SCHEDULE 9

TEST PROCEDURES

PART II

TESTS FOR SPECIAL FORM RADIOACTIVE MATERIAL

1. The tests which must be performed on specimens that comprise or simulate special form radioactive material are: the impact test, the percussion test, the bending test and the heat test.

2. A different specimen may be used for each of the tests.

3. After each test specified in paragraphs 4 – 8 below, a leaching assessment or volumetric leakage test must be performed on the specimen by a method no less sensitive than the methods given in paragraph 9 below for indispersible solid material and paragraph 10 below for encapsulated material.

4. Impact test: The specimen must drop onto the target from a height of 9 metres. The target must be as defined in paragraph 5 of Part IV of this Schedule.

5. Percussion test: The specimen must be placed on a sheet of lead which is supported by a smooth solid surface and struck by the flat face of a mild steel bar so as to cause an impact equivalent to that resulting from a free drop of 1.4 kg through 1 metre. The lower part of the bar must be 25 mm in diameter with the edges rounded off to a radius of (3.0 ± 0.3)mm. The lead, of hardness number 3.5 to 4.5 on the Vickers scale and not more than 25 mm thick, must cover an area greater than that covered by the specimen. A fresh surface of lead must be used for each impact. The bar must strike the specimen so as to cause maximum damage.

6. Bending test: This test applies only to long, slender sources with both a minimum length of 10 cm and a length to minimum width ratio of not less than 10. The specimen must be rigidly clamped in a horizontal position so that one half of its length protrudes from the face of the clamp. The orientation of the specimen must be such that the specimen will suffer maximum damage when its free end is struck by the flat face of a steel bar. The bar must strike the specimen so as to cause an impact equivalent to that resulting from a free vertical drop of 1.4 kg through 1 metre. The lower part of the bar must be 25 mm in diameter with the edges rounded off to a radius of (3.0 ± 0.3)mm.

7. Heat test: The specimen must be heated in air to a temperature of 800°C and held at that temperature for a period of 10 minutes and must then be allowed to cool.

8. Specimens that comprise or simulate radioactive material enclosed in a sealed capsule may be excepted from—

(a) the tests prescribed in paragraphs 4 and 5 provided the mass of the special form radioactive material is less than 200 g and provided they are alternatively subjected to the Class 4 impact test prescribed in the ISO classification document; and

(b) the test prescribed in paragraph 7 provided they are alternatively subjected to the Class 6 temperature test specified in the ISO classification document.

9. For specimens which comprise or simulate indispersible solid material, a leaching assessment must be performed as follows—

(a) the specimen must be immersed for 7 days in water at ambient temperature. The volume of water to be used in the test must be sufficient to ensure that at the end of the 7-day test period the free volume of the unabsorbed and unreacted water remaining must be at least 10% of the volume of the solid test sample itself. The water must have an initial pH of 6-8 and a maximum conductivity of 1 mS/m at 20°C;

(b) the water with specimen must then be heated to a temperature of (50 ± 5)°C and maintained at this temperature for 4 hours;

(c) the activity of the water must then be determined;

(d) the specimen must then be stored for at least 7 days in still air at a temperature not less than 30°C and relative humidity of not less than 90%;

(e) the specimen must then be immersed in water of the same specification as in (a) above and the water with the specimen heated to (50 ± 5)°C and maintained at this temperature for 4 hours;

(f) the activity of the water must then be determined.

10. For specimens which comprise or simulate radioactive material enclosed in a sealed capsule, either a leaching assessment or a volumetric leakage assessment must be performed as follows—

(a) the leaching assessment must consist of the following steps—

(i) the specimen must be immersed in water at ambient temperature. The water must have an initial pH of 6-8 with a maximum conductivity of 1 mS/m at 20°C;

(ii) the water and specimen must be heated to a temperature of (50 ± 5)°C and maintained at this temperature for 4 hours;

(iii) the activity of the water must then be determined;

(iv) the specimen must then be stored for at least 7 days in still air at a temperature not less than 30°C and relative humidity of not less than 90%;

(v) the process in (i), (ii) and (iii) must be repeated;

(b) the alternative volumetric leakage assessment shall comprise any of the tests prescribed in the ISO leak test document which are acceptable to the Secretary of State.