

UNOFFICIAL TRANSLATION

Swedish Code of Statutes
1994:2060
Amendments 1997:123

Ordinance relating to Strategic Products (1994:2060)

Introductory provisions

§ 1 The Strategic Products Act (1991:341) and Council Regulation (EC) no. 3381/94 from 19 December 1994 setting up a community regime for the control of exports of dual-use goods is applied to nuclear materials and to those products which are included in Annexes 1 and 3-6 in this Ordinance.

§ 2 With regard to chemical precursors which are referred to in Annex 1, category 1 (1C350), the Act, except in the case of declarations according to §§ 6b - 6c, shall not be applied to mixtures where such precursors are included, if

1. the chemical precursor is difficult to separate from the mixture, and
2. the precursor is either included in the mixture with a concentration less than 25 per cent or the amount of precursors in the shipment concerned does not exceed 100 kilograms.

§ 3 Applications for permission according to Council Regulation (EC) no. 3381/94 and according to the Strategic Products Act (1991:341) shall be submitted to the National Inspectorate for Strategic Products. This does not apply, however, in cases which are referred to in § 12.

Export

§ 4 Permission according to Article 3 in Council Regulation (EC) no. 3381/94 can be granted in the form of

1. individual permission for a certain shipment of goods, or
2. such general permission for a certain period as is referred to in §§ 6 and 7.

§ 5 For products which are included in Annex 4 and 5 in this Ordinance, permission is required according to Articles 19 - 21 in Council Regulation (EC) no. 3381/94.

§ 6 For export to a country outside the EU which participates in the current international arrangement for export control of strategic products, except for products listed in Annexes 4 and 5 to this Ordinance, general permission (regime country permission) can on application be granted for a certain period of time.

§ 7 For frequently occurring export to civil purchasers in countries outside the EU for civil end use of highly technological products according to Annex 1, categories 1-9 (001-099), general permission (company-specific permission) can after application be given for a certain period of time.

§ 8 Any application for export by individual permission for a certain shipment of goods shall include information about the nature of the product, the recipient country, the

value and intended use of the product, the purchaser or other recipient, the intended date of export, the planned port of export and, where possible, information about the end user. If permission has been granted earlier, this shall be indicated in the application.

An application for export according to §§ 6 and 7 shall include information about the nature of the product and the recipient country and, where possible, information about the value of the product and its intended use, the purchaser or other recipient, the intended date of export, the planned port of export and information about the end user. If permission has been granted earlier, this shall be indicated in the application.

Contract concerning manufacturing rights

§ 9 An application for permission for the leasing or transfer of manufacturing rights shall include information about the content and value of the manufacturing rights, the contract parties, the intended date for the commencement of the contract and, where relevant, any connection to previously granted permission, the intended use of the product and, where possible, who shall finally use the manufactured products.

Supply

§ 10 An application for permission to supply products which can be found abroad shall include information about the nature and value of the product, who has made the product available abroad, the purchaser or other recipient, the intended use of the product, the intended date of delivery and, where relevant, any connection to any previously granted permission and, where possible, the end user.

For manufacturing equipment, the capacity of the product shall be indicated and, for toxins and chemical precursors, the weight of the product.

Notification of export

§ 11 The export of products which are governed by Council Regulation (EC) no. 3381/94 shall be reported to the customs authority not later than one week before the date of the intended export.

This does not apply if the export according to the export permit refers to

1. products which are exported for repair, control-check or other similar measure and which will be reimported,
2. products which are reexported after repair, control-check or other similar measure,
3. products which are exported for demonstration purposes, loan or treatment and which will be reimported, if they are not consumed,
4. products which are being returned after complaint, wrong delivery or other similar reason, or
5. biological agents

A notification obligation according to the first paragraph is not necessary either for export in cases where the permits have been granted in accordance with §§ 6 and 7.

The Board of Customs or any authority which the Board of Customs may appoint can, if there are special reasons for doing so, in special cases grant exemption from what is prescribed in the first paragraph.

Special provisions on nuclear substances, specific equipment and matériel, etc. connected with nuclear technology activities.

§ 12 Applications for permission for the export of nuclear substances and materials etc which are listed in Annex 3 shall be submitted to the Nuclear-Power Inspectorate.

