GOVERNMENT NOTICE

DEPARTMENT OF MINERALS AND ENERGY

No. 653 **13 June 2008**

Under Section **2 (a) (b) (c) (f)** of the Nuclear Energy Act, 1999 (Act No 46 of 1999). The Minister of Minerals and Energy hereby publishes for comment a draft regulation in schedules on the declaration of certain substances, materials and equipment as restricted material, source material, special nuclear material and nuclear related equipment and material. The regulation intends to repeal the Government Notice No. 740 of 16 April 1994.

All interested parties are invited to comment in writing on the said draft regulation and to direct the comments to: The Director General, Department of Minerals and Energy, Private Bag X59, PRETORIA, 0001, for attention: Ms E Monale: Director: Nuclear Non-Proliferation, Fax No (012) 317 8957 or email:elsie.monale@dme.gov.za.

Comments must reach the Department of Minerals and Energy within 30 days of the date of the publication of this notice.

B P SONJICA
MINISTER OF MINERALS AND ENERGY

DRAFT REGULATION

DEPARTMENT OF MINERALS AND ENERGY

NUCLEAR ENERGY ACT, 1999 (ACT NO. 46 OF 1999)

REGULATION IN TERMS OF SECTION 2 (a) (b) (c) (f) OF THE NUCLEAR ENERGY ACT, 1999 (ACT NO. 46 OF 1999), ON THE DECLARATION OF CERTAIN SUBSTANCES, MATERIALS AND EQUIPMENT AS RESTRICTED MATERIAL, SOURCE MATERIAL, SPECIAL NUCLEAR MATERIAL AND NUCLEAR RELATED EQUIPMENT AND MATERIAL

Under Section **2 (a) (b) (c) (f)** of the Nuclear Energy Act, 1999 (Act No. 46 of 1999), the Minister of Minerals and Energy, by notice in the Gazette hereby declare any substances, materials and equipment as restricted material, source material, special nuclear material and nuclear related equipment and material.

B P SONJICA
MINISTER OF MINERALS AND ENERGY

SCHEDULE

SCHEDULE 1: RESTRICTED MATERIAL

1. Beryllium

Beryllium as follows: Metal, alloys containing more than 50% of beryllium by mass, compounds containing beryllium, and manufactures thereof, except-

(a) metal windows for X-ray machines;

(b) oxide shapes in fabricated or semi-fabricated forms specially designed for electronic component parts or as substrates for electronic circuits.

Technical Note: This control applies to waste and scrap containing beryllium as defined here.

2. Hafnium

Hafnium of the following description: Metal, alloys and compounds of hafnium containing more than 60% hafnium by mass and manufactures thereof.

3. Zirconium

Zirconium as follows: Metal, alloys containing more than 50% zirconium by mass and compounds in which the ration of hafnium content to zirconium content is less than 1 part to 500 parts by mass, and manufactures wholly thereof: except zirconium in the form of foil having a thickness not exceeding 0,10 mm.

Technical Note: This control applies to waste and scrap containing zirconium as defined here.

SCHEDULE 2: SOURCE MATERIAL

Source material

Source material is any substance containing-

(a) uranium, expressed as a conversion to uranium oxide U_3O_8,above-

(i) 0,05% of the mass of the substance; and

(ii) a mass of 3 kilograms; or

(b) thorium, expressed as a conversion to thorium oxide ThO_2, above-

(i) 0,05% of the mass of the substance; and

(ii) a mass of 3 kilograms; or

(c) uranium, depleted in the isotope 235, above 3 kilograms.

SCHEDULE 3: SPECIAL NUCLEAR MATERIAL

Special nuclear material is-

(a) plutonium-239;

(b) uranium-233;

(c) uranium enriched in its uranium-235 isotope;

(d) transuranium elements; or

(e) any compound of any of the materials referred to in subparagraphs (b), (c) and (d) or of anything so referred to and any other substance or substances in a quantity consisting of or containing a mass of any of the isotopes or elements referred to in subparagraphs (b), (c) and (d), above 0,5 gram, regardless of the concentration thereof.

