

Activity	What is <u>not</u> in the box of Elements!		Duration	15 - 30 mins
Learning Intention	To identify some observable physical properties in the elements of the periodic table and to gain an understanding of the characteristics of elements which were not part of the kit.			
Year / Level	Victorian Curriculum -Levels 9 & 10 Australian Curriculum - Year 10	Curricular Link(s)	<p>The atomic structure and properties of elements are used to organise them in the periodic table (VCSSU123)</p> <p>The atomic structure and properties of elements are used to organise them in the Periodic Table (ACSSU186)</p> <ul style="list-style-type: none"> • recognising that elements in the same group of the periodic table have similar properties • explaining how the electronic structure of an atom determines its position in the periodic table and its properties 	
Resources Required	Students need access to an A2 (or A3) Periodic Table with only the symbols of the elements shown in each box. Students also need access to the internet to investigate the characteristics of the elements not provided in the kit			
Risk Assessment	<i>Careful handling of the samples in the Elements Kit</i>			
Outline	<p>Teacher led discussion</p> <p>The "Elements Kit" provides samples of a large number of the naturally occurring elements.</p> <p>As a class (or group) the students need to examine each of the samples to identify the symbol /name of each sample and place the sample on the Periodic Table provided. It should be come evident that not all the elements are present.</p> <ul style="list-style-type: none"> • Initial questions for discussion <ul style="list-style-type: none"> ○ Are there elements which look similar? Are the similar looking elements grouped together or distributed across the Periodic Table? ○ In what state is each of the samples? ○ Are there any states which are not represented? ○ <i>Unless the activity is carried out in very warm weather, none of the samples will be liquids.</i> ○ Are any elements liquids at room temperature? Does anyone know of an element which would be a liquid at room temperature? ○ Are there any columns or rows on the Periodic Table which do not have any samples of elements? ○ What are the possible reasons that samples of the 'missing' elements have not been provided? <p>With feedback from the students, together the class can</p> <ul style="list-style-type: none"> • Construct a list of possible reasons why samples of all the elements may not have been provided. (Cost, scarcity/unavailability, hazardous, unable to 			

	<p>be contained/diffuses out of the container, cannot be shipped/posted/transported etc)</p> <ul style="list-style-type: none">• Identify the groups on the Periodic Table for which no samples, or only a very limited number of samples, were provided in the kit. <p>Student Investigation</p> <p>In groups of three or four, students research a group of elements which has not been included in the "Elements Kit". (Teacher allocates the Groups to the students to ensure each of the relevant groups are being investigated.)</p> <p>The students need to identify and record</p> <ul style="list-style-type: none">• The name of the group• The names of the elements in the group• The common characteristics/properties of the elements in the group• The reason(s) the elements have not been included in the kit• If the students have developed an understanding of electronic structure, they may be able to identify what the elements of the group have in common in terms of structure and relate this to the reason the samples are not in the kit <p>Each group presents their findings to the rest of the class.</p>
Worksheet	<i>A worksheet/template can be created so that the students can record their findings</i>