§ 13 The Nuclear-Power Inspectorate determines permission matters referred to in § 12 for the export to a recipient in any country which

- has a bilateral agreement with Sweden concerning cooperation in non-proliferation matters in the nuclear energy field, or

- in a special explanation to the International Atomic Energy Association's (IAEA's) General Director has undertaken to apply the rules for the control of materials and equipment etc which have been agreed upon within the Nuclear Suppliers Group (NSG) and which explanation has been circulated through INFCIRC 254 to the IAEA member countries.

In the event of export to a recipient in any other country than those referred to in the first paragraph, the Nuclear-Power Inspectorate can request the necessary guarantees and statements. The Inspectorate shall, together with its own statement, submit the matter for consideration by the government.

§ 14 The Nuclear-Power Inspectorate shall seek the guidance of the National Radiation Protection Institute with regard to conditions or regulations required with respect to radiation protection, where the export includes the transit of nuclear substances through the country.

§ 15 In the application of §§ 16 and 17, the following applies
 natural uranium: uranium which contains the naturally occurring mixture of isotopes;
 depleted uranium: uranium in which the content of the uranium 235 isotope is lower than in natural uranium;
 enriched uranium: uranium in which the content of the uranium 235 isotope is higher than in natural uranium.

§ 16 The Nuclear-Power Inspectorate will determine, regardless of recipient country, questions relating to permission for export of the following amounts of uranium, plutonium, thorium or tritium in the pure state or in the form of an alloy, compound or mixture

1. not more than 10 kilogram of enriched uranium containing not more than five per cent of the uranium 235 isotope,
2. not more than 100 gram of enriched uranium containing more than five per cent of the uranium 235 isotope,
3. not more than 10 gram of the uranium 233 isotope,
4. not more than 10 gram plutonium,
5. not more than 50 kilogram of natural or, with respect to the uranium 235 isotope, depleted uranium,

6. not more than 50 kilogram thorium,

7. not more than 1 gram tritium.

§ 17 Unless otherwise indicated in Annexes 1 and 3, the following substances, materials, products or arrangements may be sent out of the country without permission:

deuterium, tritium or lithium or any compound in which any of these substances is included;

a product, such as an instrument, apparatus or compound for medical or similar purposes, in which deuterium, tritium or lithium is included;

natural or depleted uranium or a compound in which such uranium is included, for use as a counterweight in an aircraft, for the production of radiation screening devices, for the colouring of ceramic products and glass, for the production of an alloy, if this is intended for use other than as a nuclear fuel and provided that the content of uranium does not exceed one per cent by weight;

products, counterweights or devices referred to above, with the exception of radiation screening devices, thorium or any compound in which thorium is included for the production of

1. activating material for electrodes to gas discharge lamps, gas discharge tubes or electronic tubes,

2. incandescent nets or incandescent mantles,

3. highly fire-proof ceramics which are not nuclear fuel,

4. luminescent powder,

5. lenses or filters for electromagnetic radiation,

6. alloys in which the content of thorium does not exceed five per cent by weight;

any product referred to under 1-6 above;

a substance whose content of natural or depleted uranium or of thorium does not exceed 200 gram per tonne;

nuclear substances in quantities lower than 0.1% of the amounts given in § 16.

§ 18 An application for the export of spent nuclear fuel shall include information about how the material shall finally be taken care of. With regard to material which comes from a nuclear-technical activity in Sweden, the application shall include the assurance of the exporter that he will accept the material in return if it cannot be taken care of in the intended way.

Declarations

§ 19 A declaration according to § 6b of the Strategic Products Act (1991:341) shall be submitted to the National Chemicals Inspectorate by the person who professionally

1. produces, prepares, consumes, imports or exports substances referred to in Annex 6, section 1,
2. during one of the three most recent calendar years has produced, prepared, consumed, imported or exported such substances,
3. produces, imports or exports substances referred to in Annex 6, section 2,
4. during the previous calendar year has produced, imported or exported such substances, or
5. annually by synthesis produces a total of more than 10 tonne of discrete organic chemicals not included in Annex 6 or more than 10 tonne of a discrete organic chemical not included there which contains phosphorus, sulphur, or fluorine.

