

STUDENT INVESTIGATION

Activity:

Mendeleev's placement of Tellurium and Iodine

Purpose:

To find reason's for Mendeleev's reversal of the placement of Tellerium and Iodine in *his* Periodic Table.

S	Cl
16	17
Se	Br
34	35
Te	I
52	53

Background Information:

Mendeleev used increasing atomic masses of elements known at that time to order the elements in his table over one hundred years ago. In designing his version of the Periodic Table he decided to reverse the order of Tellurium and Iodine so that their properties would better fit their surrounding elements. He rationalized this reverse placement of Te and I by assuming that the atomic masses of Te and I had not been accurately determined, and that later, more accurate measurements of their atomic masses would change their values.

However, more accurate measurements have not significantly changed the values of the atomic masses of Te and I. Our increased knowledge of atomic structure has caused modern chemists to order the elements according to atomic number, not atomic mass, apparently resolving Mendeleev's reversal of Te and I.

Materials:

DTE CD-ROM, computer with CD-ROM drive.

Procedure:

1. Find the oxidation number and atomic mass for each of the following elements in their **Advanced Info** section of *Discover the Elements*. Record this information in the table below.

S, Cl, Se, Br, I, Te

Element	S	Cl	Se	Br	I	Te
Atomic Mass						
Oxidation Number						

Data Analysis:

Based on their oxidation numbers, arrange the six elements into two vertical groups using the table on the right.

Group I	Group II

Conclusion:

Explain whether your data analysis supports Mendeleev's reversal in placing Tellurium before Iodine in his Periodic Table and why.