# Classroom Activity: Classifying Halogenoalkanes and Understanding Nucleophilic Substitution Reactions

## Introduction to Halogenoalkanes (10 minutes)

*Read the introduction to halogenoalkanes and answer the following questions:*

1. What is a halogenoalkane?
2. What are the different types of halogenoalkanes?
3. Why is it important to understand the classification of halogenoalkanes?

## Classification of Halogenoalkanes (15 minutes)

*Classify the following compounds as primary, secondary, or tertiary halogenoalkanes:*

1. CH3Cl
2. CH3CH2Cl
3. (CH3)3CBr

## Nucleophilic Substitution Reactions (20 minutes)

*Predict the products of the following nucleophilic substitution reactions:*

1. $CH_3Cl + OH^- \rightarrow ?$

2. $CH_3CH_2Cl + CN^- \rightarrow ?$

## Synthesis Design (20 minutes)

*Design a synthesis of the following compound using nucleophilic substitution reactions:*

$CH_3CH_2OH$

[Space for synthesis design]

## Applications of Halogenoalkanes (15 minutes)

*Discuss the following applications of halogenoalkanes:*

1. Pharmaceuticals
2. Agrochemicals
3. Materials science

## Safety and Handling of Halogenoalkanes (10 minutes)

*What are the safety precautions that should be taken when handling halogenoalkanes?*

## Glossary (10 minutes)

*Define the following terms:*

1. Halogenoalkane
2. Nucleophile
3. Leaving group
4. SN1 reaction
5. SN2 reaction

## Conclusion (10 minutes)

**Individual Reflection:**

1. What did you learn about halogenoalkanes and nucleophilic substitution reactions?
2. How will you apply this knowledge in the future?
3. What questions do you still have about halogenoalkanes and nucleophilic substitution reactions?