SCHEDULE 4: NUCLEAR RELATED MATERIAL AND EQUIPMENT

CATEGORY A: MATERIAL

1. **Deuterium and heavy water**

Deuterium, heavy water (deuterium oxide) and any other deuterium compound in which the ratio of deuterium to hydrogen atoms exceeds 1 :5 000 for use in a nuclear reactor.

2. **Nuclear grade graphite**

Graphite having a purity level better than 5 parts per million boron equivalent and with a density greater than 1,50 g/cm3.

CATEGORY B: EQUIPMENT

1. Reactors and equipment therefor

(i) Complete nuclear reactor capable of operation so as to maintain a controlled self-sustaining fission chain reaction with a designed maximum rate of production of plutonium not exceeding 100 grams per year.

A nuclear reactor basically includes the items within or attached directly to the reactor vessel, the equipment which controls the level of power in the core, and the components which normally contain or come in direct contact with or control the primary coolant of the reactor core.

(ii) Reactor pressure vessels as complete units or as major shop-fabricated parts which are especially designed or prepared to contain the core of a nuclear reactor referred to in subparagraph (1), and are capable of withstanding the operating pressure of the primary coolant.

(iii) Reactor fuel charging and discharging machines especially designed or prepared for inserting or removing fuel in a nuclear reactor referred to in subparagraph (1), which is capable of on-load operation or employing technically sophisticated positioning or alignment features to allow complex off-load fuelling operations such as those in which direct viewing of or access to the fuel is not normally available.

(iv) Reactor control rods especially designed or prepared rods, support or suspension structures therefore, rod drive mechanism or rod guide tubes for the control of the reaction rate in a nuclear reactor referred to in subparagraph (1).

(v) Reactor pressure tubes which are especially designed or prepared to contain fuel elements and the primary coolant in a reactor referred to in subparagraph (1), at an operating pressure in excess of 5,1 MPa.

(vi) Primary coolant pumps especially designed or prepared for circulating as primary coolant for nuclear reactors referred to in subparagraph (1).

(vii) Zirconium metal and alloys in the form of tubes or assemblies of tubes, especially designed or prepared for use in a reactor referred to in subparagraph (1), and in which the relation of hafnium to zirconium is less than 1 :500 parts by weight.

(viii) Nuclear reactor internals especially designed or prepared for use in a nuclear reactor as defined in paragraph (1) above, including support columns for the core, fuel channels, thermal shields, baffles, core grid plate and diffuser plates.

(ix) Heat exchangers (system generators) especially designed or prepared for use in the primary coolant circuit of a nuclear reactor as defined in paragraph (1) above.

(x) Neutron detection and measuring instruments especially designed or prepared neutron detection and measuring instruments for determining neutron flux levels within the core of a reactor as defined in paragraph (1) above

2. **Plants for the reprocessing of irradiated fuel elements and equipment, especially designed or prepared therefor**

A plant for the reprocessing of irradiated fuel elements includes the equipment and components which normally come in direct contact with and directly control the irradiated fuel and the major nuclear material and fission product processing streams.

(i) Plants for the recovery of fissionable materials from irradiated nuclear materials.

(ii) Irradiated fuel element chopping machines are equipments that breach the cladding of the fuel to expose the irradiated nuclear material to dissolution. They are remotely operated and especially designed or prepared for use in a reprocessing plant and intended to cut, chop or shear irradiated nuclear fuel assemblies, bundles or rods.

(iii) Dissolvers, which are critically safe tanks (e.g. small diameter, annular or slab tanks) especially designed or prepared for use in a reprocessing plant, intended for the dissolution of irradiated nuclear fuel and which are capable of withstanding hot, highly corrosive liquids and which can be remotely loaded and maintained.