiometry.

