

not compete seriously with radioactive decay until the region just beyond element 100. The following slide (Figure 17) shows a number of predicted half-lives for radioactive decay.

<u>Predicted Half-Lives</u>		
Bk ²⁴⁹	α	years
Cf ²⁵²	α	years
99 ²⁴⁹	EC,α	minutes
99 ²⁵³	α	months
100 ²⁵⁰	EC,α	minutes
100 ²⁵²	α	hours
100 ²⁵⁴	α	days
101 ²⁵⁷	EC,α	minutes
102 ²⁵⁸	α	minutes

Figure 17

These considerations illustrate clearly that one of the problems is that of conceiving means for producing nuclides of sufficiently high mass numbers with half-lives long enough for chemical identification. Thus, the serious problem is again the paucity of starting materials.

A hopeful aspect to the problem of the production and the identification of transcalifornium elements is the feeling that the chemical properties can be predicted with confidence. Thus it is expected that the (III) oxidation state will predominate for the next few elements. Of especial importance in planning experiments is the confidence that the elution sequence will continue to follow that of the analogous rare earths