

Name _____

Bases at Work: The Role of Bases in Various Industries

Open-Ended Response Answer Key

1. Using bases in wastewater treatment helps adjust the pH of water, which is crucial for the efficient removal of pollutants. By ensuring that water is within the optimal pH range, harmful substances can be transformed into less dangerous forms, reducing environmental harm.
2. In pharmaceutical manufacturing, bases are used in processes like saponification to synthesize active pharmaceutical ingredients. For instance, bases like sodium hydroxide are used to create soap molecules, an essential component in various medications. Bases play a critical role in controlling reaction conditions, ensuring purity, and enhancing drug effectiveness.
3. Bases are used in the production of plastics to catalyze polymerization reactions. This results in the creation of long chains of molecules, forming plastic materials with various properties. Plastics have diverse applications in industries such as packaging, construction, and electronics, impacting our daily lives significantly.
4. Bases play a crucial role in maintaining the pH balance of bodily fluids and tissues. An imbalanced pH can disrupt enzyme function, cellular processes, and overall health. For instance, extreme alkaline conditions can lead to conditions like metabolic alkalosis, affecting various bodily functions. Maintaining pH balance is vital for the body's proper functioning and overall well-being.