The regulations in the first section also apply to composite chemical products, mixtures, formulations etc which contain any of the substances included in Annex 6.

The term "production" also applies if the substance has been produced as an intermediate product in a process or if the substance has arisen as a coproduct, by-product or contamination in a process.

The term "production by synthesis" means production of organic chemicals through chemical reactions or through biological or biotechnical processes (biosynthesis).

§ 20 The declaration according to § 19, first paragraph 1-4, shall be submitted

1. not later than 15 January each year and shall relate to the activity during the previous calendar year,
2. not later than 15 September each year and shall relate to the activity which is planned for the coming calendar year, and not later than 30 days before the activity is started for each such additional activity which is planned after the ordinary annual declaration has been submitted, and
3. not later than 15 February 1995 with regard to information according to § 21, § 22a and § 23a. The information shall for substances in Annex 6, section 1, relate to the activity for each of the three previous calendar years, and for substances in Annex 6, section 2, to the activity during the last calendar year (initial declaration).

The declaration according to § 19, first paragraph 5, shall be submitted

1. not later than 15 January each year and shall relate to the activity during the previous calendar year, and
2. not later than 15 February 1995 with regard to information according to §§ 21 and 24 (initial declaration).

§ 21 A person who is required to submit a declaration shall provide information relating to

1. the name and address of the company and the number of factories within the company,

2. the name, address and exact location of each separate factory, the owner or company which runs it and the number of separate manufacturing units within the factory,
3. the name and exact location of each separate manufacturing unit and the owner or company who runs it, and
4. the main activity at the factory or manufacturing unit.

§ 22 A declaration according to § 19, first paragraph 1 and 2, shall

a) in the initial declaration and in the annual declaration relating to the previous calendar year for each substance according to Annex 6, section 1, include the following information:

1. whether the conditions according to § 19, first paragraph 1 and 2, apply,
2. an unambiguous chemical name for the substance, CAS-number (Chemical Abstracts Service) or if such is lacking, a structural formula and trade name or trivial name,
3. the name of any product in which the substance is included, and the content of the substance in each product,
4. the time period during which the substance was produced, the quantity produced, the place to which the substance was delivered and, if possible, the end product which was produced there,
5. the total amount in kilograms which at each factory has been:
 - produced/synthesized, with information about production capacity
 - prepared,
 - consumed,
 - stored,
 - imported, with information about its origin,
 - purchased within the country, with information about the supplier,
 - sold within the country, with information about the recipient, or
 - exported, with information about the recipient, and
6. the purposes for which the substance has been produced, prepared or consumed.

b) in the declaration for the coming calendar year for each substance according to Annex 6, section 1, include information concerning:

1. whether the conditions according to § 19, first section 1 and 2, apply,

2. an unambiguous chemical name for the substance, CAS-number (Chemical Abstracts Service) or if such is lacking, a structural formula and trade name or trivial name,
3. the name of any product in which the substance is included and the content of the substance in each product,
4. the total amount in kilograms which at each factory plant is planned to be:
 - produced/synthesized, with information about production capacity
 - prepared,
 - consumed,
 - imported, with information about its origin,
 - purchased within the country, with information about the supplier,
 - sold within the country, with information about the recipient, or
 - exported, with information about the recipient, and
5. the time periods which are predicted for production, preparation or consumption, and also
6. the purposes for which the substance will be produced, prepared or consumed.

§ 23 A declaration according to § 19, first section 3 and 4, shall

- a) in the initial declaration and in the annual declaration relating to the previous calendar year for each substance according to Annex 6, section 2, include information about:
 1. whether the conditions according to § 19, first section 3 and 4, apply,
 2. an unambiguous chemical name for the substance, CAS-number (Chemical Abstracts Service) or if such is lacking, a structural formula and trade name or trivial name,
 3. the name of any product in which the substance is included and the content of the substance in each product,
 4. the time period during which the substance was produced, the quantity produced, the place to which the substance was delivered and, if possible, the end product which was produced there,
 5. the total amount in tonne which at each factory has been:
 - produced/synthesized,
 - stored,
 - imported, with information about its origin,

- purchased within the country, with information about the supplier,
- sold within the country, with information about the recipient, or
- exported, with information about the recipient, and

