WORKSHEET 3

EXPERIMENT: SEPARATING A MIXTURE

Syllabus reference 8.2.1

INTRODUCTION

The planet Earth is made up almost entirely of mixtures. The nature and composition of these mixtures varies, so to obtain many of the resources we need in our everyday life we need to separate and analyse the mixtures to determine the types and amount of each component.

In this experiment you are to:

a **devise a process for separating the components of a mixture of sand, salt and water;**
b **work out a method to carry out a gravimetric analysis of the mixture to estimate the percentage of each component present in the mixture; and**
c **perform the separation and analysis.**

HINT *Consider the following properties of each of the three components:*

- *solubility of solids in water*
- *state of each component (solid, liquid/solution, gas)*
- *boiling point*

PROCESS

1 You will be provided with a mixture of sand, salt and water.

2 Consider how you will separate the solid insoluble component.

3 Consider how you will separate the components of the salt water solution.

4 Construct a flowchart to outline the procedure you will follow.

5 Write out a step by step procedure based on the flowchart.

6 Remember you will need to calculate the % by mass of each component so you will need to know the total mass of the original mixture you started with and the mass of each component at the end.

Caution: Consider safety issues when devising your procedure.

7 Decide what equipment will be needed and write out a list.

8 Draw up a data table to record initial total mass and final masses of each component.

9 Calculate the percentage composition of each component:

$$\%\ \text{component} = \frac{\text{final mass of component}}{\text{total mass of original mixture (including water)}} \times 100$$

10 Check to see if the total percentage is 100. If it is not, suggest reasons for this.