6. the purposes for which the substance has been produced.

b) in the declaration for the coming calendar year for each substance according to Annex 6, section 2, include information about:

1. whether conditions according to § 19, first section 3 and 4, apply,
2. an unambiguous chemical name for the substance, CAS-number (Chemical Abstracts Service) or if such is lacking, a structural formula and trade name or trivial name,
3. the name of any product in which the substance is included and the content of the substance in each product,
4. the total amount in tonne which at each factory is planned to be:
 - produced/synthesized,
 - imported, with information about its origin,
 - purchased within the country, with information about the supplier,
 - sold within the country, with information about the recipient, or
 - exported, with information about the recipient, and
5. the time periods which are predicted for production, and also
6. the purposes for which the substance will be produced.

§ 24 The declaration according to § 19, first section 5, shall in the initial declaration and in the annual declaration relating to the previous calendar year include information about:

1. the total amount in tonne which at each factory by synthesis has been produced of any discrete organic chemical not included in Annex 6, and
2. the total amount in tonnes which at each factory by synthesis has been produced of a discrete organic chemical not included in Annex 6 which contains phosphorus, sulphur or fluorine.

§ 24a Annual declarations according to § 6d of the Strategic Products Act (1991:341) shall be submitted on a form provided by the National Inspectorate for Strategic Products. They shall be submitted not later than 15 January and shall relate to products invoiced during the previous calendar year.

Enforcement regulations

§ 25 The Board of Customs provides more detailed instructions regarding the information which shall be given in relation to a notification of export to countries within EU of products listed in Annex 4 and 5 to this ordinance.

The Nuclear-Power Inspectorate provides more detailed instructions relating to the application of §§ 12-18.

The National Chemicals Inspectorate provides more detailed information relating to the application of §§ 19-24.

Penalty

§ 26 The National Chemicals Inspectorate issues direction of conditional fine in accordance with § 15 of the Strategic Products Act (1991:341).

Supervision

§ 27 Supervision and other controls referred to in § 16 of the Strategic Products Act (1991:341) shall be executed by the Nuclear-Power Inspectorate with regard to nuclear substances and materials etc indicated in Annex 3 and by the National Inspectorate for Strategic Products in other cases.

Provisional regulations

1994:2060

This ordinance becomes effective on 1 January 1995, when the ordinance relating to the prohibition of export of certain products which can be used for purposes of mass destruction etc (1991:343) shall cease to be valid.

Permission granted by the Board of Customs according to § 2a, second section 2, and § 4 in the cancelled ordinance relating to the prohibition of certain exports (1986:89) shall be valid until the end of February 1995.

1995:1663

1. This ordinance becomes effective on 1 February 1996.

2. The declarations which according to § 24a shall be submitted not later than 15 January 1997 shall refer to products invoiced during the period February-December 1996.

Annex 3

I NUCLEAR REACTORS AND EQUIPMENT FOR THESE

1. Complete nuclear reactors:

All nuclear reactors except those which are constructed so that the production of plutonium cannot exceed 100 gram per year.

2. Reactor pressure vessel:

Pressure vessel of metal in the form of ready-made units or larger workshop-made parts for such, which are specially constructed or arranged to enclose the core of a nuclear reactor and which can resist the operating pressure of the primary cooling agent.

3. Equipment for the handling of reactor fuel:

Handling equipment specially constructed or arranged for the insertion or removal of fuel in a nuclear reactor, either for fuel exchange during operation or, during a shutdown with the help of advanced technical equipment for position determination or adjustment, to make possible complicated fuel exchange operations, where the fuel is not normally directly visible or accessible in any other way.

4. Reactor steering rods:

Rods specially constructed or arranged to control the neutron flow in a nuclear reactor.

5. Reactor pressure tubes:

Tubes which are specially constructed or arranged to contain fuel elements and primary cooling agent in a nuclear reactor at an operating pressure exceeding 5.1 MPa.

6. Zirconium tubes:

Zirconium metal and zirconium alloys in the form of tubes or bundles of tubes which are specially constructed or arranged for use in a nuclear reactor and in which the ratio of hafnium to zirconium is smaller than 1:500 by weight (0.2 per cent by weight), if the amount of tube in the amount to be exported is greater than 50 kg.

7. Pumps for primary cooling agents:

Pumps specially constructed or arranged to pump liquid metal as a primary cooling agent for nuclear reactors.

II NON-NUCLEAR MATERIAL FOR REACTORS

1. Deuterium and heavy water:

Deuterium, heavy water (deuterium oxide) and any other deuterium compound in which the weight ratio of deuterium to hydrogen (protium) exceeds 1:2500, if the amount of deuterium in the amount to be exported is greater than 10 kg.

2. Graphite of nuclear-technical quality:

Graphite in which the content of boron is lower than five parts per million and the density of which is greater than 1500 kg/m^3 , if the amount of graphite in the amount to be exported is greater than 5000 kg.

III PLANTS FOR REPROCESSING OF IRRADIATED FUEL ELEMENTS AND EQUIPMENT SPECIALLY CONSTRUCTED OR ARRANGED FOR THIS PURPOSE

1. Transport containers for irradiated nuclear fuel, with the exception of containers used for transport to or from nuclear-technical plants in Sweden.

2. Cutting machines for irradiated fuel elements:

Remote controlled equipment specially constructed or arranged for use in a reprocessing plant and intended to cut or cut off irradiated nuclear fuel elements, bundles or rods.

3. Dissolving vessels:

Critically safe containers (e.g. with a small diameter, ring-shaped or disc-shaped) specially constructed or arranged for use in a reprocessing plant, which are intended for

the dissolution of irradiated nuclear fuel, which can resist hot, strongly corrosive liquid and which can be filled and handled by remote control.

4. Apparatus and equipment for liquid extraction:

Specially constructed or arranged apparatus for liquid extraction which is resistant to corrosion by nitric acid, such as filled or pulsed columns, mixer settlers and centrifugal contactors for use in plants for the reprocessing of irradiated nuclear fuel.

5. Containers or storage tanks for chemicals:

Specially constructed or arranged containers or storage tanks which are resistant to corrosion by nitric acid, for use in plants for the reprocessing of irradiated fuel.

6. Systems for conversion of plutonium nitrate to plutonium oxide:

Complete systems which are specially constructed or arranged for the conversion of plutonium nitrate to plutonium oxide and are specially adapted to avoid criticality and radiation influence and to minimize the risk of spreading of toxic substances.

7. Systems for production of plutonium metal from plutonium oxide:

Complete systems specially constructed or arranged for the production of plutonium metal and specially adapted to avoid criticality and irradiation influence and to minimize the risk of spreading toxic substances.

IV PLANTS FOR THE MANUFACTURE OF NUCLEAR FUEL ELEMENTS

A plant for the manufacture of nuclear fuel elements includes equipment which

- a) normally comes into direct contact with or which directly treats or controls production flows of nuclear substance, or
- b) seals the nuclear substance into the cutting loop.

V PLANTS FOR SEPARATION OF URANIUM ISOTOPES AND EQUIPMENT, OTHER THAN ANALYTICAL INSTRUMENTS, ESPECIALLY CONSTRUCTED OR ARRANGED FOR THIS PURPOSE

1. Gas centrifuges and systems and components which are specially constructed or arranged for use in gas centrifuges as follows.

1.1 Rotating components:

a) Complete rotor units:

Thin-walled cylinders, or a number of joined thin-walled cylinders, manufactured from a material which has a high strength in relation to its density.

b) Rotor pipes:

Specially constructed or arranged thin-walled cylinders with a wall thickness of 12 mm or less, with a diameter between 75 and 400 mm and manufactured from a material which has a high strength in relation to its density.

c) Rings or bellows:

Components which are specially constructed or arranged to locally reinforce the rotor pipe or to connect a number of such pipes. A bellows is a short cylinder with a wall

thickness of 3 mm or less and a diameter of between 75 and 400 mm, which has a bulge around its circumference and is manufactured from a material which has a high strength in relation to its density.

d) Intermediate walls (baffles):

Disc-shaped components with a diameter of between 75 and 400 mm specially constructed or arranged to be fitted inside the rotor pipe of the centrifuge, to separate the outflow chamber from the main separation chamber and, in certain cases, to contribute to the circulation of the uranium hexafluoride gas inside the main separation chamber of the rotor pipe, which are manufactured from a material which has a high strength in relation to its density.

e) Top plates and bottom plates:

Disc-shaped components with a diameter of between 75 and 400 mm specially constructed or arranged to fit into the ends of the rotor pipe and thus encase uranium hexafluoride within the rotor pipe and, in certain cases, support, retain or include as an integrated part one part of the upper bearing (the top plate), or support the rotating components of the motor and the lower bearing (the bottom plate), and which are manufactured from a material which has a high strength in relation to its density.

Note to 1.1.

Materials used for rotating components in a centrifuge are:

- a) Mar-aged steel which can have a failure limit of 2050 MPa ($2.05 \times 10^9 \text{ N/m}^2$) or more.
- b) Aluminium alloys which can have a failure limit of 460 MPa ($0.46 \times 10^9 \text{ N/m}^2$) or more.
- c) Fibre materials which are suitable for use in composites and which, for fibres of carbon or aramid, have a specific modulus of $12.7 \times 10^6 \text{ m}$ or greater or a specific failure limit of $23.5 \times 10^4 \text{ m}$ or greater and which, for glass fibres, have a specific modulus of $3.18 \times 10^6 \text{ m}$ or greater and a specific failure limit of $7.62 \times 10^4 \text{ m}$ or greater. ("Specific modulus" is Young's modulus in N/m^2 divided by the specific weight 7 N/m^3 . "Specific failure limit" is the failure limit in N/m^2 divided by the specific weight in N/m^3 .)

1.2 Static components:

a) Magnetic bearings:

Specially constructed or arranged bearings consisting of a ring-shaped magnet suspended in a bearing housing containing a dampening medium.

b) Bearing with damper:

Specially constructed or arranged bearings consisting of a bearing pin/bearing brass unit fitted onto a damper.

c) Molecular pumps:

Specially constructed or arranged cylinders which have internally machine-treated or extruded spiral-shaped grooves and machine-worked internal surfaces.

d) Stators for electrical motors:

Specially constructed or arranged ring-shaped stators for rapid multi-phase alternating current (or reluctance) motors for synchronous operation in a vacuum in the frequency range of 600-2000 Hz and with an effect in the range of 50-1000 volt-ampere (VA).

2. Specially constructed or arranged auxiliary systems, equipment or components for enrichment plants based on the gas-centrifuge method as follows.

2.1 Input systems and output systems for enriched and depleted uranium hexafluoride (final product and residual fraction) in the form of specially constructed or arranged process systems including:

- a) Feeding autoclaves (stations) used to transfer uranium hexafluoride to the centrifuge cascades at pressures up to 100 kPa.
- b) Equipment for desublimation (cooling traps) used to remove uranium hexafluoride from the cascades at pressures up to 3 kPa. The equipment can be cooled to 203 K (-70°C) and heated to 343 K (+70°C).
- c) Stations for the final product and residual fraction used to transfer uranium hexafluoride to containers.

2.2 Pipe systems for uranium hexafluoride:

Specially constructed or arranged pipe systems and branch pipes to handle uranium hexafluoride within the centrifuge cascades. The pipe system usually consists of three parallel branch pipes where each centrifuge is connected to each of the branch pipes.

3. Specially constructed or arranged units and components for use in enrichment by gas diffusion as follows.

3.1 Membranes for gas diffusion:

- a) Specially constructed or arranged thin porous filters, with a pore size between 100 and 1000 Å (Ångström), a thickness of 5 mm or less and, in tubular filters, a diameter which is 25 mm or less, and which are manufactured from metals, polymers or ceramics resistant to uranium hexafluoride, and
- b) chemical compounds or powders specially produced for the manufacture of such filters. These compounds and powders consist of nickel, nickel compounds with at least 60% nickel, aluminium oxide or completely fluorinated hydrocarbon polymers, resistant to uranium hexafluoride and with a purity of 99.9% or higher, a particle size smaller than 10 microns and a small scatter in the particle size.

3.2 Containers for diffusion membranes:

Specially constructed or arranged hermetically sealed cylindrical vessels with a diameter greater than 300 mm and a length greater than 900 mm, or rectangular vessels with comparable dimensions, which have one inlet connection and two outlet connections each having a diameter greater than 50 mm, intended to include membranes for gas diffusion and made from or internally coated with materials which are resistant to uranium hexafluoride, designed for horizontal or vertical installation.

3.3 Compressors and blowing machines:

Specially constructed or arranged axial, centrifugal or displacement compressors or blowing machines with a suction capacity for uranium hexafluoride of $1 \text{ m}^3/\text{min}$ or more and with an outlet pressure of up to several hundred kPa, constructed for long-term operation in an uranium hexafluoride environment, with or without an electrical motor of suitable strength, and separate units for such compressors and blowing machines.

3.4 Axle packings (gaskets):

Specially constructed or arranged vacuum packings with connections for inlet and outlet of barrier flow, for packing at the axis which connects the rotor with the compressor or blowing machine with a leakage of air to the internal chamber of the compressor or blowing machine which is filled with uranium hexafluoride.

3.5 Heat exchanger for cooling uranium hexafluoride:

Specially constructed or arranged heat exchangers manufactured from or coated with materials resistant to uranium hexafluoride (except stainless steel) or with copper or with some combination of these metals.

4. Specially constructed or arranged auxiliary systems, equipment and components for use in enrichment by gas diffusion as follows.

4.1 Input systems and output systems for enriched and depleted uranium hexafluoride (final product and residual fraction) in the form of specially constructed or arranged process systems with an operating pressure of 300kPa or less:

- a) Feeding autoclaves (stations) used to transfer uranium hexafluoride to the gas diffusion cascades.
- b) Equipment for desublimation (cooling traps) used to remove uranium hexafluoride from the diffusion cascades.
- c) Condensing stations where uranium hexafluoride gas from the cascades is compressed and cooled so that liquid uranium hexafluoride is formed.
- d) Stations for the final product and residual fraction used to transfer uranium hexafluoride to containers.

4.2 Pipe systems for uranium hexafluoride:

Specially constructed or arranged pipe systems and branch pipes to handle uranium hexafluoride within the gas diffusion cascades. The pipe system consists of two parallel branch pipes where each cell is connected to each of the branch pipes.

4.3 Vacuum systems:

- a) Specially constructed or arranged large collection pipes and branch pipes for high-vacuum with a suction capacity of $5 \text{ m}^3/\text{min}$ or more.
- b) Vacuum pumps, specially constructed for operation in an uranium hexafluoride atmosphere and made from or coated with aluminium, nickel or nickel alloys containing more than 60% nickel.

4.4 Shut-off and regulating valves

Specially constructed or arranged manual or automatic stop and regulating valves with bellows packing, manufactured from a material resistant to uranium hexafluoride and with a diameter of between 40 mm and 1500 mm, intended to be installed in main and auxiliary systems in an enrichment plant based on the gas diffusion method.

5. Separation units based on the spray process.
6. Separation units based on vortex pipes.

VI PLANTS FOR THE MANUFACTURE OF HEAVY WATER, DEUTERIUM AND DEUTERIUM COMPOUNDS AND EQUIPMENT SPECIALLY CONSTRUCTED OR ARRANGED FOR THIS PURPOSE

1. Columns for water hydrogen sulphide exchange:

Exchange columns manufactured from fine-grain steel (such as ASTM A516) with diameters of between 6 and 9 m, with an operating pressure greater or equal to 2 MPa and with a corrosion tolerance of 6 mm or more, specially constructed or arranged for the manufacture of heavy water by the water/hydrogen sulphide exchange process.

2. Blowing machines and compressors:

Single-stage centrifugal blowing machines or compressors for the circulation of hydrogen sulphide gas (i.e. gas which contains more than 70% H₂O) and with a low pressure unit (i.e. 0.2 MPa), specially constructed or arranged for the manufacture of heavy water using the water/hydrogen sulphide exchange process.

3. Columns for ammonia hydrogen exchange:

Exchange columns 35 m or higher with a diameter between 1.5 and 2.5 m intended for an operating pressure greater than 15 MPa, specially constructed or arranged for the manufacture of heavy water using the ammonia/hydrogen exchange process.

4. Internal components in exchange columns and step pumps:

Internal components of the exchange columns and step-pumps, which are specially constructed or arranged for columns for the manufacture of heavy water using the ammonia/hydrogen exchange process.

5. Ammonia crackers:

Ammonia crackers with an operating pressure greater than or equal to 3 MPa, which are specially constructed or arranged for the manufacture of heavy water using the ammonia/hydrogen exchange process.

6. Absorption analysers in the infrared range:

Absorption analysers in the infrared range which during operation can analyse the ratio of hydrogen to deuterium when the deuterium concentration is greater than or equal to 90%.

7. Catalytic burners:

Catalytic burners for the conversion of enriched deuterium gas to heavy water, specially constructed or arranged for the manufacture of heavy water using the ammonia hydrogen exchange process.

VII OTHER EQUIPMENT

Particle accelerators with an average effect in the beam which is greater than 5 megawatts for electrons or greater than 0.5 megawatts for protons and heavier particles.

VIII EQUIPMENT AND MATERIALS CONCERNING WHICH THE MANUFACTURING RIGHTS MUST NOT BE LEASED OR TRANSFERRED

Such equipment as is indicated under I, III points 2-7 and IV-VII.

Annex 6

Section 1.	CAS-number
1. Amiton: 0,0-diethyl-S (2-(diethylamino) ethyl)	
- phosphorothiolate and corresponding alkylated and protonated salts	78-35-5
2. PFIB: 1,1,3,3,3-Pentafluoro-2-(trifluoromethyl)	
- 1-propene	382-21-8
3. BZ: 3-Quinuclidinyl benzilate	6581-06-2
4. Chemicals, besides those listed in the Annex to the Military Equipment Ordinance (1992:1303), containing a phosphorus atom to which is bound a methyl, ethyl or propyl (normal or iso) group but no further carbon atoms e.g: Methylphosphonyl dichloride	676-97-1
Dimethylmethylphosphonate	756-79-6
Exception: Phonophos: O-Ethyl-S- phenyl-ethyl-phosphonothiolothionate	944-22-9
5. N,N-Dialkyl (Me, Et, n-Pr or i-Pr)-phosphoramidodihalides	
6. Dialkyl (Me, Et, n-Pr or i-Pr)-N,N-dialkyl-(Me, Et, n-Pr or i-Pr)-phosphoramidate	
7. Arsenic trichloride	7784-34-1
8. 2,2-Diphenyl-2-hydroxy acetic acid	76-93-7
9. Quinuclidine-3-ol	1619-34-7
10. N,N-Dialkyl (Me, Et, n-Pr or i-Pr)-aminoethyl-2-chlorides and corresponding protonated salts	

11. N,N-Dialkyl (Me, Et, n-Pr or i-Pr)-aminoethan-2-ols and the corresponding protonated salts

Exceptions: N, N-Dimethylaminoethanol and the corresponding protonated salts

108-01-0

N,N-Diethylaminoethanol and the corresponding protonated salts

100-37-8

12. N,N-Dialkyl (Me, Et, n-Pr or i-Pr)-aminoethan-2-thiols and the corresponding protonated salts

13. Thiodiglycol: Bis(2-hydroxyethyl) sulphide

111-48-8

14. Pinacolyl alcohol: 3,3-Dimethylbutan-2-ol

464-07-3

Section 2.

CAS-number

1. Phosgene: Carbonyl dichloride

75-44-5

2. Cyanchloride

506-77-4

3. Hydrogen cyanide

74-90-3

4. Chloropicrine: Trichloronitro-methane

76-06-02

5. Phosphorus oxichloride

10025-87-3

6. Phosphorus trichloride

7719-12-2

7. Phosphorus pentachloride

10026-13-8

8. Trimethyl phosphite

121-45-9

9. Triethyl phosphite

122-52-1

10. Dimethyl phosphite

868-85-9

11. Diethyl phosphite

762-04-9

12. Sulphur monochloride

10025-67-9

13. Sulphur dichloride

10545-99-0

14. Thionyl chloride

7719-09-7

15. Ethyldiethanolamine

139-87-7

16. Methyldiethanolamine

105-59-9

17. Triethanolamine

102-71-6